



*Imbunatatirea sistemului de conservare a carnivorelor mari din Vrancea*

RAPORT TEHNIC

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**Evaluarea populației de carnivore mari din Parcul Natural Putna-Vrancea prin metode non-invazive**

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## Introducere

Datele referitoare la ocuparea habitatelor sunt deosebit de utile oferind managerilor de arii protejate informatii mai usor de obtinut decat cele obtinute prin tehnicile de evaluare a abundenței pentru populatiile de animale salbatice dintr-un spatiu.

Estimarea ocuparii habitatelor din Parcul Natural Putna Vrancea s-a realizat cu ajutorul programului Presence (MacKenzie et al., 2006). Aceasta aplicatie ne ajuta sa estimăm probabilitatea de detecție ( $d$ ) și ocuparea sitului ( $\psi$ ). In cadrul analizei mai putem include si covariate, care estimează impactului unor elemente de mediu, precum tipul de utilizare a terenului asupra probabilității de ocupare a habitatelor.

## Definirea si selectarea siturilor

Situl poate fi definit generic ca fiind unitatea de sampling din arealul de studiu, delimitat natural (ex. bălți) sau arbitrar (ex. patrat 3×3 km). În acest sit trebuie să determinăm dacă specia este prezentă sau absentă. Astfel, rezultatul observației (ignorând problema probabilității de detecție) poate lua două valori: prezent (1) sau absent (0). In cadrul proiectului am definit ca areal de studiu Parcul Natural Putna-Vrancea, iar ca sit celule nesuprapuse de 3×3 km ( $\approx 9 \text{ km}^2$ ). Sistemul de prelevare a probabilitatii de ocupare a habitatelor de catre carnivore mari a cuprins 59 de celule, suprafata totala fiind astfel de  $\approx 531 \text{ km}^2$ .

Pentru prelevarea imaginilor s-au folosit 10 perechi de camere foto/video automate. Mecanismul de functionare si setare fost descris in metodologia de lucru. Deoarece cele 10 perechi nu au fost disponibile mereu, prelevarea s-a realizat si cu 8 perechi de camere. In sesiunile in care s-a lucrat cu 8 perechi s-au acoperit 13,56% din numarul total de celule din arealul de studiu, iar in sesiunile cu 10 perechi 16,95%. Selectarea siturilor s-a realizat randomizat cu ajutorul programului HawthTools (<http://www spatialecology.com/htools/overview.php>).

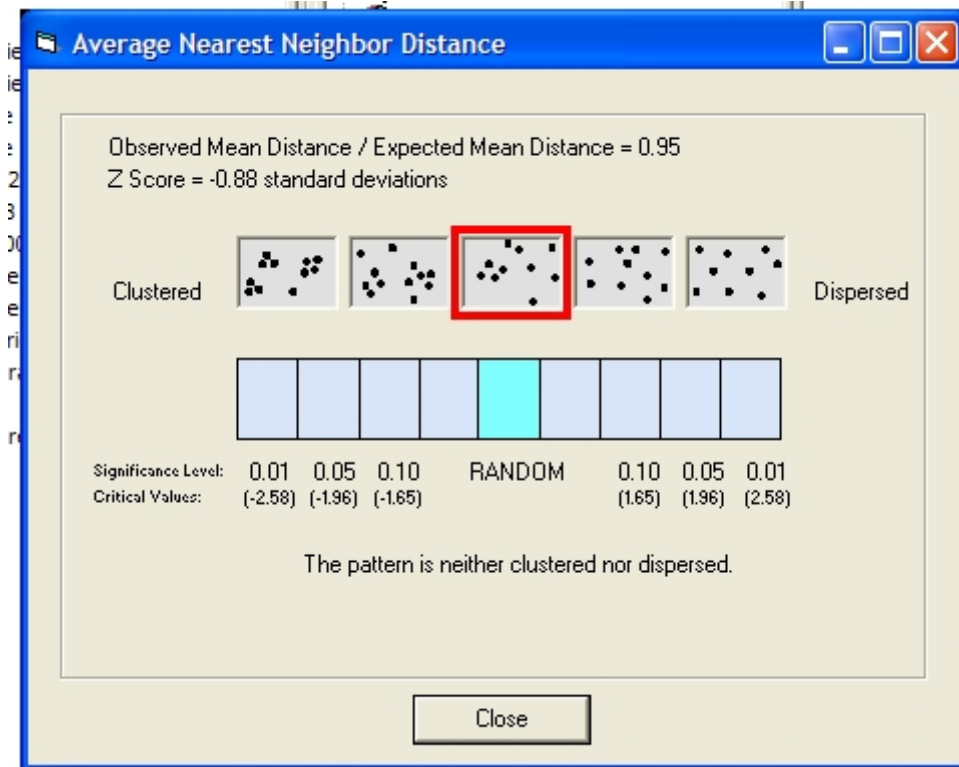
Analiza post-hoc a randomizarii pentru toate siturile s-a realizat prin aplicarea testului Zscore la media distantelor vecinilor celor mai apropiati (Average Nearest Neighbor). Ipoteza testată a fost:

$H_0$  = Punctele de prelevare au o distribuție clusterizată sau la distanțe egale

$H_1$  = Punctele de prelevare sunt dispuse randomizat.

Rezultatul analizei a fost:

Average Nearest Neighbor Summary  
Observed Mean Distance: 1019.358397 meters  
Expected Mean Distance: 1070.045832 meters  
Nearest Neighbor Ratio: 0.952631  
Z Score: -0.878603  
p-value: 0.379617  
Results: random



## Definirea sezonului de analiză

În studiile de analiza a ocupării habitatelor definirea sezonului este crucială pentru semnificația rezultatului. Acestea prezumă că populația este închisă și nu se produc schimbări în probabilitatea de detecție de la o perioadă de samplig la alta. Analiza noastră s-a derulat între octombrie 2006 și aprilie 2009, incluzând astfel mai multe sezoane. Totuși pentru că nu există diferențe semnificative de la o sesiune la alta între probabilitatea de ocupare toate sesiunile au fost considerate ca făcând parte dintr-un singur sezon. În această fază putem aprecia că un studiu care evalua prezenta carnivorelor mari în același sit, la intervale de timp mari (de exemplu 3 luni) ar fi putut fi mai util, oferind prin analiza ocupării habitatelor în sezoane multiple informații despre cum s-a schimbat mărimea populației de carnivore.

În studiul nostru s-au derulat 10 sesiuni de prelevare, cu câte 3 vizități ale sitului. În 7 sesiuni s-au folosit 10 perechi de camere în restul de 3 sesiuni 8 perechi de camere. În total camerele au fost active 450 de zile. Dacă vom considera fiecare pereche de camere ca unități independente, în total acestea au funcționat 4230 zile.

## Metode de estimare a succesului unui model: Verosimilitate (Likelihood), Verosimilitate maximă (Maximum likelihood), Akaike Information Criterion (AIC)

Pentru evaluarea performanței modelului trebuie să aplicăm o serie de metode statistice precum Likelihood, Maximum Likelihood sau Akaike Information Criterion.

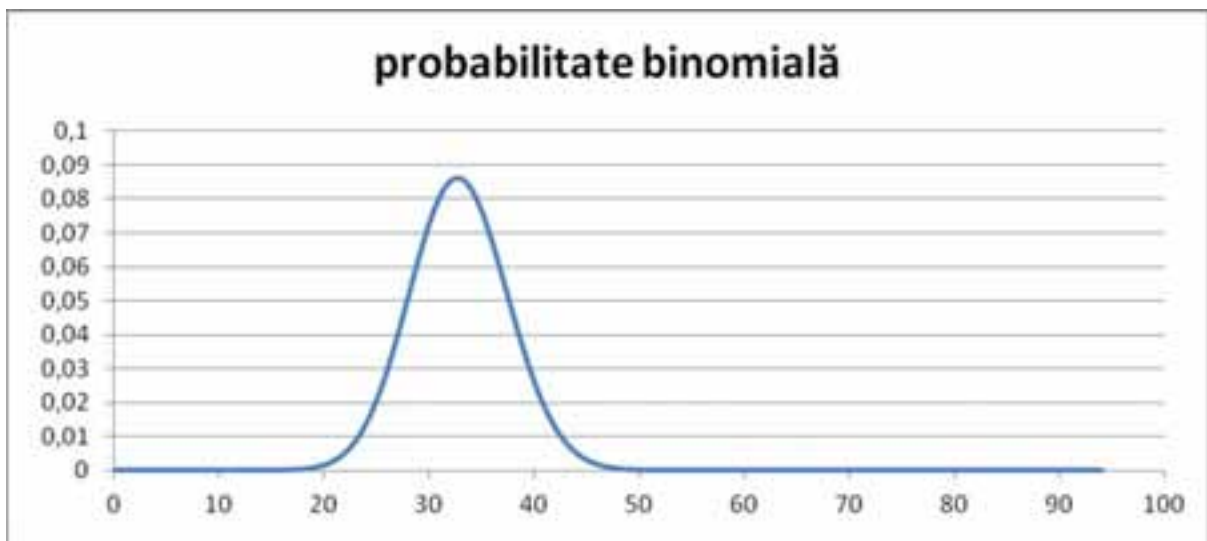
În cazul evaluării ocupării habitatelor de către urs, dacă avem 94 de sesiuni de prelevare și la 33 avem imagini cu urs, probabilitatea de a captura imagini cu urși este 0,36. Trebuie să determinăm dacă această probabilitate este normală.

Primul evaluarea o vom realiza cu ajutorul funcției binomiale

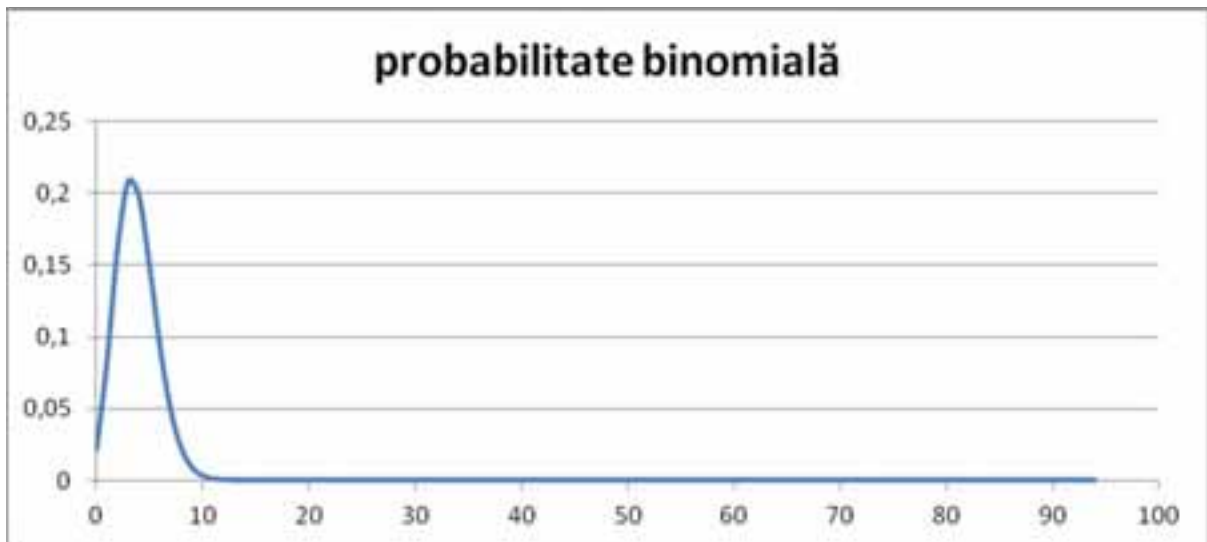
$$\text{BINOMIAL: } f(y | n, p) = \binom{n}{y} p^y (1-p)^{n-y}$$

Unde  $y$  = numărul de situri cu imagini,  $p$  = probabilitatea de a avea imagini în 33 de situri,  $n$  = numărul total de situri.

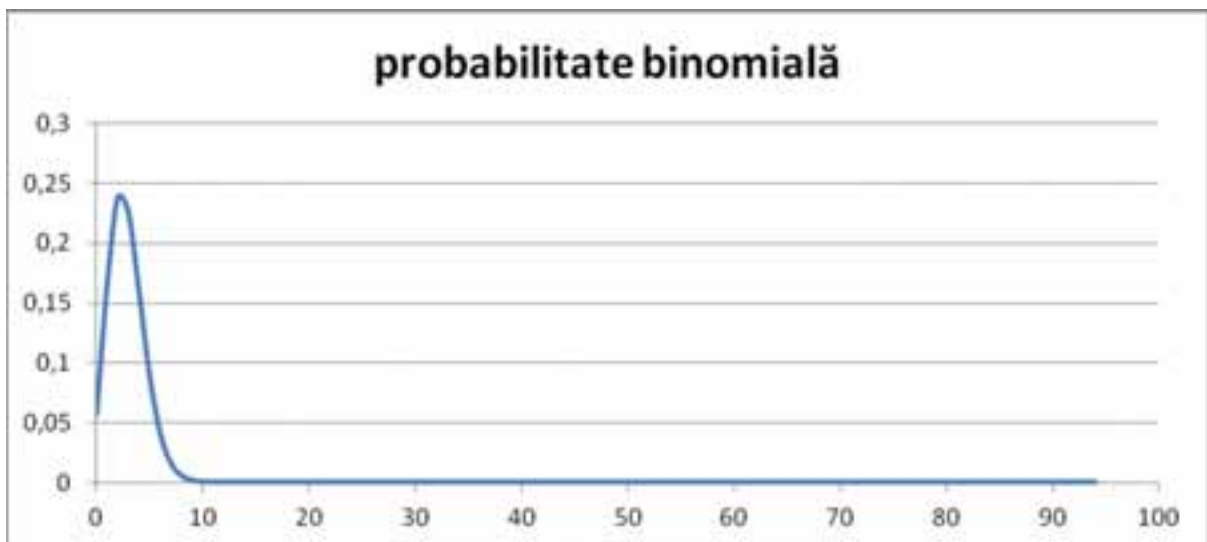
Pentru urs curba binomială este:



Pentru ras curba binomială este:



Pentru lup curba binomială este:

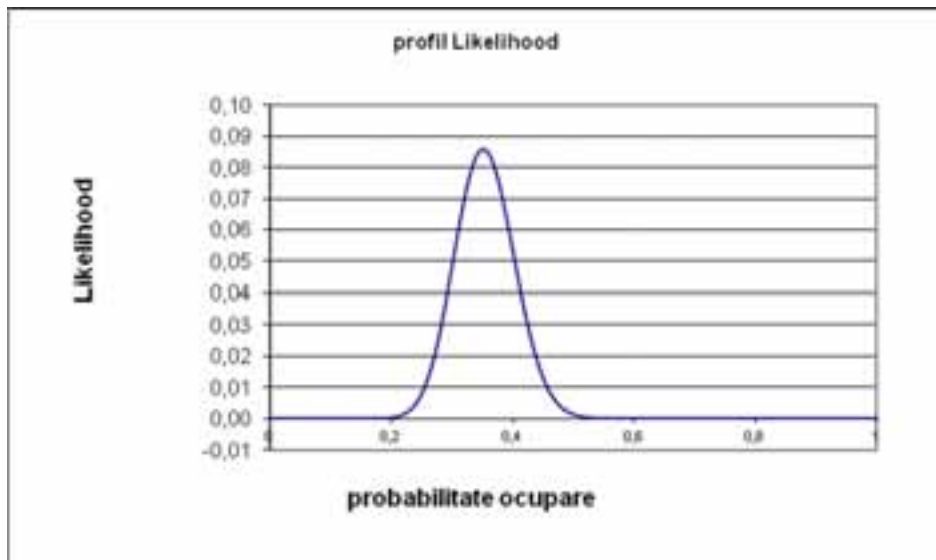


Din analiza graficelor rezulta cu pentru urs ar trebui sa avem imagini la 17-50 situri (probabilitate 0,35), pentru ras 0-12 situri (probabilitate 0,04) iar pentru lup la 0-10 situri (probabilitate 0,03).

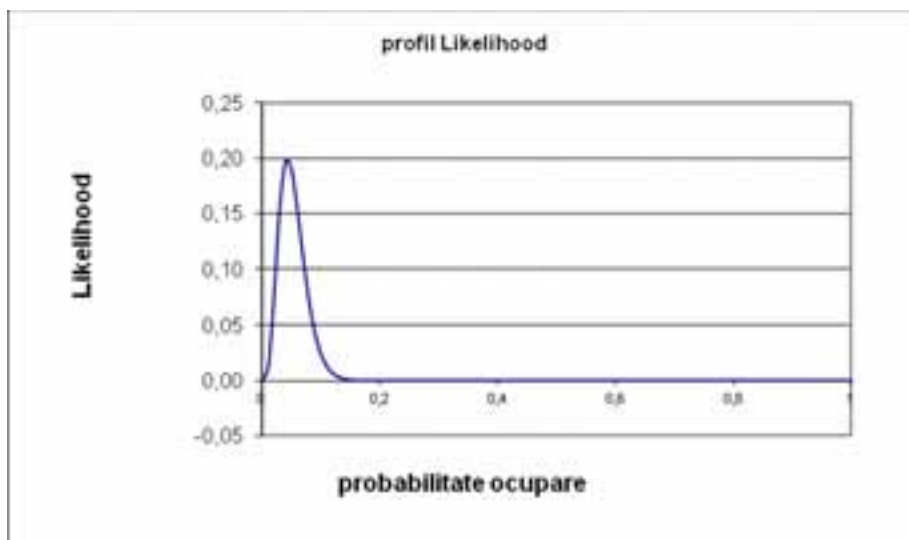
Urmatorul pas este de a calcula verosimilitatea (likelihood) prin calculul probabilitatii de a avea 33 de situri cu imagini (pentru urs), 4 situri (ras) si 3 situri (lup) pentru diferite probabilitati, de la 0,00 la 1, cu pas de incrementare Delta x = 0,01.

$$\text{LIKELIHOOD: } L(p | n, y) = \binom{n}{y} p^y (1-p)^{n-y} = \frac{n!}{y!(n-y)!} p^y (1-p)^{n-y}$$

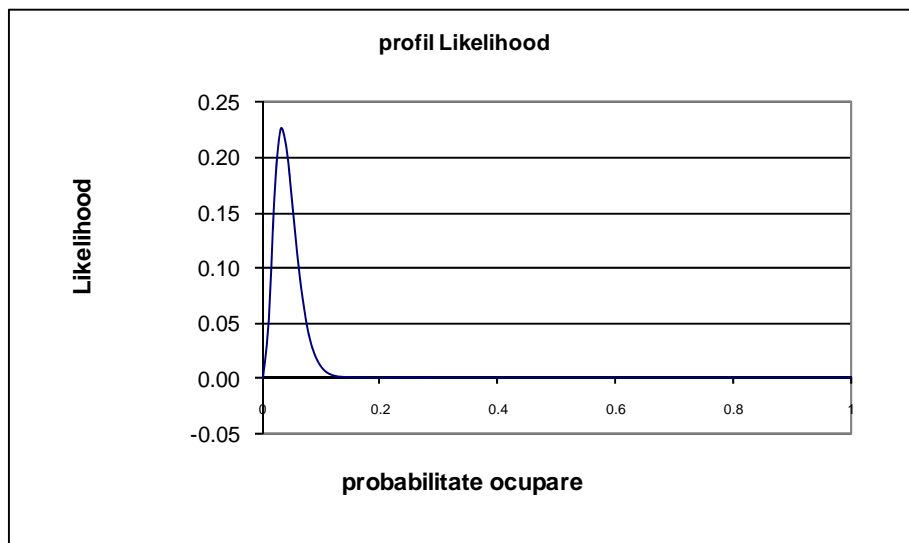
Pentru urs curba likelihood este:



Pentru ras curba likelihood este:



Pentru lup curba likelihood este:



Cea mai buna estimare a verosimilatii (verosimilatea maxima sau maximul likelihood estimation, MLE) este o valoare care trebuie sa fie cat mai apropiata de valoarea initiala (0,35 pentru urs, 0,4 pentru ras, 0,3 pentru lup).

urs:

<b>Max Likelihood =</b>		<b>0.09</b>
<b>MLE =</b>	<b>0.35</b>	<b>0.35</b>

ras:

<b>Max Likelihood =</b>		<b>0.20</b>
<b>MLE =</b>	<b>0.04</b>	<b>0.04</b>

lup:

<b>Max Likelihood =</b>		<b>0.23</b>
<b>MLE =</b>	<b>0.03</b>	<b>0.03</b>

In cazul nostru vom estima likelihood pentru valoarea rezultata din modelele rulate:  $\psi(\cdot), p(\text{habitat}); \psi(\text{habitat}), p(\text{habitat}); \psi(\cdot), p(\cdot)$  și  $\psi(\text{habitat}), p(\cdot)$ . Valoarea obtinuta este foarte mica (0, urmat de 80 de zerouri 102 pentru modelul  $\psi(\cdot), p(\cdot)$  de exemplu), astfel ca datele se prezinta sub forma de  $-2 \cdot \text{LogLikelihood}$  (in tabelele modelelor notat  $-2 \cdot \text{LogLike}$ ).

Deoarece avem 94 de sesiuni cu cate 3 vizite per sesiune rezulta ca probabilitatea de detectie variaza pentru fiecare vizita. Pentru urs in prima vizita la cele 94 situri avem 14 situatii in care s-au observat ursi, in a doua 10 si in a doua 16. Asadar se inregistreaza probabilitati diferite: 0,15; 0,11 și 0,17.

Pentru a selecta modele cele mai aproape de realitate se foloseste metoda Akaike Information Criterion, care balanseaza numarul de parametri si ii adaptează la forma datelor (likelihood).

$$AIC = 2 \times \text{numarul de parametri} - 2 \times \log(\text{Likelihood})$$

O valoare mica a AIC indica o mai buna combinatie de simplitate si potrivirea datelor. Modelul cu AIC cel mai mic este mai performant dupa acest criteriu. Pentru a afla daca este mult mai bun, sau doar un pic mai bun, calculam diferenta intre modele, deltaAIC. Daca deltaAIC este mic atunci modelele sunt apropiate. Daca are valoarea mai mica de 2 atunci toate modelele sunt bune, un deltaAIC intre 4 si 7 indica faptul ca modelul cu AIC mai mic nu este neaparat cel mai corect. Likelihood-ul modelului se calculează astfel:

$$\text{Model Likelihood} = e^{-\text{delta AIC}/2}$$

Astfel daca pentru psi(habitat),p(habitat)Fit Model Likelihood = 0.3697 si psi(.),p(habitat) = 1, modelul psi(.),p(habitat) este probabil de 3 ori mai bun decat modelul psi(habitat),p(habitat)Fit.

AIC wgtModel mediaza intre probabilitatile de ocupare ale habitatelor pentru fiecare din parametri luati in calcul (mentionati in coloana no.Par.). Astfel valoarea AIC wgtModel reprezinta o probabilitate de ocupare a habitatelor (Model Likelihood impartit la toate Model Likelihood)

Pentru psi(.),p(habitat), AIC wgtModel =  $1/1+0,3697+0,3396+0,3198 = 0.4928$

Model	AIC	deltaAIC	AIC wgtModel	Likelihood	no.Par.	-2*LogLike
psi(.),p(habitat)	231.37	0	0.4928	1	3	225.3687
psi(habitat),p(habitat)Fit	233.36	1.99	0.1822	0.3697	4	225.3603
psi(.),p(.)	233.53	2.16	0.1674	0.3396	2	229.5295
psi(habitat),p(.)	233.65	2.28	0.1576	0.3198	3	227.6503



# Estimarea ocuparii habitatebr de către urs - rezultate modelare

PRESENCE - Presence/Absence-Site Occupancy data analysis

Wed Jan 06 13:19:44 2010, Version 2.3090901

```
-----  
==>i:i:\camere_foto\pao\urs_total.pao  
==>l:i:\camere_foto\pao\urs_total.pa2.out  
==>name=psi(,),p(habitat)  
==>model=100  
==>j:i:\camere_foto\pao\urs_total.dm  
==>lmt=200  
model=100 N,T-->94,3  
modtype-->1 Single-Season data Model selected  
Data checksum = 28282  
NSi-->2  
site_covname[0]=forest  
site_covname[1]=non_forest  
NSa-->0
```

```
-----  
TITLE:urs_total  
-----
```

```
modtype=1 N=94 T=3 Groups=1 bootstraps=0  
-->3-1
```

```
Matrix 1: rows=2, cols=2
```

```
-,a1,
```

```
psi 1
```

```
=====  
Matrix 2: rows=4, cols=3
```

```
-,b1,b2,
```

```
p1 forest non_forest
```

```
p2 forest non_forest
```

```
p3 forest non_forest  
=====
```

```
Custom Model:
```

```
Number of sites = 94
```

```
Number of sampling occasions = 3
```

```
Number of missing observations = 0
```

```
Number of parameters = 3
```

```
Number of significant digits = 6.5
```

```
Number of function calls = 88
```

```
-2log(likelihood) = 225.3687
```

```
AIC = 231.368670
```

```
Model has been fit using the logistic link.
```

```
Naive estimate = 0.3511
```

```
Individual Site estimates of Psi:
```

```
Site Survey Psi Std.err 95% conf. interval
```

1 1A 1 1-1: 0.8493 0.2299 0.1430 - 0.9948

=====  
Individual Site estimates of p:

Site	Survey	p	Std.err	95% conf. interval
1	1A	1	1-1: 0.3905	0.1608 0.1456 - 0.7067

PRESENCE - Presence/Absence-Site Occupancy data analysis  
Wed Jan 06 13:21:46 2010, Version 2.3090901

=====  
==>i:i:\camere\_foto\pao\urs\_total.pao  
==>l:i:\camere\_foto\pao\urs\_total.pa2.out  
**==>name=psi(habitat),p(habitat)Fit**  
==>model=100  
==>j:i:\camere\_foto\pao\urs\_total.dm  
==>lmt=200  
==>boot2=1000  
model=100 N,T-->94,3  
modtype-->1 Single-Season data Model selected  
Data checksum = 28282  
NSi-->2  
site\_covname[0]=forest  
site\_covname[1]=non\_forest  
NSa-->0

-----  
TITLE:urs\_total  
-----

modtype=1 N=94 T=3 Groups=1 bootstraps=0  
-->3-1  
Matrix 1: rows=2, cols=3  
-,a1,a2,  
psi forest non\_forest

=====  
Matrix 2: rows=4, cols=3  
-,b1,b2,  
p1 forest non\_forest  
p2 forest non\_forest  
p3 forest non\_forest

=====  
Custom Model:  
Number of sites = 94  
Number of sampling occasions = 3  
Number of missing observations = 0  
Number of parameters = 4  
Number of significant digits = 6.9  
Number of function calls = 142  
-2log(likelihood) = 225.3603  
AIC = 233.360291  
Model has been fit using the logistic link.  
Naive estimate = 0.3511

Untransformed Estimates of coefficients for covariates (Beta's)

```
=====
A1 :occupancy   psiforest           1.589092 (2.127513)
A2 :occupancy   psinon_forest        1.924847 (3.166048)
B1 :detection   p1forest           -1.695340 (0.462363)
B2 :detection   p1non_forest       -0.481212 (0.794612)
```

Variance-Covariance Matrix of Untransformed estimates (Beta's):

```
      A1    A2    B1    B2
A1  4.526312  0.000000 -0.891981 -0.000000
A2  0.000000 10.023860 -0.000000 -1.755947
B1 -0.891981 -0.000000  0.213780  0.000000
B2 -0.000000 -1.755947  0.000000  0.631409
-----
```

Individual Site estimates of Psi:

```
Site  Survey  Psi  Std.err  95% conf. interval
1   1A  1   1-1: 0.8727  0.3518  0.0136 - 0.9997
```

Individual Site estimates of p:

```
Site  Survey  p  Std.err  95% conf. interval
1   1A  1   1-1: 0.3905  0.1608  0.1456 - 0.7067
```

PRESENCE - Presence/Absence-Site Occupancy data analysis

Wed Jan 06 13:16:24 2010, Version 2.3090901

```
-----
==>i:i:\camere_foto\pao\urs_total.pao
==>l:i:\camere_foto\pao\urs_total.pa2.out
==>name=psi(,),p(.)
==>model=100
==>j:i:\camere_foto\pao\urs_total.dm
==>lmt=200
model=100 N,T-->94,3
modtype-->1 Single-Season data Model selected
```

```
Data checksum = 28282
NSi-->2
site_covname[0]=forest
site_covname[1]=non_forest
NSa-->0
```

TITLE:urs\_total

```
-----
modtype=1 N=94 T=3 Groups=1 bootstraps=0
-->3-1
Matrix 1: rows=2, cols=2
-,a1,
psi 1
=====
```

Matrix 2: rows=4, cols=2

-,b1,  
p1 1  
p2 1  
p3 1

=====

Custom Model:

Number of sites = 94  
Number of sampling occasions = 3  
Number of missing observations = 0  
Number of parameters = 2  
Number of significant digits = 8.0  
Number of function calls = 71  
-2log(likelihood) = 229.5295  
AIC = 233.529538

Model has been fit using the logistic link.

Naive estimate = 0.3511

Untransformed Estimates of coefficients for covariates (Beta's)

=====

			estimate	std.error
A1	:occupancy	psi	1.153335	(1.220542)
B1	:detection	p1	-1.472207	(0.394000)

Variance-Covariance Matrix of Untransformed estimates (Beta's):

	A1	B1
A1	1.489722	-0.422146
B1	-0.422146	0.155236

-----

=====

Individual Site estimates of Psi:

Site	Survey	Psi	Std.err	95% conf. interval
1	1A 1	1-1: 0.7601	0.2226	0.2246 - 0.9720

=====

Individual Site estimates of p:

Site	Survey	p	Std.err	95% conf. interval
1	1A 1	1-1: 0.1866	0.0598	0.0958 - 0.3318

PRESENCE - Presence/Absence-Site Occupancy data analysis

Wed Jan 06 13:20:47 2010, Version 2.3090901

-----

==>i:i:\camere\_foto\pao\urs\_total.pao

==>l:i:\camere\_foto\pao\urs\_total.pa2.out

==>name=psi(habitat),p(.)

==>model=100

==>j=i:\camere\_foto\pao\urs\_total.dm

==>lmt=200

model=100 N,T-->94,3

modtype-->1 Single-Season data Model selected

Data checksum = 28282  
 NSi-->2  
 site\_covname[0]=forest  
 site\_covname[1]=non\_forest  
 NSa-->0

-----  
 TITLE:urs\_total  
 -----

modtype=1 N=94 T=3 Groups=1 bootstraps=0  
 -->3-1

Matrix 1: rows=2, cols=3  
 -,a1,a2,  
 psi forest non\_forest

=====  
 Matrix 2: rows=4, cols=2  
 -,b1,  
 p1 1  
 p2 1  
 p3 1

=====  
 Custom Model:

Number of sites = 94  
 Number of sampling occasions = 3  
 Number of missing observations = 0  
 Number of parameters = 3  
 Number of significant digits = 6.5  
 Number of function calls = 141  
 -2log(likelihood) = 227.6503  
 AIC = 233.650291

Model has been fit using the logistic link.

Naive estimate = 0.3511

Untransformed Estimates of coefficients for covariates (Beta's)

=====  

			estimate	std.error
A1	:occupancy	psiforest	0.586031	(0.695898)
A2	:occupancy	psinon_forest	20.175407	(21063.022660)
B1	:detection	p1	-1.305679	(0.324289)

Variance-Covariance Matrix of Untransformed estimates (Beta's):

	A1	A2	B1	
A1	0.484274	0.037599	-0.178632	
A2	0.037599	443650923.567844	-0.022135	
B1	-0.178632	-0.022135	0.105163	

=====  
 Individual Site estimates of Psi:

	Site	Survey	Psi	Std.err	95% conf. interval	
1	1A	1	1-1: 1.0000	0.0000	0.0000 - 1.0000	

Individual Site estimates of p:

	Site	Survey	p	Std.err	95% conf. interval

1 1A 1 1-1: 0.2132 0.0544 0.1255 -0.3385

### Assessing Model Fit

History(cohort)	Observed	Expected	Chi-square
100(0)	9.0000	8.8548	0.00
111(0)	2.0000	0.5643	3.65
010(0)	8.0000	8.8548	0.08
101(0)	3.0000	1.9571	0.56
000(0)	61.0000	61.0000	0.00
001(0)	11.0000	8.8548	0.52

sum(chisq)= 4.8126 sum+N-seensum= 8.7268, Test Statistic = 1.4545

-----  
Test Statistic (data) = 1.4545  
From 1000 parametric bootstraps...  
Probability of test statistic >= observed = 0.1828  
Average simulated Test Stat = 1.0082  
Median simulated Test Stat = 0.8663  
Estimate of c-hat = 1.4426 (=TestStat/AvgTestStat)  
Estimate of c-hat = 1.6789 (=TestStat/MedianTestStat)  
-----

## Estimarea ocuparii habitatelor de către lup- rezultate modelare

PRESENCE - Presence/Absence-Site Occupancy data analysis  
Wed Jan 06 13:33:16 2010, Version 2.3090901

-----  
==>i:i:\camere\_foto\pao\lup\_total.pao  
==>l:i:\camere\_foto\pao\lup\_total.pa2.out  
**==>name=psi(,),p(.)**  
==>model=100  
==>j:i:\camere\_foto\pao\lup\_total.dm  
==>lmt=200  
model=100 N,T-->94,3  
modtype-->1 Single-Season data Model selected  
Data checksum = 28204  
NSi-->2  
site\_covname[0]=forest  
site\_covname[1]=non\_forest  
NSa-->0

-----  
lup  
-----

modtype=1 N=94 T=3 Groups=1 bootstraps=0  
-->3-1

Matrix 1: rows=2, cols=2

-,a1,

14

psi 1

=====

Matrix 2: rows=4, cols=2

-,b1,

p1 1

p2 1

p3 1

=====

Custom Model:

Number of sites = 94

Number of sampling occasions = 3

Number of missing observations = 0

Number of parameters = 2

Number of significant digits = 10.8

Number of function calls = 159

-2log(likelihood) = 33.2277

AIC = 37.227740

Model has been fit using the logistic link.

Naive estimate = 0.0319

Untransformed Estimates of coefficients for covariates (Beta's)

=====

			estimate	std.error
A1	:occupancy	psi	20.937261	(31622776601.683792)
B1	:detection	p1	-4.532599	(0.580446)

Variance-Covariance Matrix of Untransformed estimates (Beta's):

	A1	B1
A1	999999999999999870000.000000	0.000000
B1	0.000000	0.336918

-----

=====

Individual Site estimates of Psi:

Site	Survey	Psi	Std.err	95% conf. interval
1 Bahneanu	1	1-1: 1.0000	25.5307	0.0000 - 1.0000

=====

Individual Site estimates of p:

Site	Survey	p	Std.err	95% conf. interval
1 Bahneanu	1	1-1: 0.0106	0.0061	0.0034 - 0.0325

PRESENCE - Presence/Absence-Site Occupancy data analysis

Wed Jan 06 13:35:17 2010, Version 2.3090901

-----

==>i:i:\camere\_foto\pao\lup\_total.pao

==>l:i:\camere\_foto\pao\lup\_total.pa2.out

==>name=psi(,),p(habitat)

==>model=100

==>j:i:\camere\_foto\pao\lup\_total.dm

==>lmt=200

```

model=100 N,T-->94,3
modtype-->1 Single-Season data Model selected
Data checksum = 28204
NSi-->2
site_covname[0]=forest
site_covname[1]=non_forest
NSa-->0

```

```

-----
lup
-----

```

```

modtype=1 N=94 T=3 Groups=1 bootstraps=0

```

```

-->3-1

```

```

Matrix 1: rows=2, cols=2

```

```

-,a1,

```

```

psi 1

```

```

=====

```

```

Matrix 2: rows=4, cols=3

```

```

-,b1,b2,

```

```

p1 forest non_forest

```

```

p2 forest non_forest

```

```

p3 forest non_forest

```

```

=====

```

```

Custom Model:

```

```

Number of sites          = 94

```

```

Number of sampling occasions = 3

```

```

Number of missing observations = 0

```

```

Number of parameters      = 3

```

```

Number of significant digits = 9.2

```

```

Number of function calls   = 223

```

```

-2log(likelihood)         = 32.8298

```

```

AIC                       = 38.829800

```

```

Model has been fit using the logistic link.

```

```

Naive estimate            = 0.0319

```

```

Untransformed Estimates of coefficients for covariates (Beta's)

```

```

=====

```

		estimate	std.error
A1	:occupancy psi	20.255935	(31622776601.683792)
B1	:detection p1forest	-4.465908	(0.580659)
B2	:detection p1non_forest	-97.510361	(31622776601.683792)

```

Variance-Covariance Matrix of Untransformed estimates (Beta's):

```

	A1	B1	B2
A1	99999999999999870000.000000	0.000000	0.000000
B1	0.000000	0.337165	0.000000
B2	0.000000	0.000000	99999999999999870000.000000

```

-----

```

```

=====

```

```

Individual Site estimates of Psi:

```

Site	Survey	Psi	Std.err	95% conf. interval
------	--------	-----	---------	--------------------



1 Bahneanu 1 1-1: 1.0000 50.4614 0.0000 - 1.0000

=====  
Individual Site estimates of p:

Site	Survey	p	Std.err	95% conf. interval
1 Bahneanu	1	1-1: 0.0000	0.0000	0.0000 - 1.0000

PRESENCE - Presence/Absence-Site Occupancy data analysis

Wed Jan 06 13:35:45 2010, Version 2.3090901

=====  
==>i:i:\camere\_foto\pao\lup\_total.pao  
==>l:i:\camere\_foto\pao\lup\_total.pa2.out  
==>name=psi(habitat),p(.)  
==>model=100  
==>j:i:\camere\_foto\pao\lup\_total.dm  
==>lmt=200  
model=100 N,T-->94,3  
modtype-->1 Single-Season data Model selected  
Data checksum = 28204  
NSi-->2  
site\_covname[0]=forest  
site\_covname[1]=non\_forest  
NSa-->0

-----  
lup

-----  
modtype=1 N=94 T=3 Groups=1 bootstraps=0  
-->3-1  
Matrix 1: rows=2, cols=3  
-,a1,a2,  
psi forest non\_forest

=====  
Matrix 2: rows=4, cols=2  
-,b1,  
p1 1  
p2 1  
p3 1

=====  
Custom Model:

Number of sites = 94  
Number of sampling occasions = 3  
Number of missing observations = 0  
Number of parameters = 3  
Number of significant digits = 6.3  
Number of function calls = 259  
-2log(likelihood) = 32.8298  
AIC = 38.829800  
Model has been fit using the logistic link.  
Naive estimate = 0.0319  
Untransformed Estimates of coefficients for covariates (Beta's)

```

=====
                                estimate std.error
A1 :occupancy   psiforest           20.022972 (51137.540188)
A2 :occupancy   psinon_forest       -95.529689 (31622776601.683792)
B1 :detection   p1                   -4.465908 (0.580659)

```

Variance-Covariance Matrix of Untransformed estimates (Beta's):

```

      A1    A2    B1
A1 2615048016.436893 0.000000 -2.671547
A2 0.000000 99999999999999870000.000000 0.000000
B1 -2.671547 0.000000 0.337165

```

Individual Site estimates of Psi:

```

Site  Survey  Psi  Std.err  95% conf. interval
individual Site estimates of p:
Site  Survey  p  Std.err  95% conf. interval
1 Bahneanu  1    1-1: 0.0114 0.0065 0.0037 - 0.0346

```

PRESENCE - Presence/Absence-Site Occupancy data analysis  
Wed Jan 06 14:07:08 2010, Version 2.3090901

```

-----
==>i:i:\camere_foto\pao\lup_total.pao
==>l=i:\camere_foto\pao\lup_total.pa2.out
==>name=psi(habitat),p(habitat)FIT
==>model=100
==>j=i:\camere_foto\pao\lup_total.dm
==>lmt=200
==>boot2=1000
model=100 N,T-->94,3
modtype-->1 Single-Season data Model selected

```

```

Data checksum = 28204
NSi-->2
site_covname[0]=forest
site_covname[1]=non_forest
NSa-->0

```

```

-----
lup
-----
modtype=1 N=94 T=3 Groups=1 bootstraps=0
-->3-1
Matrix 1: rows=2, cols=3
-,a1,a2,
psi forest non_forest
=====
Matrix 2: rows=4, cols=3
-,b1,b2,
p1 forest non_forest

```

p2 forest non\_forest  
 p3 forest non\_forest

=====

Custom Model:

Number of sites = 94  
 Number of sampling occasions = 3  
 Number of missing observations = 0  
 Number of parameters = 4  
 Number of significant digits = 7.0  
 Number of function calls = 302  
 -2log(likelihood) = 32.8298  
 AIC = 40.829800  
 Model has been fit using the logistic link.

Naive estimate = 0.0319

Untransformed Estimates of coefficients for covariates (Beta's)

=====

		estimate	std.error
A1	:occupancy psiforest	20.477874	(31622776601.683792)
A2	:occupancy psinon_forest	-172.150773	(31622776601.683792)
B1	:detection p1forest	-4.465908	(0.580659)
B2	:detection p1non_forest	-107.926875	(31622776601.683792)

Variance-Covariance Matrix of Untransformed estimates (Beta's):

	A1	A2	B1	B2
A1	99999999999999870000.000000	0.000000	0.000000	0.000000
A2	0.000000	99999999999999870000.000000	0.000000	0.000000
B1	0.000000	0.000000	0.337165	0.000000
B2	0.000000	0.000000	0.000000	99999999999999870000.000000

-----

=====

Individual Site estimates of Psi:

Site	Survey	Psi	Std.err	95% conf. interval
1 Bahneanu	1	1-1: 0.0000	0.0000	0.0000 - 1.0000

Individual Site estimates of p:

Site	Survey	p	Std.err	95% conf. interval
1 Bahneanu	1	1-1: 0.0000	0.0000	0.0000 - 1.0000

=====

**Assessing Model Fit**

History(cohort)	Observed	Expected	Chi-square
000(0)	91.0000	91.0340	0.00
010(0)	1.0000	0.9774	0.00
100(0)	2.0000	0.9774	1.07
sum(chisq)=	1.0704	sum+N-seensum=	2.0817, Test Statistic = 0.6939

-----

Test Statistic (data) = 0.6939

From 1000 parametric bootstraps...

Probability of test statistic  $\geq$  observed = 0.7163

Average simulated Test Stat = 2.1873

Median simulated Test Stat = 1.0158

Estimate of  $\hat{c}$  = 0.3172 (=TestStat/AvgTestStat)

Estimate of  $\hat{c}$  = 0.6831 (=TestStat/MedianTestStat)

-----

## Estimarea ocuparii habitatelor de către ras - rezultate modelare

PRESENCE - Presence/Absence-Site Occupancy data analysis  
Wed Jan 06 13:51:23 2010, Version 2.3090901

-----  
==>i=i:\camere\_foto\pao\ras\_total.pao  
==>l=i:\camere\_foto\pao\ras\_total.pa2.out  
==>name=psi(,),p(.)  
==>model=100  
==>j=i:\camere\_foto\pao\ras\_total.dm  
==>lmt=200  
model=100 N,T-->94,3  
modtype-->1 Single-Season data Model selected

Data checksum = 28207  
NSi-->2  
site\_covname[0]=forest  
site\_covname[1]=non\_forest  
NSa-->0

-----  
ras  
-----

modtype=1 N=94 T=3 Groups=1 bootstraps=0

-->3-1

Matrix 1: rows=2, cols=2

-,a1,

psi 1

=====

Matrix 2: rows=4, cols=2

-,b1,

p1 1

p2 1

p3 1

=====

Custom Model:

Number of sites = 94

Number of sampling occasions = 3

Number of missing observations = 0

Number of parameters = 2

Number of significant digits = 4.9

\*\*\*\* Numerical convergence may not have been reached.  
Parameter estimates converged to approximately  
4.86 significant digits.

Number of function calls = 186  
-2log(likelihood) = 41.9879  
AIC = 45.987894

Model has been fit using the logistic link.

Naive estimate = 0.0426

Untransformed Estimates of coefficients for covariates (Beta's)

```
=====
              estimate std.error
A1 :occupancy  psi          20.532019 (31622776601.683792)
B1 :detection  p1          -4.241327 (0.503584)
```

Variance-Covariance Matrix of Untransformed estimates (Beta's):

```
      A1    B1
A1 999999999999999870000.000000 0.000000
B1 0.000000 0.253597
-----
```

=====

Individual Site estimates of Psi:

```
Site  Survey  Psi  Std.err  95% conf. interval
1 Bahneanu  1    1-1: 1.0000 38.2876 0.0000 - 1.0000
```

=====

Individual Site estimates of p:

```
Site  Survey  p  Std.err  95% conf. interval
1 Bahneanu  1    1-1: 0.0142 0.0070 0.0053 - 0.0372
```

PRESENCE - Presence/Absence-Site Occupancy data analysis  
Wed Jan 06 13:53:28 2010, Version 2.3090901

```
-----
==>i:i:\camere_foto\pao\ras_total.pao
==>l:i:\camere_foto\pao\ras_total.pa2.out
==>name=psi(,),p(habitat)
==>model=100
==>j=i:\camere_foto\pao\ras_total.dm
==>lmt=200
model=100 N,T-->94,3
modtype-->1 Single-Season data Model selected
```

Data checksum = 28207

NSi-->2

site\_covname[0]=forest

site\_covname[1]=non\_forest

NSa-->0

-----  
ras  
-----

modtype=1 N=94 T=3 Groups=1 bootstraps=0

-->3-1

Matrix 1: rows=2, cols=2

-,a1,

psi 1

=====

Matrix 2: rows=4, cols=3

-,b1,b2,

p1 forest non\_forest

p2 forest non\_forest

p3 forest non\_forest

=====

Custom Model:

Number of sites = 94

Number of sampling occasions = 3

Number of missing observations = 0

Number of parameters = 3

Number of significant digits = 8.0

Number of function calls = 219

-2log(likelihood) = 41.4563

AIC = 47.456324

Model has been fit using the logistic link.

Naive estimate = 0.0426

Untransformed Estimates of coefficients for covariates (Beta's)

=====

			estimate	std.error
A1	:occupancy	psi	21.298866	(31622776601.683792)
B1	:detection	p1forest	-4.174387	(0.503831)
B2	:detection	p1non_forest	-69.867975	(31622776601.683792)

Variance-Covariance Matrix of Untransformed estimates (Beta's):

	A1	B1	B2
A1	999999999999999870000.000000	0.000000	0.000000

B1 0.000000 0.253846 0.000000  
B2 0.000000 0.000000 999999999999999870000.000000

-----  
=====  
Individual Site estimates of Psi:

Site	Survey	Psi	Std.err	95% conf. interval
1 Bahneanu	1	1-1: 1.0000	17.7836	0.0000 - 1.0000

Individual Site estimates of p:

Site	Survey	p	Std.err	95% conf. interval
1 Bahneanu	1	1-1: 0.0000	0.0000	0.0000 - 1.0000

PRESENCE - Presence/Absence-Site Occupancy data analysis  
Wed Jan 06 13:53:49 2010, Version 2.3090901

-----  
==>i:i:\camere\_foto\pao\ras\_total.pao  
==>l:i:\camere\_foto\pao\ras\_total.pa2.out  
==>name=psi(habitat),p(.)  
==>model=100  
==>j:i:\camere\_foto\pao\ras\_total.dm  
==>lmt=200  
model=100 N,T-->94,3  
modtype-->1 Single-Season data Model selected

Data checksum = 28207  
NSi-->2  
site\_covname[0]=forest  
site\_covname[1]=non\_forest  
NSa-->0

-----  
ras  
-----

modtype=1 N=94 T=3 Groups=1 bootstraps=0

-->3-1  
Matrix 1: rows=2, cols=3  
-,a1,a2,  
psi forest non\_forest  
=====

Matrix 2: rows=4, cols=2  
-,b1,  
p1 1  
p2 1  
p3 1  
=====



Custom Model:

Number of sites = 94  
Number of sampling occasions = 3  
Number of missing observations = 0

Number of parameters = 3  
Number of significant digits = 7.9  
Number of function calls = 205  
-2log(likelihood) = 41.4563  
AIC = 47.456323

Model has been fit using the logistic link.

Naive estimate = 0.0426

Untransformed Estimates of coefficients for covariates (Beta's)

```
=====
              estimate std.error
A1 :occupancy  psiforest      20.333042 (31622776601.683792)
A2 :occupancy  psinon_forest  -84.307973 (31622776601.683792)
B1 :detection  p1             -4.174387 (0.503831)
```

Variance-Covariance Matrix of Untransformed estimates (Beta's):

```
      A1   A2   B1
A1  999999999999999870000.000000  0.000000  0.000000
A2  0.000000 999999999999999870000.000000  0.000000
B1  0.000000 0.000000 0.253846
```

-----  
=====

Individual Site estimates of Psi:

Site	Survey	Psi	Std.err	95% conf. interval
1 Bahneanu	1	1-1: 0.0000	0.0000	0.0000 - 1.0000

Individual Site estimates of p:

Site	Survey	p	Std.err	95% conf. interval
1 Bahneanu	1	1-1: 0.0152	0.0075	0.0057 - 0.0397

PRESENCE - Presence/Absence-Site Occupancy data analysis  
Wed Jan 06 14:05:38 2010, Version 2.3090901

=====  
==>i=i:\camere\_foto\pao\ras\_total.pao  
==>l=i:\camere\_foto\pao\ras\_total.pa2.out  
==>name=psi(habitat),p(habitat)Fit

```

==>model=100
==>j=i:\camere_foto\pao\ras_total.dm
==>lmt=200
==>boot2=1000
model=100 N,T-->94,3
modtype-->1 Single-Season data Model selected

```

```

Data checksum = 28207
NSi-->2
site_covname[0]=forest
site_covname[1]=non_forest
NSa-->0

```

```

-----
ras
-----
modtype=1 N=94 T=3 Groups=1 bootstraps=0

```

```

-->3-1
Matrix 1: rows=2, cols=3
-,a1,a2,
psi forest non_forest
=====

```

```

Matrix 2: rows=4, cols=3
-,b1,b2,
p1 forest non_forest
p2 forest non_forest
p3 forest non_forest
=====

```

Custom Model:

```

Number of sites          = 94
Number of sampling occasions = 3
Number of missing observations = 0

```

```

Number of parameters      = 4
Number of significant digits = 9.3
Number of function calls   = 246
-2log(likelihood)         = 41.4563
AIC                        = 49.456323

```

Model has been fit using the logistic link.

```
Naive estimate          = 0.0426
```

Untransformed Estimates of coefficients for covariates (Beta's)

```

=====
                estimate  std.error
A1  :occupancy  psiforest      20.591306 (31622776601.683792)

```

A2 :occupancy psinon\_forest -134.811000 (31622776601.683792)  
 B1 :detection p1forest -4.174387 (0.503831)  
 B2 :detection p1non\_forest -80.122270 (31622776601.683792)

Variance-Covariance Matrix of Untransformed estimates (Beta's):

	A1	A2	B1	B2
A1	99999999999999870000.000000	0.000000	0.000000	0.000000
A2	0.000000	99999999999999870000.000000	0.000000	0.000000
B1	0.000000	0.000000	0.253846	0.000000
B2	0.000000	0.000000	0.000000	99999999999999870000.000000

-----

=====

Individual Site estimates of Psi:

Site	Survey	Psi	Std.err	95% conf. interval
1 Bahneanu	1	1-1: 0.0000	0.0000	0.0000 - 1.0000

Individual Site estimates of p:

Site	Survey	p	Std.err	95% conf. interval
1 Bahneanu	1	1-1: 0.0000	0.0000	0.0000 - 1.0000

=====

### Assessing Model Fit

History(cohort)	Observed	Expected	Chi-square
000(0)	90.0000	90.0603	0.00
100(0)	2.0000	1.2932	0.39
001(0)	1.0000	1.2932	0.07
010(0)	1.0000	1.2932	0.07

sum(chisq)= 0.5193 sum+N-seensum= 0.5793, Test Statistic = 0.1448

-----  
 Test Statistic (data) = 0.1448

From 1000 parametric bootstraps...

Probability of test statistic >= observed = 0.9530

Average simulated Test Stat = 1.7676

Median simulated Test Stat = 0.7031

Estimate of c-hat = 0.0819 (=TestStat/AvgTestStat)

Estimate of c-hat = 0.2060 (=TestStat/MedianTestStat)

-----

## Ocuparea habitatelor (psi) si probabilitatea de detectie (p) a speciilor urs, lup si ras in Parcul Natural Putna Vrancea

Rezultatele investigarii siturilor cu ajutorul camerelor foto automate au fost prelucrate cu ajutorului programului PRESENCE. Pentru a calcula cei doi parametri pentru fiecare specie s-au rulat patru modele care includ si doua covariate (parametri de habitat de care ar putea depinde psi si p – padure si nonpadure). Modelele rulate au fost: psi(.),p(habitat), psi(habitat),p(habitat), psi(.),p(.),psi(habitat),p(.).

Modelul psi(.),p(.) este cel mai simplu model de ocupare a habitatelor si asuma ca toate siturile au aceeasi probabilitate de ocupare, deci se va estima doar o valoare a apoi  $\psi \approx 1 \times a1$ . La fel si pentru probabilitatea de detectie  $p \approx 1 \times b1$ .

Ulterior in modelare se includ si covariatele forest/non forest, calculandu-se psi si p pentru fiecare situatie - psi(habitat),p(habitat) (pentru siturile din padure si pentru cele din nonpadure).

$$\begin{aligned}\psi &\approx a1 \times \text{padure} + a2 \times \text{nonpadure} \\ p &\approx b1 \times \text{padure} + b2 \times \text{nonpadure}\end{aligned}$$

Din model sunt scoase pe rand covariate atat pentru calculul psi cat si pentru calculul p. Pentru psi(habitat),p(.) calculul va fi astfel:

$$\begin{aligned}\psi &\approx a1 \times \text{padure} + a2 \times \text{nonpadure} \\ p &\approx 1 \times b1\end{aligned}$$

Pentru psi(.),p(habitat), calculul este:

$$\begin{aligned}\psi &\approx 1 \times a1 \\ p &\approx b1 \times \text{padure} + b2 \times \text{nonpadure}\end{aligned}$$

Rezultatele pentru cele trei specii sunt:

Urs (*Ursus arctos*)

Model	psi		p		deltaAIC	AIC wgt	Model Likelihood
	forest	nonforest	forest	nonforest			
psi(.),p(habitat)	0.8493 (0.2299)		0.1517 (0.0476)	0.3905 (0.1608)	0	0.4928	1
psi(habitat),p(habitat)	0.8305 (0.2995)	0.8727 (0.3518)	0.1551 (0.0606)	0.382 (0.1876)	1.99	0.1822	0.3697
psi(.),p(.)	0.7601 (0.2226)		0.1866 (0.0598)		2.16	0.1674	0.3396
psi(habitat),p(.)	0.6425 (0.1599)	1.0000 (0.0000)	0.2132 (0.0544)		2.28	0.1576	0.3198

Cel mai aproape de adevar model este psi(.),p(habitat), care sugereaza ca probabilitatea de ocupare a habitatelor de catre urs este indiferenta fata de habitat, avand o valoare de 0.8493. Aceasta valoare ne spune ca in Parcul Natural Putna Vrancea ursul este prezent in 84,93% din cele 59 celule 3x3 km, deci pe 459 kmp din cei 531 kmp investigati. Totodata probabilitatea de fotografia un animal cel putin odata intr-un sit ocupat este de 15,17% in padure si 39,05% in nonpadure in cele 45 de zile investigate per sesiune.

**Determinarea abundenței la Urs (*Ursus arctos*)**

Matrix 1: rows=3, cols=3

-,a1,a2,

r 0.090000 0

lambda 0 1.720000

```
=====
Number of parameters      = 2
Number of function calls  = 82
Final function value      = 115.793650
-2log(likelihood)        = 231.587299
AIC                       = 235.587299
Naive occupancy estimate  = 0.351064
```

Untransformed (beta) parameters:

```
Estimated parameter      estimate std.err
-----
beta0                    = -25.5139  9.3603
beta1                    =  0.3157  0.4405
```

beta var-cov matrix:

```
87.6153 -4.0219
-4.0219  0.1941
```

Individual Site estimates of r:

```
Site  Survey  r  Std.err  95% conf. interval
1 Bahneanu  1  1-1: 0.0957  0.0767 -50.8010 --0.9062
```

Individual Site estimates of Lambda:

```
Site  Survey  Lambda  Std.err  95% conf. interval
1 Bahneanu  1  1-1: 1.7212  1.3041  0.5587 -10.8911
```

**MODEL PARAMETERS:**

```
Estimated parameter      estimate std.err 95% confidence interval
-----
Detection probability (r) = 0.0000 0.0000 -0.0000 - 0.0000
Avg. abundance/sample unit(lambda) = 1.37  0.60  0.19 - 2.56
```

```
Derived parameter      estimate std.err 95% confidence interval
-----
Occupancy (psi)        = 0.7462 0.1533 0.4457 - 1.0467
Total Abundance (N)    = 128.90 56.78 17.61 - 240.19
```

CPU time: 1.0 seconds

Abundenta medie per 9 sqkm = 1.37 ( $\pm 0.60$ )

Estimare minima: 0.77 ursi per 9 sqkm

Estimare maxima: 1.97 ursi per 9 sqkm

Numar ursi per 531 sqkm = 45.43 minim

Numar ursi per 531 sqkm = 116.23 maxim

Numar de ursi per 531 sqkm (53100 hectare) = 80.83 mediu

Nr mediu per sqkm(100 ha) = 0.152

Lup (*Canis lupus*)

Model	psi		p		deltaAIC	AIC wgt	Model Likelihood
	forest	nonforest	forest	nonforest			
psi(.),p(.)	1.0000 (25.5307)		0.0106 (0.0061)		0	0.4845	1
psi(.),p(habitat)	1.0000 (50.4614)		0.0114 (0.0065)	0 (0.0000)	1.6	0.2177	0.4493
psi(habitat),p(.)	1 (0.0001)	0 (0.0000)	0.0114 (0.0065)		1.6	0.2177	0.4493
psi(habitat),p(habitat)	1.0000 (40.4178)	0 (0.0000)	0.0114 (0.0065)	0 (0.0000)	3.6	0.0801	0.1653

In cazul lupului modelul in care nu se ia in considerare nici o covariata este cel mai realist. Probabilitatea de ocupare a habitatelor este de 100% (putem avea lupi in toate cele 59 de celule 3x3 km) dar probabilitatea de a fotografia cel putin un animal in 45 zile intr-un sit ocupat este foarte mica  $\approx 1,06\%$ . De remarcat ca in nonpadure probabilitatea de ocupare este nula, ca si probabilitatea de detectie (modelele psi(.),p(habitat), psi(habitat),p(.) si psi(habitat),p(habitat)), ceea ce indica ca lupul nu se intalneste decat accidental in alte habitate decat cele forestiere.

Ras (*Lynx lynx*)

Model	psi		p		deltaAIC	AIC wgt	Model Likelihood
	forest	nonforest	forest	nonforest			
psi(.),p(.)	1.0000 (38.2876)		0.0142 (0.0070)		0	0.4683	1
psi(.),p(habitat)	1.0000 (17.7836)		0.0152 (0.0075)	0.0000 (0.0)	1.47	0.2245	0.4795
psi(habitat),p(.)	1.0000 (46.7167)	0.0000 (0.0000)	0.0152 (0.0075)		1.47	0.2245	0.4795
psi(habitat),p(habitat)	1.0000 (36.0836)	0 (0.0000)	0.0152 (0.0075)	0.0000 (0.0)	3.47	0.0826	0.1764

Rasul , animal criptic are un grad de ocupare de 100% a habitatelor si o probabilitatea de detectie foarte redusa ( $\approx 1,42\%$ ). In nonpadure probabilitatea de detectie este 0, ceea ce conduce la o probabilitatea de ocupare 0.

## Recomandări

In viitor metoda se poate aplica in sensul determinarii abundentei speciilor vizate astfel:

- Fiecare camera in stare buna de functionare se monteaza independent, nu in pereche, dar nu mai putin de 20 de camere;
- Camerele trebuie sa functioneze maxim 5 zile, si se muta in alte situri de 2 ori. Astfel un sezon are 30 zile si se investigheaza 60 de situri;
- Se include in analiza un areal mai mare, inclusiv Subcarpatii.
- Montarea se face selectand siturile randomizat.
- Sezonul de 30 de zile in 60 de situri se repeta, in aceleasi situri, primavara, vara, toamna si iarna. Metoda se repeta si in fiecare an. Respectandu-se siturile (oriunde in patratul de prelevare, nu neaparat in acelasi punct) se poate determina abundenta si schimbarea marimii populatiei.
- Pentru determinarea adundentei se pot aplica modele Royle-Nichols Abundance Induced Heterogeneity sau Repeated Count Model (Royle) (a se vedea <http://www.uvm.edu/envnr/vtcfwru/spreadsheets/abundance/abundance.htm>)

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## Anexa – date prelucrare evaluare ocupare habitate

*Ursus arctos*

Data	Cod sit	Nume sit	Sampling			Total camere	Utilizare teren
			A	B	C		
Sep-08	1A	Bahneanu	1	0	0	1	Transitional woodland-shrub
	1B	Clabuc	1	1	1	1	Mixed forest
	1C	Tisaru Mare	0	1	0	1	Mixed forest
	1D	Tisita Mica	0	1	0	1	Mixed forest
	1E	Piatra Alba	1	0	1	1	Broad-leaved forest
	1F	Tiua Neagra	1	0	1	1	Coniferous forest
	1G	Astagu Mare	0	0	0	0	Coniferous forest
	1H	Dealul Negru	0	0	1	1	Natural grasslands
	1I	Pr. Tiganul	0	0	0	0	Mixed forest
	1J	Locotei	0	0	0	0	Broad-leaved forest
Feb-08	2A	Porcu	0	0	0	0	Mixed forest
	2B	Stramba	0	0	0	0	Mixed forest
	2C	Babovici	1	0	1	1	Mixed forest
	2D	Mesteacantul	0	1	0	1	Coniferous forest
	2E	Coasa	1	0	0	1	Broad-leaved forest
	2F	Dumbravanu	0	0	1	1	Mixed forest
	2G	Vulturu	0	0	0	0	Mixed forest
	2H	Canele	0	0	0	0	Mixed forest
Dec-08	3A	Putna	0	0	1	1	Mixed forest
	3B	Paraul Alb	0	1	0	1	Mixed forest
	3C	Alunu	0	0	0	0	Mixed forest
	3D	Piscul Cainelui	0	0	0	0	Mixed forest
	3E	Fantana lui Bucur	0	0	0	0	Broad-leaved forest
	3F	Sagau	0	0	0	0	Mixed forest
	3G	Pr. Mesteacantului	0	0	0	0	Broad-leaved forest
	3H	Tamla	0	0	0	0	Coniferous forest
Jul-08	4A	Clabuc	0	1	0	1	Mixed forest
	4B	Schit	1	0	0	1	Broad-leaved forest
	4C	Stramba	1	0	0	1	Mixed forest
	4D	Golul Lepsei	1	0	0	1	Transitional woodland-shrub
	4E	Musat	0	0	1	1	Broad-leaved forest
	4F	Ostog	0	0	0	0	Mixed forest
	4G	Pr. Bradului	0	0	0	0	Coniferous forest
Oct-08	4H	Neteda	0	0	0	0	Mixed forest
	5A	Golul Lepsei 2	0	0	0	0	Broad-leaved forest
	5B	Musat	1	0	0	1	Broad-leaved forest
	5C	Golul Lepsei	0	0	0	0	Mixed forest
	5D	Mesteacantul	0	0	0	0	Mixed forest
	5E	Babovici	0	0	0	0	Mixed forest



Jan-09	5F	Bahneanu	0	0	0	0	Coniferous forest
	5G	Buniu	0	0	0	0	Coniferous forest
	5H	Pr. Condratului	0	0	0	0	Mixed forest
	5I	Alunu	1	0	0	1	Broad-leaved forest
	5J	Mioarele	0	0	1	1	Mixed forest
	6A	Babovici	0	0	0	0	Mixed forest
	6B	Coza 1	0	0	0	0	Broad-leaved forest
	6C	Coza 2	0	0	0	0	Broad-leaved forest
	6D	Dealul Crucii	0	0	0	0	Mixed forest
	6E	Golul Lipsei	0	0	0	0	Mixed forest
	6F	Horumbat	0	0	0	0	Mixed forest
	6G	Paraul Marului	0	0	0	0	Coniferous forest
	6H	Strei	0	0	0	0	Broad-leaved forest
	6I	Tisaru Mare	0	0	0	0	Mixed forest
6J	Vulturu	0	1	0	1	Mixed forest	
Mar-09	7A	Alunu	0	0	0	0	Mixed forest
	7B	Alunu Carnituri	1	0	0	1	Broad-leaved forest
	7C	Babovici	0	0	0	0	Mixed forest
	7D	Bahneanu	1	1	1	1	Transitional woodland-shrub
	7E	Coasa	0	0	0	0	Mixed forest
	7F	Galaciuc	0	0	0	0	Coniferous forest
	7G	Golul Lipsei	0	0	0	0	Broad-leaved forest
	7H	Neteda	0	0	1	1	Coniferous forest
	7I	Ostog	0	0	1	1	Mixed forest
	7J	Pietricica	0	0	1	1	Mixed forest
Oct-06	8A	Pr. Vulpiei	1	0	0	1	Broad-leaved forest
	8B	Bercea	0	0	0	0	Mixed forest
	8C	Tisaru Mare	0	0	1	1	Broad-leaved forest
	8D	Tisarul Mic	0	0	0	0	Broad-leaved forest
	8E	Padurea Babovici	0	0	1	1	Mixed forest
	8F	Piciorul lui Ivan	0	0	0	0	Broad-leaved forest
	8G	Ciuta	0	0	0	0	Broad-leaved forest
	8H	DI. Ses	0	0	0	0	Mixed forest
	8I	Valea Marului	0	0	0	0	Broad-leaved forest
	8J	Plaiul Cojocea	0	0	0	0	Transitional woodland-shrub
Feb-07	9A	Musat	0	0	0	0	Broad-leaved forest
	9B	Padurea Lepsa	0	0	0	0	Broad-leaved forest
	9C	Valea Putnei	0	0	0	0	Transitional woodland-shrub
	9D	Piscul Capusa	0	1	0	1	Broad-leaved forest
	9E	Sagau	0	0	0	0	Mixed forest
	9F	Coasa	0	0	0	0	Mixed forest
	9G	Culmea Serb	0	0	1	1	Broad-leaved forest
	9H	Culmea Tisarului	0	0	0	0	Broad-leaved forest
	9I	Fundul Vacariei	0	0	0	0	Broad-leaved forest
	9J	Piscul lui Brad	0	0	0	0	Broad-leaved forest

Dec-06	10A	Sagau	0	0	0	0	Coniferous forest
	10B	Paraul Vulpii	0	0	0	0	Broad-leaved forest
	10C	Culmea Ciubotaru 1	0	0	0	0	Broad-leaved forest
	10D	Culmea Ciubotaru 2	0	0	0	0	Broad-leaved forest
	10E	Bahneanu	0	1	0	1	Coniferous forest
	10F	Neteda	0	0	0	0	Broad-leaved forest
	10G	Culmea Ses	0	0	0	0	Mixed forest
	10H	Piscul Bisericii	0	0	0	0	Coniferous forest
	10I	Piatra Alba	0	0	0	0	Broad-leaved forest
	10J	Tisita Porcu	0	0	0	0	Mixed forest

*Canis lupus*

Data	Cod sit	Nume sit	Sampling			Total camere	Utilizare teren
			A	B	C		
Sep-08	1A	Bahneanu	0	0	0	0	Transitional woodland-shrub
	1B	Clabuc	0	0	0	0	Mixed forest
	1C	Tisaru Mare	0	0	0	0	Mixed forest
	1D	Tisita Mica	0	0	0	0	Mixed forest
	1E	Piatra Alba	0	0	0	0	Broad-leaved forest
	1F	Tiua Neagra	0	0	0	0	Coniferous forest
	1G	Astagu Mare	0	0	0	0	Coniferous forest
	1H	Dealul Negru	0	0	0	0	Natural grasslands
	1I	Pr. Tiganul	0	0	0	0	Mixed forest
	1J	Locotei	0	0	0	0	Broad-leaved forest
Feb-08	2A	Porcu	0	0	0	0	Mixed forest
	2B	Stramba	0	0	0	0	Mixed forest
	2C	Babovici	0	0	0	0	Mixed forest
	2D	Mesteacanut	0	0	0	0	Coniferous forest
	2E	Coasa	0	0	0	0	Broad-leaved forest
	2F	Dumbravanu	0	0	0	0	Mixed forest
	2G	Vulturu	0	0	0	0	Mixed forest
	2H	Canele	0	0	0	0	Mixed forest
Dec-08	3A	Putna	0	0	0	0	Mixed forest
	3B	Paraul Alb	0	0	0	0	Mixed forest
	3C	Alunu	0	0	0	0	Mixed forest
	3D	Piscul Cainelui	0	0	0	0	Mixed forest
	3E	Fantana lui Bucur	0	0	0	0	Broad-leaved forest
	3F	Sagau	0	0	0	0	Mixed forest
	3G	Pr. Mesteacanutului	0	0	0	0	Broad-leaved forest
	3H	Tamla	0	0	0	0	Coniferous forest
Jul-08	4A	Clabuc	0	0	0	0	Mixed forest
	4B	Schit	0	1	0	1	Broad-leaved forest
	4C	Stramba	0	0	0	0	Mixed forest
	4D	Golul Lepsei	0	0	0	0	Transitional woodland-shrub
	4E	Musat	0	0	0	0	Broad-leaved forest
	4F	Ostog	0	0	0	0	Mixed forest
	4G	Pr. Bradului	0	0	0	0	Coniferous forest
Oct-08	4H	Neteda	0	0	0	0	Mixed forest
	5A	Golul Lepsei 2	0	0	0	0	Broad-leaved forest
	5B	Musat	0	0	0	0	Broad-leaved forest
	5C	Golul Lepsei	0	0	0	0	Mixed forest
	5D	Mesteacanut	0	0	0	0	Mixed forest
	5E	Babovici	0	0	0	0	Mixed forest
	5F	Bahneanu	0	0	0	0	Coniferous forest
5G	Buniu	0	0	0	0	Coniferous forest	

Jan-09	5H	Pr. Condratului	0	0	0	0	Mixed forest
	5I	Alunu	0	0	0	0	Broad-leaved forest
	5J	Mioarele	0	0	0	0	Mixed forest
	6A	Babovici	0	0	0	0	Mixed forest
	6B	Coza 1	0	0	0	0	Broad-leaved forest
	6C	Coza 2	1	0	0	1	Broad-leaved forest
	6D	Dealul Crucii	0	0	0	0	Mixed forest
	6E	Golul Lepsei	0	0	0	0	Mixed forest
	6F	Horumbat	0	0	0	0	Mixed forest
	6G	Paraul Marului	0	0	0	0	Coniferous forest
	6H	Strei	0	0	0	0	Broad-leaved forest
	6I	Tisaru Mare	0	0	0	0	Mixed forest
	6J	Vulturu	0	0	0	0	Mixed forest
Mar-09	7A	Alunu	0	0	0	0	Mixed forest
	7B	Alunu Carnituri	0	0	0	0	Broad-leaved forest
	7C	Babovici	0	0	0	0	Mixed forest
	7D	Bahneanu	0	0	0	0	Transitional woodland-shrub
	7E	Coasa	0	0	0	0	Mixed forest
	7F	Galaciuc	0	0	0	0	Coniferous forest
	7G	Golul Lepsei	0	0	0	0	Broad-leaved forest
	7H	Neteda	0	0	0	0	Coniferous forest
	7I	Ostog	0	0	0	0	Mixed forest
	7J	Pietricica	0	0	0	0	Mixed forest
Oct-06	8A	Pr. Vulpiei	1	0	0	1	Broad-leaved forest
	8B	Bercea	0	0	0	0	Mixed forest
	8C	Tisaru Mare	0	0	0	0	Broad-leaved forest
	8D	Tisarul Mic	0	0	0	0	Broad-leaved forest
	8E	Padurea Babovici	0	0	0	0	Mixed forest
	8F	Piciorul lui Ivan	0	0	0	0	Broad-leaved forest
	8G	Ciuta	0	0	0	0	Broad-leaved forest
	8H	DI. Ses	0	0	0	0	Mixed forest
	8I	Valea Marului	0	0	0	0	Broad-leaved forest
	8J	Plaiul Cojocea	0	0	0	0	Transitional woodland-shrub
Feb-07	9A	Musat	0	0	0	0	Broad-leaved forest
	9B	Padurea Lepsa	0	0	0	0	Broad-leaved forest
	9C	Valea Putnei	0	0	0	0	Transitional woodland-shrub
	9D	Piscul Capusa	0	0	0	1	Broad-leaved forest
	9E	Sagau	0	0	0	0	Mixed forest
	9F	Coasa	0	0	0	0	Mixed forest
	9G	Culmea Serb	0	0	0	1	Broad-leaved forest
	9H	Culmea Tisarului	0	0	0	0	Broad-leaved forest
	9I	Fundul Vacariei	0	0	0	0	Broad-leaved forest
	9J	Piscul lui Brad	0	0	0	0	Broad-leaved forest
Dec-06	10A	Sagau	0	0	0	0	Coniferous forest
	10B	Paraul Vulpiei	0	0	0	0	Broad-leaved forest

10C	Culmea Ciubotaru 1	0	0	0	0	Broad-leaved forest
10D	Culmea Ciubotaru 2	0	0	0	0	Broad-leaved forest
10E	Bahneanu	0	0	0	1	Coniferous forest
10F	Neteda	0	0	0	0	Broad-leaved forest
10G	Culmea Ses	0	0	0	0	Mixed forest
10H	Piscul Bisericii	0	0	0	0	Coniferous forest
10I	Piatra Alba	0	0	0	0	Broad-leaved forest
10J	Tisita Porcu	0	0	0	0	Mixed forest

*Lynx lynx*

Data	Cod sit	Nume sit	Sampling			Total camere	Utilizare teren	
			A	B	C			
Sep-08	1A	Bahneanu	0	0	0	0	Transitional woodland-shrub	
	1B	Clabuc	0	0	0	0	Mixed forest	
	1C	Tisaru Mare	0	0	0	0	Mixed forest	
	1D	Tisita Mica	0	0	0	0	Mixed forest	
	1E	Piatra Alba	0	0	0	0	Broad-leaved forest	
	1F	Tiua Neagra	0	0	0	0	Coniferous forest	
	1G	Astagu Mare	0	0	0	0	Coniferous forest	
	1H	Dealul Negru	0	0	0	0	Natural grasslands	
	1I	Pr. Tiganul	0	0	0	0	Mixed forest	
	1J	Locotei	0	0	0	0	Broad-leaved forest	
Feb-08	2A	Porcu	0	0	0	0	Mixed forest	
	2B	Stramba	0	0	0	0	Mixed forest	
	2C	Babovici	0	0	0	0	Mixed forest	
	2D	Mesteacanal	0	0	0	0	Coniferous forest	
	2E	Coasa	0	0	0	0	Broad-leaved forest	
	2F	Dumbravanu	0	0	0	0	Mixed forest	
	2G	Vulturu	0	0	0	0	Mixed forest	
	2H	Canele	0	0	0	0	Mixed forest	
	3A	Putna	0	0	0	0	Mixed forest	
	3B	Paraul Alb	0	0	0	0	Mixed forest	
Dec-08	3C	Alunu	0	0	0	0	Mixed forest	
	3D	Piscul Cainelui	0	0	0	0	Mixed forest	
	3E	Fantana lui Bucur	0	0	0	0	Broad-leaved forest	
	3F	Sagau	0	0	0	0	Mixed forest	
	3G	Pr. Mesteacanalui	0	0	0	0	Broad-leaved forest	
	3H	Tamla	0	0	0	0	Coniferous forest	
	4A	Clabuc	0	0	0	0	Mixed forest	
	4B	Schit	0	0	0	0	Broad-leaved forest	
	4C	Stramba	0	0	0	0	Mixed forest	
	4D	Golul Lepsei	0	0	0	0	Transitional woodland-shrub	
Jul-08	4E	Musat	0	0	0	0	Broad-leaved forest	
	4F	Ostog	0	0	0	0	Mixed forest	
	4G	Pr. Bradului	0	0	0	0	Coniferous forest	
	4H	Neteda	0	0	0	0	Mixed forest	
	Oct-08	5A	Golul Lepsei 2	0	0	0	0	Broad-leaved forest
		5B	Musat	0	0	0	0	Broad-leaved forest
		5C	Golul Lepsei	0	0	0	0	Mixed forest
		5D	Mesteacanal	0	0	0	0	Mixed forest
		5E	Babovici	0	0	0	0	Mixed forest
		5F	Bahneanu	0	0	0	0	Coniferous forest
5G		Buniu	0	0	0	0	Coniferous forest	

Jan-09	5H	Pr. Condratului	0	0	0	0	Mixed forest
	5I	Alunu	0	0	0	0	Broad-leaved forest
	5J	Mioarele	0	0	0	0	Mixed forest
	6A	Babovici	0	0	0	0	Mixed forest
	6B	Coza 1	0	0	0	0	Broad-leaved forest
	6C	Coza 2	1	0	0	1	Broad-leaved forest
	6D	Dealul Crucii	0	0	0	0	Mixed forest
	6E	Golul Lepsei	0	0	0	0	Mixed forest
	6F	Horumbat	0	0	0	0	Mixed forest
	6G	Paraul Marului	0	0	0	0	Coniferous forest
	6H	Strei	0	0	0	0	Broad-leaved forest
	6I	Tisaru Mare	0	0	0	0	Mixed forest
6J	Vulturu	0	0	0	0	Mixed forest	
Mar-09	7A	Alunu	0	0	0	0	Mixed forest
	7B	Alunu Carnituri	0	0	0	0	Broad-leaved forest
	7C	Babovici	0	0	0	0	Mixed forest
	7D	Bahneanu	0	0	0	0	Transitional woodland-shrub
	7E	Coasa	0	0	0	0	Mixed forest
	7F	Galaciuc	0	0	0	0	Coniferous forest
	7G	Golul Lepsei	0	0	0	0	Broad-leaved forest
	7H	Neteda	0	0	0	0	Coniferous forest
	7I	Ostog	0	0	0	0	Mixed forest
	7J	Pietricica	0	0	0	0	Mixed forest
Oct-06	8A	Pr. Vulpiei	0	0	0	0	Broad-leaved forest
	8B	Bercea	0	0	0	0	Mixed forest
	8C	Tisaru Mare	0	0	0	0	Broad-leaved forest
	8D	Tisarul Mic	0	0	0	0	Broad-leaved forest
	8E	Padurea Babovici	0	0	0	0	Mixed forest
	8F	Piciorul lui Ivan	0	0	0	0	Broad-leaved forest
	8G	Ciuta	0	0	0	0	Broad-leaved forest
	8H	DI. Ses	0	0	0	0	Mixed forest
	8I	Valea Marului	0	0	0	0	Broad-leaved forest
	8J	Plaiul Cojocea	0	0	0	0	Transitional woodland-shrub
Feb-07	9A	Musat	0	0	1	1	Broad-leaved forest
	9B	Padurea Lepsa	0	0	0	0	Broad-leaved forest
	9C	Valea Putnei	0	0	0	0	Transitional woodland-shrub
	9D	Piscul Capusa	0	0	0	0	Broad-leaved forest
	9E	Sagau	0	0	0	0	Mixed forest
	9F	Coasa	0	0	0	0	Mixed forest
	9G	Culmea Serb	0	0	0	0	Broad-leaved forest
	9H	Culmea Tisarului	1	0	0	1	Broad-leaved forest
	9I	Fundul Vacariei	0	0	0	0	Broad-leaved forest
	9J	Piscul lui Brad	0	0	0	0	Broad-leaved forest
Dec-06	10A	Sagau	0	0	0	0	Coniferous forest
	10B	Paraul Vulpiei	0	0	0	0	Broad-leaved forest

10C	Culmea Ciubotaru 1	0	0	0	0	Broad-leaved forest
10D	Culmea Ciubotaru 2	0	0	0	0	Broad-leaved forest
10E	Bahneanu	0	0	0	0	Coniferous forest
10F	Neteda	0	0	0	0	Broad-leaved forest
10G	Culmea Ses	0	0	0	0	Mixed forest
10H	Piscul Bisericii	0	0	0	0	Coniferous forest
10I	Piatra Alba	0	1	0	1	Broad-leaved forest
10J	Tisita Porcu	0	0	0	0	Mixed forest



*Sus scrofa*

Data	Cod sit	Nume sit	Sampling			Total camere	Utilizare teren	
			A	B	C			
Sep-08	1A	Bahneanu	0	0	1	1	Transitional woodland-shrub	
	1B	Clabuc	0	0	0	0	Mixed forest	
	1C	Tisaru Mare	0	0	0	0	Mixed forest	
	1D	Tisita Mica	0	0	0	0	Mixed forest	
	1E	Piatra Alba	1	0	0	1	Broad-leaved forest	
	1F	Tiua Neagra	0	0	0	0	Coniferous forest	
	1G	Astagu Mare	0	0	0	0	Coniferous forest	
	1H	Dealul Negru	0	0	0	0	Natural grasslands	
	1I	Pr. Tiganul	0	0	0	0	Mixed forest	
	1J	Locotei	0	0	0	0	Broad-leaved forest	
Feb-08	2A	Porcu	0	0	0	0	Mixed forest	
	2B	Stramba	0	0	0	0	Mixed forest	
	2C	Babovici	0	0	0	0	Mixed forest	
	2D	Mesteacantul	0	0	0	0	Coniferous forest	
	2E	Coasa	0	0	0	0	Broad-leaved forest	
	2F	Dumbravanu	1	0	0	1	Mixed forest	
	2G	Vulturu	0	1	1	1	Mixed forest	
	2H	Canele	1	0	0	1	Mixed forest	
	3A	Putna	0	0	0	0	Mixed forest	
	3B	Paraul Alb	0	0	0	0	Mixed forest	
Dec-08	3C	Alunu	0	0	0	0	Mixed forest	
	3D	Piscul Cainelui	1	0	0	1	Mixed forest	
	3E	Fantana lui Bucur	0	0	0	0	Broad-leaved forest	
	3F	Sagau	0	0	1	1	Mixed forest	
	3G	Pr. Mesteacantului	0	0	0	0	Broad-leaved forest	
	3H	Tamla	0	0	0	0	Coniferous forest	
	4A	Clabuc	0	0	0	0	Mixed forest	
	4B	Schit	0	0	0	0	Broad-leaved forest	
	4C	Stramba	0	0	0	0	Mixed forest	
	4D	Golul Lepsei	0	0	0	0	Transitional woodland-shrub	
Jul-08	4E	Musat	0	0	0	0	Broad-leaved forest	
	4F	Ostog	0	0	1	1	Mixed forest	
	4G	Pr. Bradului	0	0	1	1	Coniferous forest	
	4H	Neteda	0	0	0	0	Mixed forest	
	Oct-08	5A	Golul Lepsei 2	0	1	0	1	Broad-leaved forest
		5B	Musat	0	0	1	1	Broad-leaved forest
		5C	Golul Lepsei	1	1	1	1	Mixed forest
		5D	Mesteacantul	0	0	0	0	Mixed forest
		5E	Babovici	1	0	1	1	Mixed forest
		5F	Bahneanu	0	1	1	1	Coniferous forest
5G		Buniu	0	0	0	0	Coniferous forest	

Jan-09	5H	Pr. Condratului	0	0	0	0	Mixed forest
	5I	Alunu	0	0	0	0	Broad-leaved forest
	5J	Mioarele	0	0	1	1	Mixed forest
	6A	Babovici	0	0	0	0	Mixed forest
	6B	Coza 1	0	0	0	0	Broad-leaved forest
	6C	Coza 2	0	0	0	0	Broad-leaved forest
	6D	Dealul Crucii	0	0	0	0	Mixed forest
	6E	Golul Lepsei	0	0	0	0	Mixed forest
	6F	Horumbat	0	0	0	0	Mixed forest
	6G	Paraul Marului	0	0	0	0	Coniferous forest
	6H	Strei	0	0	0	0	Broad-leaved forest
	6I	Tisaru Mare	0	0	0	0	Mixed forest
	6J	Vulturu	0	0	0	0	Mixed forest
Mar-09	7A	Alunu	0	0	0	0	Mixed forest
	7B	Alunu Carnituri	0	0	1	1	Broad-leaved forest
	7C	Babovici	0	0	0	0	Mixed forest
	7D	Bahneanu	0	0	0	0	Transitional woodland-shrub
	7E	Coasa	0	0	1	1	Mixed forest
	7F	Galaciuc	0	0	1	1	Coniferous forest
	7G	Golul Lepsei	0	1	0	1	Broad-leaved forest
	7H	Neteda	0	0	1	1	Coniferous forest
	7I	Ostog	0	0	0	0	Mixed forest
	7J	Pietricica	0	0	0	0	Mixed forest
Oct-06	8A	Pr. Vulpiei	0	1	0	1	Broad-leaved forest
	8B	Bercea	0	0	1	1	Mixed forest
	8C	Tisaru Mare	0	0	0	0	Broad-leaved forest
	8D	Tisarul Mic	0	0	0	0	Broad-leaved forest
	8E	Padurea Babovici	0	0	0	0	Mixed forest
	8F	Piciorul lui Ivan	0	0	0	0	Broad-leaved forest
	8G	Ciuta	0	0	0	0	Broad-leaved forest
	8H	DI. Ses	0	0	1	1	Mixed forest
	8I	Valea Marului	0	0	0	0	Broad-leaved forest
	8J	Plaiul Cojocea	0	0	0	0	Transitional woodland-shrub
Feb-07	9A	Musat	0	0	0	0	Broad-leaved forest
	9B	Padurea Lepsa	0	0	0	0	Broad-leaved forest
	9C	Valea Putnei	1	0	0	1	Transitional woodland-shrub
	9D	Piscul Capusa	0	0	0	0	Broad-leaved forest
	9E	Sagau	0	0	0	0	Mixed forest
	9F	Coasa	1	0	1	1	Mixed forest
	9G	Culmea Serb	0	0	0	0	Broad-leaved forest
	9H	Culmea Tisarului	0	0	0	0	Broad-leaved forest
	9I	Fundul Vacariei	0	1	1	1	Broad-leaved forest
	9J	Piscul lui Brad	0	1	0	1	Broad-leaved forest
Dec-06	10A	Sagau	0	0	0	0	Coniferous forest
	10B	Paraul Vulpiei	0	0	0	0	Broad-leaved forest

10C	Culmea Ciubotaru 1	0	1	0	1	Broad-leaved forest
10D	Culmea Ciubotaru 2	0	1	0	1	Broad-leaved forest
10E	Bahneanu	0	0	0	0	Coniferous forest
10F	Neteda	0	1	0	1	Broad-leaved forest
10G	Culmea Ses	0	1	0	1	Mixed forest
10H	Piscul Bisericii	0	1	0	1	Coniferous forest
10I	Piatra Alba	0	0	0	0	Broad-leaved forest
10J	Tisita Porcu	0	0	0	0	Mixed forest

*Ungulate*

Data	Cod sit	Nume sit	Sampling			Total camere	Utilizare teren	
			A	B	C			
Sep-08	1A	Bahneanu	0	0	0	0	Transitional woodland-shrub	
	1B	Clabuc	0	1	0	1	Mixed forest	
	1C	Tisaru Mare	0	0	0	0	Mixed forest	
	1D	Tisita Mica	0	0	0	0	Mixed forest	
	1E	Piatra Alba	0	0	0	0	Broad-leaved forest	
	1F	Tiua Neagra	0	0	0	0	Coniferous forest	
	1G	Astagu Mare	0	0	0	0	Coniferous forest	
	1H	Dealul Negru	0	0	0	0	Natural grasslands	
	1I	Pr. Tiganul	0	0	0	0	Mixed forest	
	1J	Locotei	0	0	0	0	Broad-leaved forest	
Feb-08	2A	Porcu	0	0	0	0	Mixed forest	
	2B	Stramba	0	0	0	0	Mixed forest	
	2C	Babovici	0	0	0	0	Mixed forest	
	2D	Mesteacantul	0	0	1	1	Coniferous forest	
	2E	Coasa	0	0	1	1	Broad-leaved forest	
	2F	Dumbravanu	0	0	0	0	Mixed forest	
	2G	Vulturu	0	0	0	0	Mixed forest	
	2H	Canele	0	0	0	0	Mixed forest	
	3A	Putna	0	0	0	0	Mixed forest	
	3B	Paraul Alb	0	0	0	0	Mixed forest	
Dec-08	3C	Alunu	0	1	0	1	Mixed forest	
	3D	Piscul Cainelui	0	0	0	0	Mixed forest	
	3E	Fantana lui Bucur	0	0	0	0	Broad-leaved forest	
	3F	Sagau	0	1	1	1	Mixed forest	
	3G	Pr. Mesteacantului	0	0	0	0	Broad-leaved forest	
	3H	Tamla	0	0	0	0	Coniferous forest	
	4A	Clabuc	0	0	0	0	Mixed forest	
	4B	Schit	0	1	0	1	Broad-leaved forest	
	4C	Stramba	1	0	0	1	Mixed forest	
	4D	Golul Lepsei	0	0	0	0	Transitional woodland-shrub	
Jul-08	4E	Musat	0	0	0	0	Broad-leaved forest	
	4F	Ostog	0	0	0	0	Mixed forest	
	4G	Pr. Bradului	0	0	0	0	Coniferous forest	
	4H	Neteda	0	1	0	1	Mixed forest	
	Oct-08	5A	Golul Lepsei 2	0	0	0	0	Broad-leaved forest
		5B	Musat	0	0	0	0	Broad-leaved forest
		5C	Golul Lepsei	0	0	0	0	Mixed forest
		5D	Mesteacantul	0	0	0	0	Mixed forest
		5E	Babovici	0	0	0	0	Mixed forest
		5F	Bahneanu	0	0	0	0	Coniferous forest
5G		Buniu	0	0	0	0	Coniferous forest	

Jan-09	5H	Pr. Condratului	0	0	0	0	Mixed forest
	5I	Alunu	0	0	0	0	Broad-leaved forest
	5J	Mioarele	1	0	0	1	Mixed forest
	6A	Babovici	0	0	0	0	Mixed forest
	6B	Coza 1	0	0	1	1	Broad-leaved forest
	6C	Coza 2	0	0	0	0	Broad-leaved forest
	6D	Dealul Crucii	0	0	0	0	Mixed forest
	6E	Golul Lepsei	0	0	0	0	Mixed forest
	6F	Horumbat	0	0	0	0	Mixed forest
	6G	Paraul Marului	0	0	0	0	Coniferous forest
	6H	Strei	0	0	0	0	Broad-leaved forest
	6I	Tisaru Mare	0	0	0	0	Mixed forest
	6J	Vulturu	0	0	0	0	Mixed forest
Mar-09	7A	Alunu	0	0	0	0	Mixed forest
	7B	Alunu Carnituri	0	1	1	1	Broad-leaved forest
	7C	Babovici	1	1	1	1	Mixed forest
	7D	Bahneanu	0	0	0	0	Transitional woodland-shrub
	7E	Coasa	0	0	0	0	Mixed forest
	7F	Galaciuc	1	0	0	1	Coniferous forest
	7G	Golul Lepsei	0	0	0	0	Broad-leaved forest
	7H	Neteda	0	0	0	0	Coniferous forest
	7I	Ostog	0	0	1	1	Mixed forest
	7J	Pietricica	0	0	0	0	Mixed forest
Oct-06	8A	Pr. Vulpiei	0	1	0	1	Broad-leaved forest
	8B	Bercea	0	0	1	1	Mixed forest
	8C	Tisaru Mare	0	0	0	0	Broad-leaved forest
	8D	Tisarul Mic	0	0	1	1	Broad-leaved forest
	8E	Padurea Babovici	0	0	0	0	Mixed forest
	8F	Piciorul lui Ivan	0	0	0	0	Broad-leaved forest
	8G	Ciuta	0	0	0	0	Broad-leaved forest
	8H	DI. Ses	0	0	0	0	Mixed forest
	8I	Valea Marului	0	0	0	0	Broad-leaved forest
	8J	Plaiul Cojocea	0	0	0	0	Transitional woodland-shrub
Feb-07	9A	Musat	0	0	1	1	Broad-leaved forest
	9B	Padurea Lepsa	1	0	1	1	Broad-leaved forest
	9C	Valea Putnei	0	0	1	1	Transitional woodland-shrub
	9D	Piscul Capusa	0	1	1	1	Broad-leaved forest
	9E	Sagau	0	1	0	1	Mixed forest
	9F	Coasa	1	0	0	1	Mixed forest
	9G	Culmea Serb	1	0	1	1	Broad-leaved forest
	9H	Culmea Tisarului	0	0	0	0	Broad-leaved forest
	9I	Fundul Vacariei	0	0	0	0	Broad-leaved forest
	9J	Piscul lui Brad	0	1	0	1	Broad-leaved forest
Dec-06	10A	Sagau	0	1	1	1	Coniferous forest
	10B	Paraul Vulpiei	0	0	0	0	Broad-leaved forest

10C	Culmea Ciubotaru 1	1	0	1	1	Broad-leaved forest
10D	Culmea Ciubotaru 2	0	0	0	0	Broad-leaved forest
10E	Bahneanu	0	0	0	0	Coniferous forest
10F	Neteda	0	0	0	0	Broad-leaved forest
10G	Culmea Ses	0	0	0	0	Mixed forest
10H	Piscul Bisericii	0	0	0	0	Coniferous forest
10I	Piatra Alba	0	0	0	0	Broad-leaved forest
10J	Tisita Porcu	0	0	0	0	Mixed forest

*Meles meles*

Data	Cod sit	Nume sit	Sampling			Total camere	Utilizare teren	
			A	B	C			
Sep-08	1A	Bahneanu	0	0	0	0	Transitional woodland-shrub	
	1B	Clabuc	0	1	0	1	Mixed forest	
	1C	Tisaru Mare	0	0	0	0	Mixed forest	
	1D	Tisita Mica	0	0	0	0	Mixed forest	
	1E	Piatra Alba	0	0	0	0	Broad-leaved forest	
	1F	Tiua Neagra	0	0	0	0	Coniferous forest	
	1G	Astagu Mare	0	0	0	0	Coniferous forest	
	1H	Dealul Negru	0	0	0	0	Natural grasslands	
	1I	Pr. Tiganul	0	0	0	0	Mixed forest	
	1J	Locotei	0	0	0	0	Broad-leaved forest	
Feb-08	2A	Porcu	0	0	0	0	Mixed forest	
	2B	Stramba	0	0	0	0	Mixed forest	
	2C	Babovici	0	0	0	0	Mixed forest	
	2D	Mesteacantul	0	0	1	1	Coniferous forest	
	2E	Coasa	0	0	1	1	Broad-leaved forest	
	2F	Dumbravanu	0	0	0	0	Mixed forest	
	2G	Vulturu	0	0	0	0	Mixed forest	
	2H	Canele	0	0	0	0	Mixed forest	
	3A	Putna	0	0	0	0	Mixed forest	
	3B	Paraul Alb	0	0	0	0	Mixed forest	
Dec-08	3C	Alunu	0	1	0	1	Mixed forest	
	3D	Piscul Cainelui	0	0	0	0	Mixed forest	
	3E	Fantana lui Bucur	0	0	0	0	Broad-leaved forest	
	3F	Sagau	0	1	1	1	Mixed forest	
	3G	Pr. Mesteacantului	0	0	0	0	Broad-leaved forest	
	3H	Tamla	0	0	0	0	Coniferous forest	
	4A	Clabuc	0	0	0	0	Mixed forest	
	4B	Schit	0	1	0	1	Broad-leaved forest	
	4C	Stramba	1	0	0	1	Mixed forest	
	4D	Golul Lepsei	0	0	0	0	Transitional woodland-shrub	
Jul-08	4E	Musat	0	0	0	0	Broad-leaved forest	
	4F	Ostog	0	0	0	0	Mixed forest	
	4G	Pr. Bradului	0	0	0	0	Coniferous forest	
	4H	Neteda	0	1	0	1	Mixed forest	
	Oct-08	5A	Golul Lepsei 2	0	0	0	0	Broad-leaved forest
		5B	Musat	0	0	0	0	Broad-leaved forest
		5C	Golul Lepsei	0	0	0	0	Mixed forest
		5D	Mesteacantul	0	0	0	0	Mixed forest
		5E	Babovici	0	0	0	0	Mixed forest
		5F	Bahneanu	0	0	0	0	Coniferous forest
5G		Buniu	0	0	0	0	Coniferous forest	

Jan-09	5H	Pr. Condratului	0	0	0	0	Mixed forest
	5I	Alunu	0	0	0	0	Broad-leaved forest
	5J	Mioarele	1	0	0	1	Mixed forest
	6A	Babovici	0	0	0	0	Mixed forest
	6B	Coza 1	0	0	1	1	Broad-leaved forest
	6C	Coza 2	0	0	0	0	Broad-leaved forest
	6D	Dealul Crucii	0	0	0	0	Mixed forest
	6E	Golul Lepsei	0	0	0	0	Mixed forest
	6F	Horumbat	0	0	0	0	Mixed forest
	6G	Paraul Marului	0	0	0	0	Coniferous forest
	6H	Strei	0	0	0	0	Broad-leaved forest
	6I	Tisaru Mare	0	0	0	0	Mixed forest
	6J	Vulturu	0	0	0	0	Mixed forest
Mar-09	7A	Alunu	0	0	0	0	Mixed forest
	7B	Alunu Carnituri	0	1	1	1	Broad-leaved forest
	7C	Babovici	1	1	1	1	Mixed forest
	7D	Bahneanu	0	0	0	0	Transitional woodland-shrub
	7E	Coasa	0	0	0	0	Mixed forest
	7F	Galaciuc	1	0	0	1	Coniferous forest
	7G	Golul Lepsei	0	0	0	0	Broad-leaved forest
	7H	Neteda	0	0	0	0	Coniferous forest
	7I	Ostog	0	0	1	1	Mixed forest
	7J	Pietricica	0	0	0	0	Mixed forest
Oct-06	8A	Pr. Vulpiei	0	1	0	1	Broad-leaved forest
	8B	Bercea	0	0	1	1	Mixed forest
	8C	Tisaru Mare	0	0	0	0	Broad-leaved forest
	8D	Tisarul Mic	0	0	1	1	Broad-leaved forest
	8E	Padurea Babovici	0	0	0	0	Mixed forest
	8F	Piciorul lui Ivan	0	0	0	0	Broad-leaved forest
	8G	Ciuta	0	0	0	0	Broad-leaved forest
	8H	DI. Ses	0	0	0	0	Mixed forest
	8I	Valea Marului	0	0	0	0	Broad-leaved forest
	8J	Plaiul Cojocea	0	0	0	0	Transitional woodland-shrub
Feb-07	9A	Musat	0	0	1	1	Broad-leaved forest
	9B	Padurea Lepsa	1	0	1	1	Broad-leaved forest
	9C	Valea Putnei	0	0	1	1	Transitional woodland-shrub
	9D	Piscul Capusa	0	1	1	1	Broad-leaved forest
	9E	Sagau	0	1	0	1	Mixed forest
	9F	Coasa	1	0	0	1	Mixed forest
	9G	Culmea Serb	1	0	1	1	Broad-leaved forest
	9H	Culmea Tisarului	0	0	0	0	Broad-leaved forest
	9I	Fundul Vacariei	0	0	0	0	Broad-leaved forest
	9J	Piscul lui Brad	0	1	0	1	Broad-leaved forest
Dec-06	10A	Sagau	0	1	1	1	Coniferous forest
	10B	Paraul Vulpiei	0	0	0	0	Broad-leaved forest



10C	Culmea Ciubotaru 1	1	0	1	1	Broad-leaved forest
10D	Culmea Ciubotaru 2	0	0	0	0	Broad-leaved forest
10E	Bahneanu	0	0	0	0	Coniferous forest
10F	Neteda	0	0	0	0	Broad-leaved forest
10G	Culmea Ses	0	0	0	0	Mixed forest
10H	Piscul Bisericii	0	0	0	0	Coniferous forest
10I	Piatra Alba	0	0	0	0	Broad-leaved forest
10J	Tisita Porcu	0	0	0	0	Mixed forest

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Data	Cod sit	Nume sit	Sampling			Total camere	Utilizare teren	
			A	B	C			
Sep-08	1A	Bahneanu	0	0	0	0	Transitional woodland-shrub	
	1B	Clabuc	0	0	0	0	Mixed forest	
	1C	Tisaru Mare	0	0	0	0	Mixed forest	
	1D	Tisita Mica	0	0	0	0	Mixed forest	
	1E	Piatra Alba	0	0	0	0	Broad-leaved forest	
	1F	Tiua Neagra	0	0	0	0	Coniferous forest	
	1G	Astagu Mare	0	0	0	0	Coniferous forest	
	1H	Dealul Negru	0	0	0	0	Natural grasslands	
	1I	Pr. Tiganul	0	0	0	0	Mixed forest	
	1J	Locotei	0	0	0	0	Broad-leaved forest	
Feb-08	2A	Porcu	0	0	0	0	Mixed forest	
	2B	Stramba	0	0	0	0	Mixed forest	
	2C	Babovici	0	0	0	0	Mixed forest	
	2D	Mesteacanal	0	0	0	0	Coniferous forest	
	2E	Coasa	0	0	0	0	Broad-leaved forest	
	2F	Dumbravanu	0	0	0	0	Mixed forest	
	2G	Vulturu	0	0	0	0	Mixed forest	
	2H	Canele	0	0	0	0	Mixed forest	
	3A	Putna	0	0	0	0	Mixed forest	
	3B	Paraul Alb	0	0	0	0	Mixed forest	
Dec-08	3C	Alunu	0	0	0	0	Mixed forest	
	3D	Piscul Cainelui	0	0	0	0	Mixed forest	
	3E	Fantana lui Bucur	0	0	0	0	Broad-leaved forest	
	3F	Sagau	0	0	0	0	Mixed forest	
	3G	Pr. Mesteacanalui	0	0	0	0	Broad-leaved forest	
	3H	Tamla	0	0	0	0	Coniferous forest	
	4A	Clabuc	0	0	0	0	Mixed forest	
	4B	Schit	0	0	0	0	Broad-leaved forest	
	4C	Stramba	0	0	0	0	Mixed forest	
	4D	Golul Lepsei	0	0	0	0	Transitional woodland-shrub	
Jul-08	4E	Musat	0	0	0	0	Broad-leaved forest	
	4F	Ostog	0	0	0	0	Mixed forest	
	4G	Pr. Bradului	0	0	0	0	Coniferous forest	
	4H	Neteda	0	0	0	0	Mixed forest	
	Oct-08	5A	Golul Lepsei 2	0	0	0	0	Broad-leaved forest
		5B	Musat	1	0	1	1	Broad-leaved forest
		5C	Golul Lepsei	0	0	0	0	Mixed forest
		5D	Mesteacanal	0	0	0	0	Mixed forest
		5E	Babovici	0	0	0	0	Mixed forest
		5F	Bahneanu	0	0	0	0	Coniferous forest
5G		Buniu	0	0	0	0	Coniferous forest	

Jan-09	5H	Pr. Condratului	0	0	0	0	Mixed forest
	5I	Alunu	0	0	0	0	Broad-leaved forest
	5J	Mioarele	0	0	0	0	Mixed forest
	6A	Babovici	0	0	0	0	Mixed forest
	6B	Coza 1	0	0	0	0	Broad-leaved forest
	6C	Coza 2	0	0	0	0	Broad-leaved forest
	6D	Dealul Crucii	0	0	0	0	Mixed forest
	6E	Golul Lepsei	0	0	0	0	Mixed forest
	6F	Horumbat	0	0	0	0	Mixed forest
	6G	Paraul Marului	0	0	0	0	Coniferous forest
	6H	Strei	0	0	0	0	Broad-leaved forest
	6I	Tisaru Mare	0	0	0	0	Mixed forest
	6J	Vulturu	0	0	0	0	Mixed forest
Mar-09	7A	Alunu	0	0	0	0	Mixed forest
	7B	Alunu Carnituri	0	0	0	0	Broad-leaved forest
	7C	Babovici	0	0	0	0	Mixed forest
	7D	Bahneanu	0	0	0	0	Transitional woodland-shrub
	7E	Coasa	0	0	0	0	Mixed forest
	7F	Galaciuc	1	0	0	1	Coniferous forest
	7G	Golul Lepsei	0	0	1	1	Broad-leaved forest
	7H	Neteda	0	0	0	0	Coniferous forest
	7I	Ostog	0	0	0	0	Mixed forest
	7J	Pietricica	0	0	0	0	Mixed forest
Oct-06	8A	Pr. Vulpiei	0	0	0	0	Broad-leaved forest
	8B	Bercea	0	0	0	0	Mixed forest
	8C	Tisaru Mare	0	0	0	0	Broad-leaved forest
	8D	Tisarul Mic	0	0	0	0	Broad-leaved forest
	8E	Padurea Babovici	0	0	0	0	Mixed forest
	8F	Piciorul lui Ivan	0	0	0	0	Broad-leaved forest
	8G	Ciuta	0	0	0	0	Broad-leaved forest
	8H	DI. Ses	0	0	0	0	Mixed forest
	8I	Valea Marului	0	0	0	0	Broad-leaved forest
	8J	Plaiul Cojocea	0	0	0	0	Transitional woodland-shrub
Feb-07	9A	Musat	0	0	0	0	Broad-leaved forest
	9B	Padurea Lepsa	0	0	0	0	Broad-leaved forest
	9C	Valea Putnei	0	0	0	0	Transitional woodland-shrub
	9D	Piscul Capusa	0	0	0	0	Broad-leaved forest
	9E	Sagau	0	0	0	0	Mixed forest
	9F	Coasa	0	0	0	0	Mixed forest
	9G	Culmea Serb	0	0	0	0	Broad-leaved forest
	9H	Culmea Tisarului	0	0	0	0	Broad-leaved forest
	9I	Fundul Vacariei	0	0	0	0	Broad-leaved forest
	9J	Piscul lui Brad	0	0	0	0	Broad-leaved forest
Dec-06	10A	Sagau	0	0	0	0	Coniferous forest
	10B	Paraul Vulpiei	0	0	0	0	Broad-leaved forest

10C	Culmea Ciubotaru 1	0	0	0	0	Broad-leaved forest
10D	Culmea Ciubotaru 2	0	0	0	0	Broad-leaved forest
10E	Bahneanu	0	0	0	0	Coniferous forest
10F	Neteda	0	0	0	0	Broad-leaved forest
10G	Culmea Ses	0	0	0	0	Mixed forest
10H	Piscul Bisericii	0	0	0	0	Coniferous forest
10I	Piatra Alba	0	0	0	0	Broad-leaved forest
10J	Tisita Porcu	0	0	0	0	Mixed forest

*Vulpes vulpes*

Data	Cod sit	Nume sit	Sampling			Total camere	Utilizare teren
			A	B	C		
Sep-08	1A	Bahneanu	0	0	0	0	Transitional woodland-shrub
	1B	Clabuc	0	0	0	0	Mixed forest
	1C	Tisaru Mare	0	0	0	0	Mixed forest
	1D	Tisita Mica	0	0	0	0	Mixed forest
	1E	Piatra Alba	0	0	0	0	Broad-leaved forest
	1F	Tiua Neagra	0	0	1	1	Coniferous forest
	1G	Astagu Mare	0	0	0	0	Coniferous forest
	1H	Dealul Negru	0	0	0	0	Natural grasslands
	1I	Pr. Tiganul	0	0	0	0	Mixed forest
	1J	Locotei	0	0	0	0	Broad-leaved forest
Feb-08	2A	Porcu	0	0	0	0	Mixed forest
	2B	Stramba	0	0	0	0	Mixed forest
	2C	Babovici	0	0	0	0	Mixed forest
	2D	Mesteacantul	0	0	0	0	Coniferous forest
	2E	Coasa	0	0	1	1	Broad-leaved forest
	2F	Dumbravanu	0	0	0	0	Mixed forest
	2G	Vulturu	0	0	0	0	Mixed forest
	2H	Canele	0	0	0	0	Mixed forest
	3A	Putna	0	0	0	0	Mixed forest
	3B	Paraul Alb	0	1	0	1	Mixed forest
Dec-08	3C	Alunu	0	0	0	0	Mixed forest
	3D	Piscul Cainelui	0	0	0	0	Mixed forest
	3E	Fantana lui Bucur	0	0	0	0	Broad-leaved forest
	3F	Sagau	0	0	0	0	Mixed forest
	3G	Pr. Mesteacantului	0	0	0	0	Broad-leaved forest
	3H	Tamla	0	0	0	0	Coniferous forest
Jul-08	4A	Clabuc	0	0	0	0	Mixed forest
	4B	Schit	1	0	1	1	Broad-leaved forest
	4C	Stramba	0	0	0	0	Mixed forest
	4D	Golul Lepsei	0	0	0	0	Transitional woodland-shrub
	4E	Musat	0	0	0	0	Broad-leaved forest
	4F	Ostog	0	0	0	0	Mixed forest

Oct-08	4G	Pr. Bradului	0	0	0	0	Coniferous forest
	4H	Neteda	0	0	0	0	Mixed forest
	5A	Golul Lepsei 2	0	0	0	0	Broad-leaved forest
	5B	Musat	0	0	0	0	Broad-leaved forest
	5C	Golul Lepsei	0	0	1	1	Mixed forest
	5D	Mesteacantul	0	0	0	0	Mixed forest
	5E	Babovici	0	0	1	1	Mixed forest
	5F	Bahneanu	0	0	0	0	Coniferous forest
	5G	Buniu	0	0	0	0	Coniferous forest
	5H	Pr. Condratului	0	0	0	0	Mixed forest
	5I	Alunu	0	0	0	0	Broad-leaved forest
	5J	Mioarele	0	0	0	0	Mixed forest
Jan-09	6A	Babovici	0	0	0	0	Mixed forest
	6B	Coza 1	0	0	0	0	Broad-leaved forest
	6C	Coza 2	0	0	1	1	Broad-leaved forest
	6D	Dealul Crucii	0	0	0	0	Mixed forest
	6E	Golul Lepsei	0	0	0	0	Mixed forest
	6F	Horumbat	0	0	0	0	Mixed forest
	6G	Paraul Marului	0	0	0	0	Coniferous forest
	6H	Strei	0	0	0	0	Broad-leaved forest
	6I	Tisaru Mare	0	0	0	0	Mixed forest
	6J	Vulturu	0	0	0	0	Mixed forest
Mar-09	7A	Alunu	0	0	0	0	Mixed forest
	7B	Alunu Carnituri	0	0	0	0	Broad-leaved forest
	7C	Babovici	1	0	0	1	Mixed forest
	7D	Bahneanu	0	0	0	0	Transitional woodland-shrub
	7E	Coasa	0	0	0	0	Mixed forest
	7F	Galaciuc	0	0	1	1	Coniferous forest
	7G	Golul Lepsei	0	0	0	0	Broad-leaved forest
	7H	Neteda	0	0	0	0	Coniferous forest
	7I	Ostog	0	0	0	0	Mixed forest
	7J	Pietricica	0	0	0	0	Mixed forest
Oct-06	8A	Pr. Vulpiei	0	0	0	0	Broad-leaved forest
	8B	Bercea	0	0	0	0	Mixed forest
	8C	Tisaru Mare	0	0	0	0	Broad-leaved forest
	8D	Tisarul Mic	0	0	0	0	Broad-leaved forest
	8E	Padurea Babovici	0	0	0	0	Mixed forest
	8F	Piciorul lui Ivan	0	0	0	0	Broad-leaved forest
	8G	Ciuta	0	0	0	0	Broad-leaved forest
	8H	DI. Ses	0	0	0	0	Mixed forest
	8I	Valea Marului	0	0	0	0	Broad-leaved forest
	8J	Plaiul Cojocea	0	0	0	0	Transitional woodland-shrub
Feb-07	9A	Musat	0	0	1	1	Broad-leaved forest
	9B	Padurea Lepsa	0	0	1	1	Broad-leaved forest
	9C	Valea Putnei	0	1	0	1	Transitional woodland-shrub

Dec-06	9D	Piscul Capusa	0	0	0	0	Broad-leaved forest
	9E	Sagau	0	1	0	1	Mixed forest
	9F	Coasa	0	0	1	1	Mixed forest
	9G	Culmea Serb	0	0	0	0	Broad-leaved forest
	9H	Culmea Tisarului	0	0	1	1	Broad-leaved forest
	9I	Fundul Vacariei	0	0	0	0	Broad-leaved forest
	9J	Piscul lui Brad	0	1	0	1	Broad-leaved forest
	10A	Sagau	0	0	0	0	Coniferous forest
	10B	Paraul Vulpiei	0	0	0	0	Broad-leaved forest
	10C	Culmea Ciubotaru 1	0	0	0	0	Broad-leaved forest
	10D	Culmea Ciubotaru 2	0	1	0	1	Broad-leaved forest
	10E	Bahneanu	0	1	0	1	Coniferous forest
	10F	Neteda	0	0	0	0	Broad-leaved forest
	10G	Culmea Ses	0	0	0	0	Mixed forest
	10H	Piscul Bisericii	0	0	0	0	Coniferous forest
	10I	Piatra Alba	0	0	0	0	Broad-leaved forest
10J	Tisita Porcu	0	0	0	0	Mixed forest	

*Felis sylvestris*

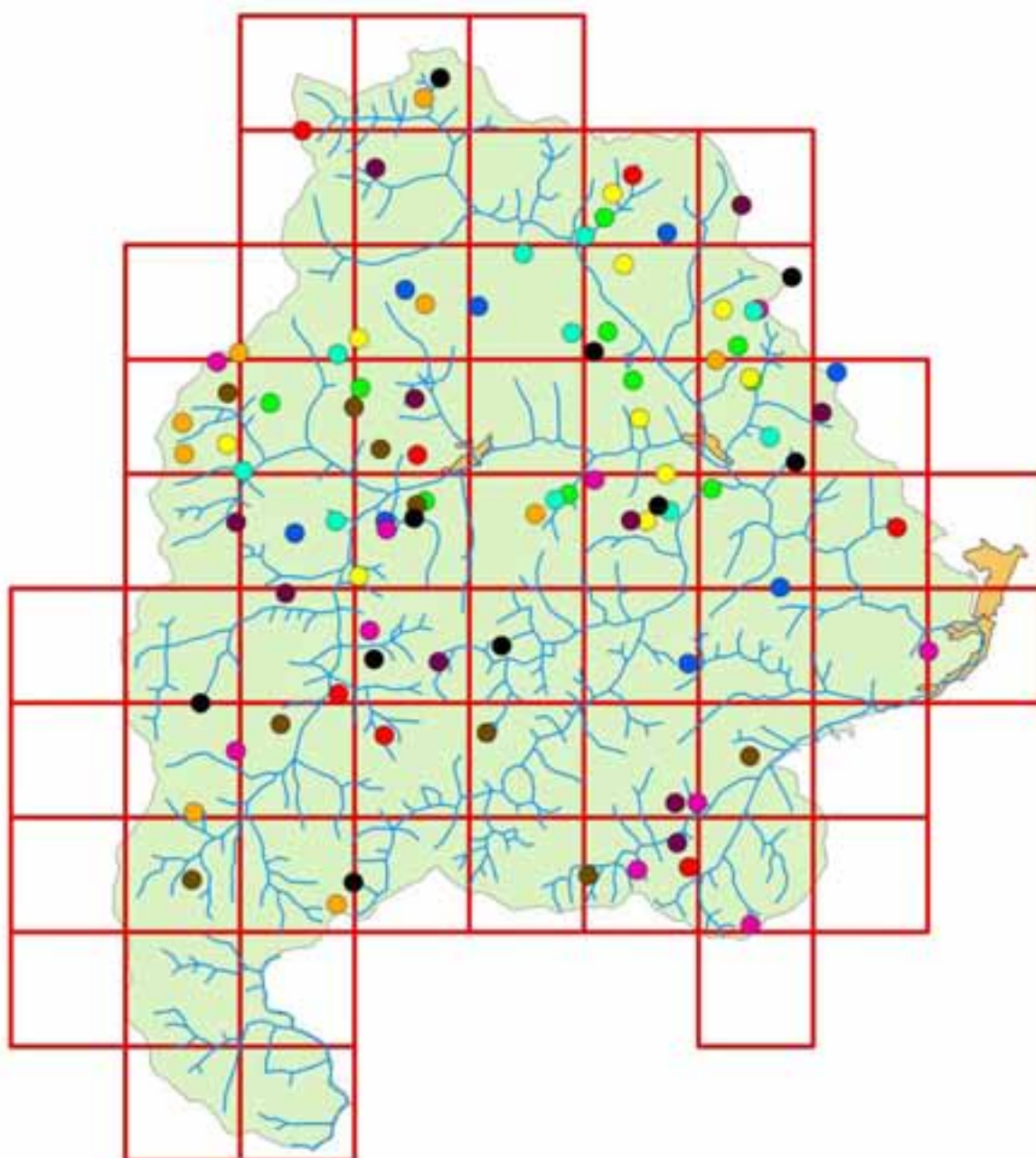
Data	Cod sit	Nume sit	Sampling			Total camere	Utilizare teren
			A	B	C		
Sep-08	1A	Bahneanu	0	0	0	0	Transitional woodland-shrub
	1B	Clabuc	0	0	0	0	Mixed forest
	1C	Tisaru Mare	0	0	0	0	Mixed forest
	1D	Tisita Mica	1	0	0	1	Mixed forest
	1E	Piatra Alba	0	0	0	0	Broad-leaved forest
	1F	Tiua Neagra	0	0	0	0	Coniferous forest
	1G	Astagu Mare	0	0	0	0	Coniferous forest
	1H	Dealul Negru	0	0	0	0	Natural grasslands
	1I	Pr. Tiganul	0	0	0	0	Mixed forest
	1J	Locotei	0	0	0	0	Broad-leaved forest
	2A	Porcu	0	0	0	0	Mixed forest
Feb-08	2B	Stramba	0	0	0	0	Mixed forest
	2C	Babovici	0	0	0	0	Mixed forest
	2D	Mesteacanul	0	0	0	0	Coniferous forest
	2E	Coasa	0	0	0	0	Broad-leaved forest
	2F	Dumbravanu	1	0	0	1	Mixed forest
	2G	Vulturu	0	0	0	0	Mixed forest
	2H	Canele	0	0	0	0	Mixed forest
Dec-08	3A	Putna	0	0	0	0	Mixed forest
	3B	Paraul Alb	0	0	0	0	Mixed forest
	3C	Alunu	0	0	0	0	Mixed forest
	3D	Piscul Cainelui	0	0	0	0	Mixed forest
	3E	Fantana lui Bucur	0	0	0	0	Broad-leaved forest

Jul-08	3F	Sagau	0	0	0	0	Mixed forest
	3G	Pr. Mesteacanolui	0	0	0	0	Broad-leaved forest
	3H	Tamla	0	0	0	0	Coniferous forest
	4A	Clabuc	0	0	0	0	Mixed forest
	4B	Schit	0	0	0	0	Broad-leaved forest
	4C	Stramba	0	0	0	0	Mixed forest
	4D	Golul Lepsei	0	0	0	0	Transitional woodland-shrub
	4E	Musat	0	0	1	1	Broad-leaved forest
	4F	Ostog	0	0	0	0	Mixed forest
	4G	Pr. Bradului	0	0	0	0	Coniferous forest
	4H	Neteda	0	0	0	0	Mixed forest
Oct-08	5A	Golul Lepsei 2	0	0	0	0	Broad-leaved forest
	5B	Musat	0	0	0	0	Broad-leaved forest
	5C	Golul Lepsei	0	0	0	0	Mixed forest
	5D	Mesteacanol	0	0	0	0	Mixed forest
	5E	Babovici	0	0	0	0	Mixed forest
	5F	Bahneanu	0	0	0	0	Coniferous forest
	5G	Buniu	0	0	0	0	Coniferous forest
	5H	Pr. Condratului	0	0	0	0	Mixed forest
	5I	Alunu	0	0	0	0	Broad-leaved forest
	5J	Mioarele	0	0	0	0	Mixed forest
	Jan-09	6A	Babovici	0	0	0	0
6B		Coza 1	0	0	0	0	Broad-leaved forest
6C		Coza 2	0	0	0	0	Broad-leaved forest
6D		Dealul Crucii	0	0	0	0	Mixed forest
6E		Golul Lepsei	0	0	0	0	Mixed forest
6F		Horumbat	0	0	0	0	Mixed forest
6G		Paraul Marului	0	0	0	0	Coniferous forest
6H		Strei	0	0	0	0	Broad-leaved forest
6I		Tisaru Mare	0	0	0	0	Mixed forest
6J		Vulturu	0	0	0	0	Mixed forest
Mar-09		7A	Alunu	0	0	0	0
	7B	Alunu Carnituri	0	0	0	0	Broad-leaved forest
	7C	Babovici	0	0	0	0	Mixed forest
	7D	Bahneanu	0	0	0	0	Transitional woodland-shrub
	7E	Coasa	0	0	0	0	Mixed forest
	7F	Galaciuc	0	0	0	0	Coniferous forest
	7G	Golul Lepsei	0	0	0	0	Broad-leaved forest
	7H	Neteda	0	0	0	0	Coniferous forest
	7I	Ostog	0	0	0	0	Mixed forest
	7J	Pietricica	0	0	0	0	Mixed forest
	Oct-06	8A	Pr. Vulpii	0	0	0	0
8B		Bercea	0	0	0	0	Mixed forest
8C		Tisaru Mare	0	0	0	0	Broad-leaved forest
8D		Tisarul Mic	0	0	0	0	Broad-leaved forest

Feb-07	8E	Padurea Babovici	0	0	0	0	Mixed forest
	8F	Piciorul lui Ivan	0	0	0	0	Broad-leaved forest
	8G	Ciuta	0	0	0	0	Broad-leaved forest
	8H	DI. Ses	0	0	0	0	Mixed forest
	8I	Valea Marului	0	0	0	0	Broad-leaved forest
	8J	Plaiul Cojoccea	0	0	0	0	Transitional woodland-shrub
	9A	Musat	0	0	0	0	Broad-leaved forest
	9B	Padurea Lepsa	0	0	0	0	Broad-leaved forest
	9C	Valea Putnei	0	0	0	0	Transitional woodland-shrub
	9D	Piscul Capusa	0	0	0	0	Broad-leaved forest
	9E	Sagau	0	0	0	0	Mixed forest
	9F	Coasa	0	0	0	0	Mixed forest
	9G	Culmea Serb	0	0	0	0	Broad-leaved forest
	9H	Culmea Tisarului	0	0	0	0	Broad-leaved forest
	9I	Fundul Vacariei	0	0	0	0	Broad-leaved forest
	9J	Piscul lui Brad	0	0	0	0	Broad-leaved forest
Dec-06	10A	Sagau	0	0	0	0	Coniferous forest
	10B	Paraul Vulpiei	0	0	0	0	Broad-leaved forest
	10C	Culmea Ciubotaru 1	0	0	0	0	Broad-leaved forest
	10D	Culmea Ciubotaru 2	0	0	0	0	Broad-leaved forest
	10E	Bahneanu	0	0	0	0	Coniferous forest
	10F	Neteda	0	0	0	0	Broad-leaved forest
	10G	Culmea Ses	0	0	0	0	Mixed forest
	10H	Piscul Bisericii	0	0	0	0	Coniferous forest
	10I	Piatra Alba	0	0	0	0	Broad-leaved forest
	10J	Tisita Porcu	0	0	0	0	Mixed forest



## Pozitia siturilor de prelevare a imaginilor



### Legendă

- |                          |                  |                               |
|--------------------------|------------------|-------------------------------|
| <b>sesiuni prelevare</b> | ● februarie 2008 | ● octombrie 2006              |
| ● decembrie 2006         | ● ianuarie 2009  | ● octombrie 2008              |
| ● decembrie 2008         | ● iulie 2008     | ● septembrie 2007             |
| ● februarie 2007         | ● martie 2009    | — retea hidrografica          |
|                          |                  | ■ grila prelevare randomizata |
|                          |                  | ■ localitati                  |
|                          |                  | ■ limita parc                 |
- 0 1.252.5 5 7.5 10 Kilometers

## Montarea camerelor automate



## Imagini obtinute cu ajutorul camerelor automate











