

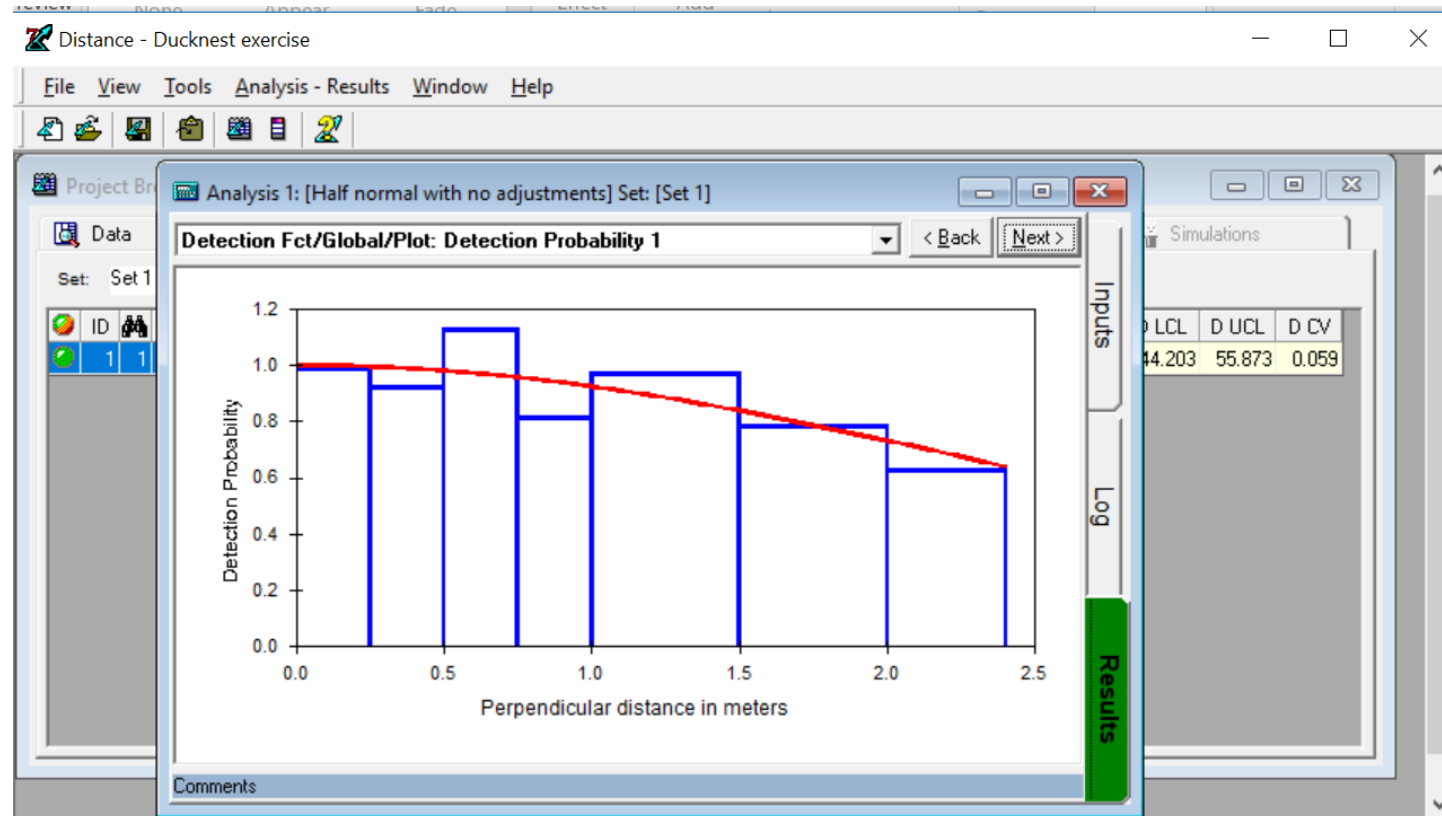
# Overview of Distance software

# What is Distance?

Windows software for design and analysis of distance sampling surveys

Free to download from [distancesampling.org](http://distancesampling.org)

Analysis methods are also available as a set of R packages.





# Introduction

## Support

distance-sampling email list

To join, send a message to

[distance-sampling+subscribe@googlegroups.com](mailto:distance-sampling+subscribe@googlegroups.com)

with a blank subject and message

You will receive a confirmation from Google

*(check you spam filter)*

Because the list is maintained by Google,

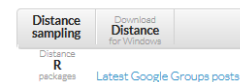
*the messages dating back to 1998, are searchable*

Distance home page

[distancesampling.org](http://distancesampling.org)



Information on the development of Distance and Distance-related R packages.



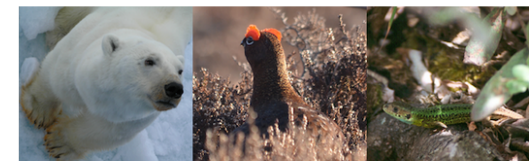
check for possible analysis approach  
by Joaquin Aidebe - 19 hours ago  
Hello all, I'm trying to assess if there are differences in the density of grassland shorebirds (*Pluvialis dominica* and ...  
Disabled researcher looking for an assistant to help Analyse data  
by Lamine M Bensabah - 21 hours ago  
Hello, I am new to Distance and have been watching the different tutorial videos with no success. I am deaf and partially ...

## Welcome to the Distance project website

The Distance project provides software for the design and analysis of distance sampling surveys of wildlife populations. This software takes two forms: a Windows-based program and a suite of packages for the statistical programming language R.

[What is distance sampling?](#)

UPCOMING: Distance sampling workshops at St Andrews in August 2014

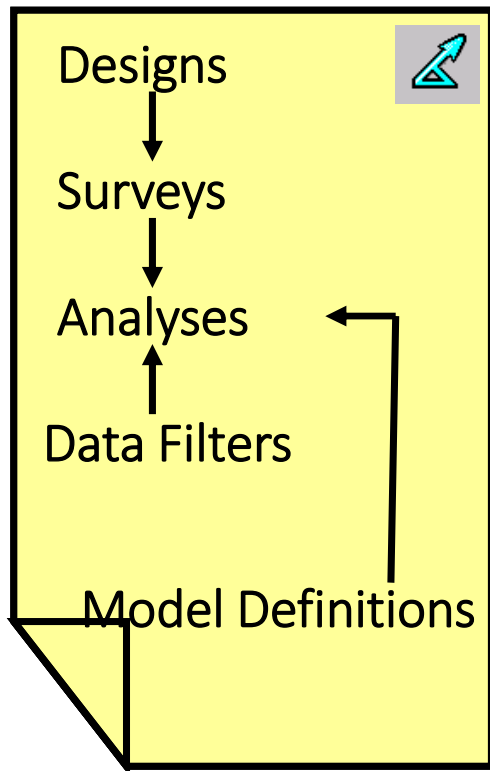


Distance for Windows

# Distance Projects

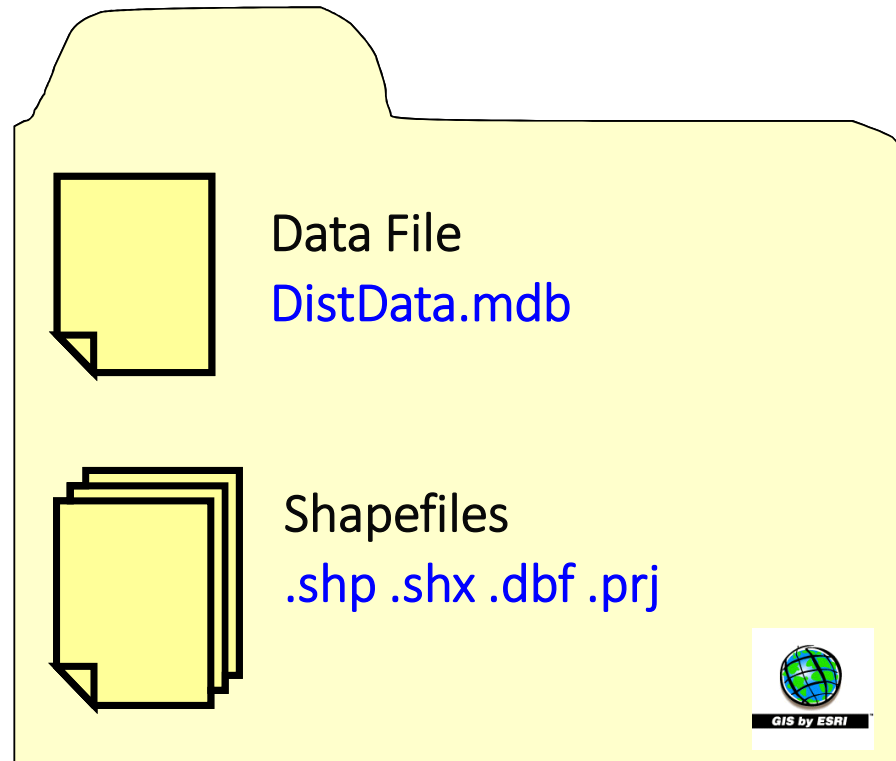
Project File

MyProject.dst



Data Folder

MyProject.dat



# Distance Projects

To create a New Project:

New Project Setup Wizard (File | New Project)

To open a Project:

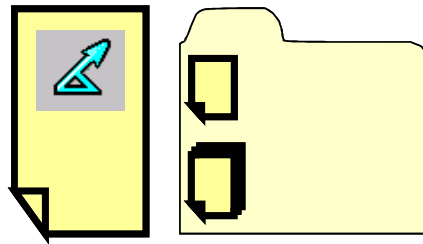
File | Open Project

To check Project Settings:

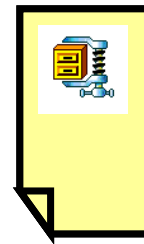
Project Properties (File | Project properties)

# Distance Projects

**Project File + Project Folder**



**Zip archive file**



To export a project to zip archive:

File | Export Project

Save as type “zip archive files \*.zip”

To unpack a project from zip archive, and open:

File | Open

Files of type “zip archive files \*.zip”

# Survey data in Distance

Data Layers

Global layer



Stratum layer



Sample layer



Observation layer





# Survey data in Distance

## Data Layers

Global

Stratum

Sample

Observation

Project Browser

Data | Maps | Designs | Surveys | Analyses | Simulations

Data layers

- Study Area
  - Region
    - Line transect
      - Observation

Contents of Observation layer 'Observation' and all fields from higher layers

Study Area		Region			Line transect			Observation		
ID	Label	ID	Label	Area	ID	Label	Line length	ID	Perp distance	Cluster size
n/a	n/a	n/a	n/a	nautmi2	n/a	n/a	nautmi	n/a	nautmi	[None]
Int	Int	Int	Int	Int	Int	Int	Int	Int	Int	Int
1	Stratify example	1	Ideal Habitat	85000	8	8	59	29	0.6	1
					30	0.1	2			
					9	9	10			
					10	10	13			
					11	11	56			
					12	12	1			
		2	Marginal Habitat	600000	13	13	80	31	0.1	1
					32	0.68	1			
					33	0.31	2			
					34	0.58	2			
					35	0.49	1			
					36	0.46	2			
37	0.36	2								
38	0.09	2								
39	0.03	2								
40	0.49	1								
41	1.94	8								
42	1.1	10								
43	0.85	5								
44	0.63	7								
45	0.38	2								

# Survey data in Distance

## Data Fields

Line transect			Observation		
ID	Label	Line length	ID	Perp distance	Cluster size
n/a	n/a	nautmi	n/a	nautmi	[None]
Int	Int	Int	Int	Int	Int
8	8	59	29	0.6	1
			30	0.1	2
9	9	10			
10	10	13			
11	11	56			
12	12	1			
13	13	80	31	0.1	1
			32	0.68	1
			33	0.31	2
			34	0.58	2
			35	0.49	1
			36	0.46	2
			37	0.36	2
			38	0.09	2
			39	0.03	2
14	14	75	40	0.49	1
			41	1.94	8
			42	1.1	10
			43	0.85	5
			44	0.63	7

Field name

Field type (Integer, Decimal, Text, ID, Label)

Units

# Survey data in Distance

Getting data into Distance:

Data Entry Wizard

Data Explorer

Data Import Wizard

# Analysis in Distance

Distance - Stratify

File View Tools Analysis - Results Window Help

Project Browser

Set: Set 1 Analysis: [Icons]

ID	Name	Cre	# params	Delta.AIC	AIC	ESW	ESW CV	D	D LCL	D UCL	D CV	D DF
17	1 1 1 CDS hr poly	15/10/20	3	22.85	292.61	0.90	0.16	0.050	0.026	0.094	0.323	47.00
18	1 1 2 MCDS hr poly hab	15/10/20	4	24.86	294.62	0.93	0.07	0.048	0.027	0.086	0.289	31.00
19	1 1 3 CDS hr her hab 1	15/10/20	3	22.78	292.54	0.88	0.16	0.050	0.026	0.094	0.322	46.00
20	1 1 4 MCDS hr her hab 1	15/10/20	4	25.11	294.87	0.92	0.07	0.050	0.028	0.089	0.289	31.00
21	1 1 5 MCDS hr her hab 2	11/12/20	4	25.11	294.87	0.92	0.07	0.050	0.026	0.095	0.313	16.00
22	1 1 6 CDS hr poly 1 mult	04/01/20	3	22.85	292.61	0.90	0.16	0.059	0.031	0.115	0.339	47.00
23	1 1 8 Strat trunc	21/02/20	4	5.73	267.31	0.83	0.06	0.053	0.000	0.000	0.000	0.00
24	1 1 9 nostrat cluster size	23/05/20	3	0.00	261.58	0.85	0.06	0.054	0.000	0.000	0.000	0.00
25	1 1 10 nostrat cluster size 1	23/05/20	2	0.00	261.58	0.85	0.06	0.054	0.000	0.000	0.000	0.00

Analysis Components

ID	Model Definitions	Used
1	CDS hr-poly 1 adj	Y
2	MCDS hab hr-poly 1 adj	Y
3	CDS hr-her 1 adj	Y
4	MCDS hab hr-her 1 adj	Y
5	MCDS hab hr-her 1 adj 1	Y
6	CDS hr-poly 1 adj 1	Y
7	CDS hr-poly 1 adj 2	N
8	MCDS hab hr-poly 1 adj str	Y
9	MCDS nostrat cluster size	Y
10	MCDS nostrat cluster size t	Y
11	CDS hr-poly all adj	Y
12	MCDS hab hr-poly df strat	Y
13	MCDS lots params	Y
14	MCDS lots params	Y
15	MCDS lots params	Y
16	MCDS lots params	Y
17	MCDS lots params	Y
18	MCDS lots params	Y
19	MCDS lots params	Y
20	MCDS lots params	Y
21	MCDS lots params	Y
22	MCDS lots params	Y
23	MCDS lots params	Y
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31	MCDS lots params	Y
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41	MCDS lots params	Y
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90	MCDS lots params	Y
91	MCDS lots params	Y
92	MCDS lots params	Y
93	MCDS lots params	Y
94	MCDS lots params	Y
95	MCDS lots params	Y
96	MCDS lots params	Y
97	MCDS lots params	Y
98	MCDS lots params	Y
99	MCDS lots params	Y
100	MCDS lots params	Y

Analysis 19: [CDS hr her hab 1] Set: [Set 1]

Detection Fct/Global/Detection Probability Plot

Analysis 17: [CDS hr poly] Set: [Set 1]

Detection Fct/Global/Detection Probability Plot

Inputs Log Results

# Survey Design in Distance

The screenshot displays the 'Distance - Kudremukh' software interface. The main window is divided into several panels:

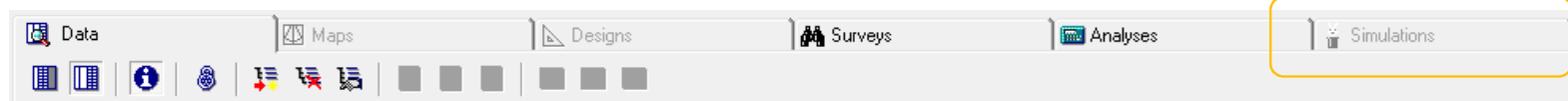
- Project Browser:** Shows a list of surveys. The selected survey is 'Design 15: [3km lines - 5k spacing complete line Grid] ...'. Below this is a table with columns: ID, Name, Created, Run, # lines, and Line length.
- Analysis Components:** A table showing data filters used in the analysis.
- Coverage probability map:** A map showing the coverage probability of the survey design. The legend indicates a color scale from yellow (low probability) to red (high probability).
- Survey map:** A map showing the survey design overlaid on the study area. The legend indicates the survey design (3km lines 5k spacing) and the study area.

ID	Name	Created	Run	# lines	Line length
5	3 3km lines 5km spacing	18/02/2001 11:38:18	18/02/2001 11:38:19	35	29349.19
6	3 3km lines 6km spacing	18/02/2001 11:46:36	18/02/2001 11:46:37		

ID	Data Filters	Used
1	All species	N
2	Sambar	N
3	Guar	N

Region	Grid2 (3km)
Less than 0.002	Less than 0.002
0.002 to 0.004	0.002 to 0.004
0.004 to 0.006	0.004 to 0.006
0.006 to 0.008	0.006 to 0.008
0.008 to 0.010	0.008 to 0.010
0.010 to 0.012	0.010 to 0.012
0.012 to 0.014	0.012 to 0.014
0.014 to 0.016	0.014 to 0.016
0.016 to 0.018	0.016 to 0.018
0.018 to 0.020	0.018 to 0.020
>= 0.020	>= 0.020

# Distance Sampling simulation



The simulation engine permits assessment of estimator or survey design performance by generating populations, sampling from them and estimating density or abundance using the sampled data

