Roteiro Distance

Leonardo Wedekin

USP - 2013

Abra o Distance

🗶 Distance	
<u>File Tools W</u> indow	<u>H</u> elp
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Crie um novo projeto clicando no primeiro botão

Dê um nome

🗶 Distance						
<u>F</u> ile <u>T</u> o	ols <u>W</u> indo	w <u>H</u> elp				
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-			_	_		
	🗶 Create P	roject				×
	Salvar em:	Praticas_solucoes	•	🗢 🗈 💣	•	
	Nome	*		Data de mod	ificaç	Ti
		ivennum item correspor	iue a pe	squisa.		
	•					P
	Nome:	Baleias_2008			Create	
	Tipo:	Distance Projects (*.dst)		•	Cancelar	
	🔲 Save thi	s folder as the default for Distance p	rojects			
	_		-	_	-	

Leia o tutorial inicial



Defina as características do estudo



*** A outra opção ("Double observer") refere-se a observadores independentes e não ao número de observadores

Defina as unidades utilizadas

Please specify the measuremen	nt units for your data.
If you want to analyze the data this wizard (in the Units tab of th	using different units, you can do so after completing ne Data Filter). Click 'Help' for more information.
	Units of original measurements
Distance:	Meter 👻
Transect	Kilometer 🗨
Area:	Square kilometer
aircraft ideally suited to aerial line	Distance intervals marked on wing stru

Vamos importar uma tabelas de dados



Escolha o arquivo



Configure a tabela

Primeira linha é cabeçalho



Defina o que cada coluna significa

Market Columns In teach columns Shortcuts Columns Columns First row Delimiter:	ta Wizard - S you tell Dista he Distance o , and choose are in the sar contains laye	Step 5: Data nce which col database. To from the list. (me order as th r names and f kample: Regio	File Structure umns in your d do this, click o Click Help for n ey will appear i ield names of a n*Area	lata file corresp on the layer nar nore informatio in the data she each column	oond with which me and field nar n. eet Gri Rd Cd	i fields ne of id size ows: 342 olumns: 6	
Layer name:	Region	Region	Line trans	Line trans	Observation	Observation	1
Field name:	Label	Area	Label	Line length	Perp distance	Cluster size	
Field type:	Label	Decimal	Label	Decimal	Decimal	Decimal	
	Bloco	Area-km2	Transect	Compr-km	Dist-m	Grupo 4	<u>~</u>
1	A	10181	30	78.045			
2	A	10181	31	27.225			
3	A	10181	32	56.758			
4	A	10181	33	22.029	2102.479254	1	
5	A	10181	34	74.157	2102.479254	2	
6	A	10181	34	74.157	914.9099807	1	
7	A	10181	35**	16.59			
8	A	10181	36	65.21			
9	Α	10181	37	35.044	192.2576396	1	
10	A	10181	37	35.044	867.4946585	2 .	-

Finish



Confira os dados

Distance - Baleias_2008 - [Project B	rowse	r]									
<u> </u>	ndow	<u>H</u> elp									
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💐 Data	Ìß	🛛 Maps				1	Desigr	IS] 6	🔥 Surveys
🔟 🔲 🚯 🐺 💘	1a										
Data layers	Cont	ents of Observat	ion laye	er 'Obsei	rvation' and	all fiel	ds from	higher layers			
🖃 🔇 Study area		Study area		Regi	on		Line tr	ansect		Observatio	n
🖻 📲 Region	ID	Label	ID	Label	Area	ID	Label	Line length	ID	Perp distance	Cluster size
🖻 🥢 Line transect	ID	Label	ID	Label	Decimal	ID	Label	Decimal	ID	Decimal	Decimal
🔤 💏 Observation	n/a	n/a	n/a	n/a	km2	n/a	n/a	km	n/a	m	[None]
	Int	Int	Int	Int	Int	Int	Int	Int	Int	Int	Int
						1	30	78.045			
<						2	31	27.225			
7						3	32	56.758			
						- 4	33	22.029	1	2102.479254	1
						Б	24	74 157	2	2102.479254	2
						J	34	74.157	3	914.9099807	1
						6	35**	16.59			
-						- 7	36	65.21			
							27	25.044	- 4	192.2576396	1
						0	57	33.044	5	867.4946585	2
						9	38	75.958	6	411.2207531	1
						10	39	16.524	- 7	475.5732862	2
									8	1089.193922	2
							40	E7 001	9	1242.772919	1
		D L	1	A	10181	11	40	57.981	10	475.5732862	1
	1 1	Baleias_2008							11	34.99971034	1
						12	41	14.195			
						13	42	62.747	12	169.6719747	1
						14	43	18.752			
									13	1566.641826	2
						15	44	55.761	14	1566.641826	2
									15	4762.121863	2
						16	45	20.248	16	2102.479254	2
						17	46	57.368	17	289.4724837	1
									18	1442.381466	1
									19	867.4946585	1
						18	47	31,614	20	2369.418118	1
									21	1161 30901	1

Vamos analisar



Tabela de modelos



Definir o filtro de dados

🖉 Distance	2 - Baleias_2008 - [Analysis 1: [New Analysis] Set: [Set 1]]		x
🔤 <u>F</u> ile	<u>V</u> iew <u>T</u> ools <u>A</u> nalysis - Inputs <u>W</u> indow <u>H</u> elp	_ é	s ×
Æ 🗳			
Analysis Name: Created: Run:	New Analysis : 28/10/2013 21:50:49	<u>B</u> un	
Survey			Inpu
Set 1	▼ [1] New Survey	<u>D</u> etails	ts
Data filter-			
1 Dei	fault Data Filter	Properties	Log
1 De	Fault Model Definition	Properties <u>N</u> ew	Results
comments			

Filtro dos dados

Data Filter Properties: [Default Data Filter]
D <u>a</u> ta selection Intervals Iruncation Units
Truncation of exact distance measurements
Right truncation Image: Right truncate at largest observed distance
Discard the largest percent of distances
C Discard all observations beyond 0
Left truncation
No left truncation
C Discard all observations within 0
Truncation for cluster size estimation (where required) Right truncation © Same as that specified above © Discard all observations beyond 0
Defaults Name: Default Data Filter OK Cancel

Aqui você poderá:

- Truncar os dados à direita e/ou à esquerda
- Truncar pelo tamanho de grupo
- Dividir as distâncias em intervalos (dados agrupados)
- Manter as distâncias como foram coletadas (não agrupadas)

Definição do modelo

Distance - Baleias_2008 - [Analysis 1: [New Analysis]	et: [Set 1]]	
<u>F</u> ile <u>V</u> iew <u>T</u> ools <u>A</u> nalysis - Inputs <u>W</u> indow	Help	
2 🍝 🖳 💼 🕮 🗉 🌌		
Analysis Name: New Analysis Created: 28/10/2013 21:50:49		<u>B</u> un
Run: Surveu		ə
Set 1	▼ [1] New Survey	Details
Data filter		
1 Default Data Filter Model definition		Properties] New
1 Default Model Definition		Properties New
		<u>م</u>

Defina as funções de detecção

Model Definition Properties: [Default Model Definition]	
Analysis Engine: CDS - Conventional distance sampling	
Estimate Detection function Cluster size Multipliers Variance Misc.	
Models Adjustment terms Constraints Diagnostics	
Detection function models	
Model Key function Series expansion 🛨	
1 Half-normal Cosine	
Select among multiple models using AIC	
Defaulta Name: Default Model Definition OK Canad	

Possíveis funções de detecção



Uniforme Uniforme Meia-normal Meia-normal Taxa de risco Taxa de risco Cosseno Polinomial simples Cosseno Polinomial hermite Cosseno Polinomial simples

Defina o estimador da variância

Model Definition Properties: [Default Model Definition]	
Analysis Engine: CDS - Conventional distance sampling	
Estimate Detection function Cluster size Multipliers	
Analutic variance estimate	
Encounter rate variance	
Estimate variance empirically Advanced	
C Assume distribution of observations is Poisson	
C Assume distribution is Poisson, with overdispersion factor 2	
Bootstrap variance estimate	
Select non-parametric bootstrap	
Levels of resampling	
Resample samples	
Resample observations within samples	
Number of resemples: Loop Seed: @ from sustem clock	
C preset to n	
Bootstrap statistics file	
File name: C:\Users\User	
Defaults Name: Default Model Definition <u>DK</u> Cancel	

Corra este modelo

Distance - I	Baleias_2008 - [Analysis 1: [New Analysis] Set: [Set 1]]	×
🔟 <u>F</u> ile <u>V</u> i	iew <u>T</u> ools <u>A</u> nalysis - Inputs <u>W</u> indow <u>H</u> elp	_ 8 ×
4 🗳 🖉		
Analysis Name: Created: Run:	New Analysis Bun 28/10/2013 21:50:49]
Survey		n
Set 1	▼ [1] New Survey ▼ Details	្រី
Data filter	It Data Filter	
	Ecoperties	Log
Model definition	on	_
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ommeries		*

Vamos aos resultados

👷 Distance - Baleias_2008 - [Analysis 1: [New Analysis] Set: [Set 1]]	
Eile <u>V</u> iew Iools <u>A</u> nalysis - Log <u>W</u> indow <u>H</u> elp	_ 8 ×
Initializing	
Making Data File	
Making Data Selection Queries	
making input file	
C:\PRORA-2\DISTAN-1\eC "C:\PRORRA-2\DISTAN-1\MCDS.exe 0. C:\Users\LEONAR-1\AppData\Local\Temp\dstDBAC.tmp \options 2>C:\Users\LEONAR-1\AppData\Local\Temp\dstDBAB.tmp"	
Start of Analyis Engine Log File	5
This is mcds.exe version 6.0.4	2
Options;	l Its
Type=Line;	
Length /Measure='Kilometer';	=
Distance=Perp /Measure='Meter';	
<pre>Area /Units='Square kilometer';</pre>	
Object=Cluster;	
Srl;	
Joedenadel -	
Maxterma=5:	
Confidence=95;	
Print=Selection;	
End;	
Data /Structure=Flat;	
Fields=STR_LABEL, STR_AREA, SMP_LABEL, SMP_EFFORT, DISTANCE, SIZE;	0
Infile=C:\Users\LEONAR~1\AppData\Local\Temp\dstDB2D.tmp /NoEcho;	9
Data will be input from file - []APPDATA\LOCAL\TEMP\DSTDB2D.TMP	
End;	
Dataset has been stored.	
Distance:	
Density=All;	
Encounter=All;	
Detection=All;	
Size=All;	
Estimator /Key=HN /Adjust=CO /Criterion=AIC;	
Log messages - 7 warnings, 0 errors	
*** Warning: Parameters are being constrained to obtain monotonicity, **	L I
⁴⁴ Warning: Parameters are being constrained to obtain monotonicity. ⁴⁴	e s
Warning, Faintieters are being constained to obtain monotonicity.	
** Warning, some parameters ate voly ing in some ALC. Hoosing one of them at random, **	0
** Warning: Parameters are being constrained to obtain monotonicity. **	-
** Warning: Size bias adjustment has increased expected cluster size. **	

Função de detecção escolhida pelo AIC

Distance - Baleias_2008 - [Analysis 1: [New Analysis] Set: [Set 1]]
<u>File View T</u> ools <u>A</u> nalysis - Results <u>W</u> indow <u>H</u> elp
2 🗳 🖉 🚳 🛢 🗶
Detection Fct/Global/Model Fitting
Effort : 4710.280
samples : 80
Width : 19077.56
observations: 308
<pre>Model Selection Minimum AIC = 5108.446 Estimator chosen based on minimum AIC : Model Hazard Rate key, k(y) = 1 - Exp(-(y/A(1))**-A(2))</pre>

Probabilidade de detecção e largura efetivamente amostrada

	Distance - Baleias_2008 - [Analysis 1: [New Analysis] Set: [Set 1]]							
<u> </u>	/ <u>T</u> ools <u>A</u> naly	sis - Results <u>W</u> i	ndow <u>H</u> elp					
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Detection Fct/Global/Parameter Estimates								
, [
Effort	: 4710.	280						
<pre># samples</pre>	: 80							
Width	: 19077	.56						
# observatio	ons: 308							
Model								
Hazard R	ate key, k(y)	= 1 - Exp(-(y/A(1))**-A(2))					
	Doint	Standard	Percent Coef	95 Dor	cent			
Parameter	Estimate	Error	of Variation	Confidenc	e Interval			
A(1)	1577.	113.0						
A(2)	2.897	0.2139						
I(0)	0.462518-03	0.250428-04	5.41	0.41580E-03	0.514478-03			
ESW	2162 1	117 06	5.41	1943 7	2405 0			
Sampling Co:	rrelatio	mated Par	ameters					
A(:	1) A(2)							
A(1) 1.00	1) A(2) 0 0.690							
A(1) A(1) 1.00 A(2) 0.69	1) A(2) 0 0.690 0 1.000	$\backslash \rangle$	•					
A(1) A(1) 1.00 A(2) 0.69	1) A(2) 0 0.690 0 1.000	\bigtriangledown	•					
A(1) A(1) 1.00 A(2) 0.69	1) A(2) 0 0.690 0 1.000	$\backslash \rangle$	•					

Q-Q plot



Mostra um bom ajuste do modelo aos dados

Testes de bom ajuste

👷 Distance - Baleias_2008 - [Analysis 1: [New Analysis] Set: [Set 1]] File View Tools Analysis - Results Window Help 街 💣 📓 闇 💈 🌋 Detection Fct/Global/K-S GOF Test Kolmogorov-Smirnov test = 0.0534 p = 0.3430 Dn Cramer-von Mises family tests W-sq (uniform weighting) = 0.2046 0.200 < p <= 0.300 Relevant critical values: W-sg crit(alpha=0.300) = 0.1841 W-sq crit(alpha=0.200) = 0.2411 C-sq (cosine weighting) = 0.1561 0.200 < p <= 0.300 Relevant critical values: C-sq crit(alpha=0.300) = 0.1218 C-sq crit(alpha=0.200) = 0.1613

Curva de detecção



Outro teste de bom ajuste (GOF)

Distance - Baleias_2008 - [Analysis 1: [New Analysis] Set: [Set 1]]

<u>File View Tools Analysis - Results Window Help</u>

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Detection Fct/Global/Chi-sq GOF Test 1

Cell	Cut	;	Observed	Expected	Chi-square
i	Poir	its	Values	Values	Values
1	0.000	0.173E+04	221	223.00	0.018
2	0.173E+04	0.347E+04	60	60.02	0.000
3	0.347E+04	0.520E+04	19	13.80	1,963
4	0.520E+04	0.694E+04	4	5.12	0.244
5	0.694E+04	0.867E+04	0	2.45	2.448
6	0.867E+04	0.104E+05	3	1.36	1.972
7	0.104E+05	0.121E+05	0	0.84	0.836
8	0.121E+05	0.139E+05	0	0.55	0.551
9	0.139E+05	0.156E+05	0	0.38	0.383
10	0.156E+05	0.173E+05	0	0.28	0.277
11	0.173E+05	0.191E+05	1	0.21	3.031
The pr judge Goodne	ogram has lin the necessity ess of Fit Tes	nited capab y for pooli: sting with	ility for ng and if some Pooli	pooling. The necessary, do ng	user should pooling by han
Cell	Cut		Observed	Expected	Chi-square
i	Poir	its	Values	Values	Values
1	0.000	0 1738+04	221	223 00	0 018
2	0.173E+04	0.347E+04	60	60.02	0.000
3	0.347E+04	0.520E+04	19	13.80	1.963
4	0.520E+04	0.694E+04	4	5.12	0.244
5	0.694E+04	0.867E+04	0	2.45	2.448
6	0.867E+04	0.104E+05	3	1.36	1.972
7	0.104E+05	0.191E+05	1	2.26	0.699
Total	Chi-square va	alue =	7.3441 De	grees of Free	dom = 4.00

Estimativas

<u>File</u> <u>V</u> iev	v <u>T</u> ools <u>A</u> naly	/sis - Results <u>W</u> i	ndow <u>H</u> elp		
🖏 💣 📓	8 8 1 2	2			
Density Estima	tes/Global				
Effort	: 4710.	280			
<pre># samples</pre>	: 80				
Width	: 19077	.56			
<pre># observati</pre>	ons: 308				
Model					
Hazard R	ate key, k(y)	= 1 - Exp(-(y/A(1))**-A(2))		
	Point	Standard	Dercent Coef	958 Da	rcent
Parameter	Point Estimate	Standard Error	Percent Coef. of Variation	95% Pe Confidenc	rcent e Interval
Parameter	Point Estimate	Standard Error	Percent Coef. of Variation	95% Pe Confidenc	rcent e Interval
Parameter DS	Point Estimate 0.15122E-01	Standard Error 0.17761E-02	Percent Coef. of Variation 11.75	95% Pe Confidenc 0.11969E-01	ercent e Interval 0.19105E-0
Parameter DS E(S)	Point Estimate 0.15122E-01 1.6488	Standard Error 0.17761E-02 0.43698E-01	Percent Coef. of Variation 11.75 2.65	95% Pe Confidenc 0.11969E-01 1.5650	e Interval 0.19105E-0 1.7371
Parameter DS E(S) D	Point Estimate 0.15122E-01 1.6488 0.24933E-01	Standard Error 0.17761E-02 0.43698E-01 0.30021E-02	Percent Coef. of Variation 11.75 2.65 12.04	95% Pe Confidenc 0.11969E-01 1.5650 0.19628E-01	e Interval 0.19105E-0: 1.7371 0.31672E-0:
Parameter DS E(S) D N	Point Estimate 0.15122E-01 1.6488 0.24933E-01 3989.0	Standard Error 0.17761E-02 0.43698E-01 0.30021E-02 480.30	Percent Coef. of Variation 11.75 2.65 12.04 12.04	95% Pe Confidenc 0.11969E-01 1.5650 0.19628E-01 3140.0	e Interval 0.19105E-0 1.7371 0.31672E-0 5068.0
Parameter DS E(S) D N	Point Estimate 0.15122E-01 1.6488 0.24933E-01 3989.0	Standard Error 0.17761E-02 0.43698E-01 0.30021E-02 480.30	Percent Coef. of Variation 11.75 2.65 12.04 12.04	95% Pe Confidenc 0.11969E-01 1.5650 0.19628E-01 3140.0	e Interval 0.19105E-0 1.7371 0.31672E-0 5068.0
Parameter DS E(S) D N	Point Estimate 0.15122E-01 1.6488 0.24933E-01 3989.0	Standard Error 0.17761E-02 0.43698E-01 0.30021E-02 480.30	Percent Coef. of Variation 11.75 2.65 12.04 12.04	95% Pe Confidenc 0.11969E-01 1.5650 0.19628E-01 3140.0	rcent e Interval 0.19105E-0 1.7371 0.31672E-0 5068.0
Parameter DS E(S) N Measurement	Point Estimate 0.15122E-01 1.6488 0.24933E-01 3989.0 	Standard Error 0.17761E-02 0.43698E-01 0.30021E-02 480.30	Percent Coef. of Variation 11.75 2.65 12.04 12.04	95% Pe Confidenc 0.11969E-01 1.5650 0.19628E-01 3140.0	ercent 0.19105E-0 1.7371 0.31672E-0 5068.0
Parameter DS E(S) D N Measurement	Point Estimate 0.15122E-01 1.6488 0.24933E-01 3989.0 	Standard Error 0.17761E-02 0.43698E-01 0.30021E-02 480.30	Percent Coef. of Variation 11.75 2.65 12.04 12.04	95% Pe Confidenc 0.11969E-01 1.5650 0.19628E-01 3140.0	e Interval 0.19105E-0 1.7371 0.31672E-0 5068.0
Parameter DS E(S) D N Measurement Density: Nu ESW: me	Point Estimate 0.15122E-01 1.6488 0.24933E-01 3989.0 Units mbers/Sq. kil	Standard Error 0.17761E-02 0.43698E-01 0.30021E-02 480.30 	Percent Coef. of Variation 11.75 2.65 12.04 12.04	95% Pe Confidenc 0.11969E-01 1.5650 0.19628E-01 3140.0	e Interval 0.19105E-0 1.7371 0.31672E-0 5068.0
Parameter DS E(S) D N Measurement Density: Nu ESW: me	Point Estimate 0.15122E-01 1.6488 0.24933E-01 3989.0 Units mbers/Sq. kil ters	Standard Error 0.17761E-02 0.43698E-01 0.30021E-02 480.30 	Percent Coef. of Variation 11.75 2.65 12.04 12.04	95% Pe Confidenc 0.11969E-01 1.5650 0.19628E-01 3140.0	ercent 0.19105E-0 1.7371 0.31672E-0 5068.0
Parameter DS E(S) D N Measurement Density: Nu ESW: me Component P	Point Estimate 0.15122E-01 1.6488 0.24933E-01 3989.0 Units mbers/Sq. kil ters	Standard Error 0.17761E-02 0.43698E-01 0.30021E-02 480.30 	Percent Coef. of Variation 11.75 2.65 12.04 12.04	95% Pe Confidenc 0.11969E-01 1.5650 0.19628E-01 3140.0	rcent 0.19105E-0 1.7371 0.31672E-0 5068.0
Parameter DS E(S) D N Measurement Density: Nu ESW: me Component P	Point Estimate 0.15122E-01 1.6488 0.24933E-01 3989.0 	Standard Error 0.17761E-02 0.43698E-01 0.30021E-02 480.30 	Percent Coef. of Variation 11.75 2.65 12.04 12.04	95% Pe Confidenc 0.11969E-01 1.5650 0.19628E-01 3140.0	ercent 0.19105E-0 1.7371 0.31672E-0 5068.0
Parameter DS E(S) D N Measurement Density: Nu ESW: me Component P Detection p	Point Estimate 0.15122E-01 1.6488 0.24933E-01 3989.0 Units mbers/Sq. kil ters ercentages of probability	Standard Error 0.17761E-02 0.43698E-01 0.30021E-02 480.30 cometers Var(D) : 20.2 : 74.9	Percent Coef. of Variation 11.75 2.65 12.04 12.04	95% Pe Confidenc 0.11969E-01 1.5650 0.19628E-01 3140.0	ercent 0.19105E-0: 1.7371 0.31672E-0: 5068.0

Nosso primeiro modelo



Crie um novo modelo

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	9	id 🌡	4 Ϋ	Σ <u>β</u>	N	ame	1	•	Crea	lted			# p	arams	De	lta AIC	AIC	E	ESW/ED	R	D	D LCL	D UCL	D CV					
	0	1	1 1	1 N	lew A	nalysis	1	28/10)/201	3 21:5	50:49	28/*		2	2	0.00	5108.	45	2162.	10	0.025	0.020	0.032	0.120					
		2		1 1	lew A	nalysis 1	1	2871	0/201	3 22:2	26:02																		

Crie novos filtros e novas definições de modelos

Distance - Baleias_2008 - [Analysis 1: [New Analysis] Set: [Set 1]]	
I File ⊻iew Tools Analysis - Inputs Window Help	X
Analysis Name: New Analysis Created: 28/10/2013 21:50:49 Bury	Bun
Set 1	Details
Data filter	
	Properties] <u>N</u> ew
Model definition	
	Properties New
Comments	