

Wildlife Fatality Estimator



Fatality Estimation tutorial

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Description

The *Fatality Estimation* module produces wildlife fatality estimates according to the following estimators:

- Jain *et al.* (2007);
- Huso (2010);
- Korner-Nievergelt *et al.* (2011).

To know more about the assumptions and limitations of each fatality estimator see Bernardino *et al.* (2013) overview:



Bernardino, J., Bispo, R., Costa, H. & Mascarenhas, M. (2013). Estimating bird and bat fatality at wind farms: a practical overview of estimators, their assumptions and limitations. *New Zealand Journal of Zoology*, 40, 1: 63-74.

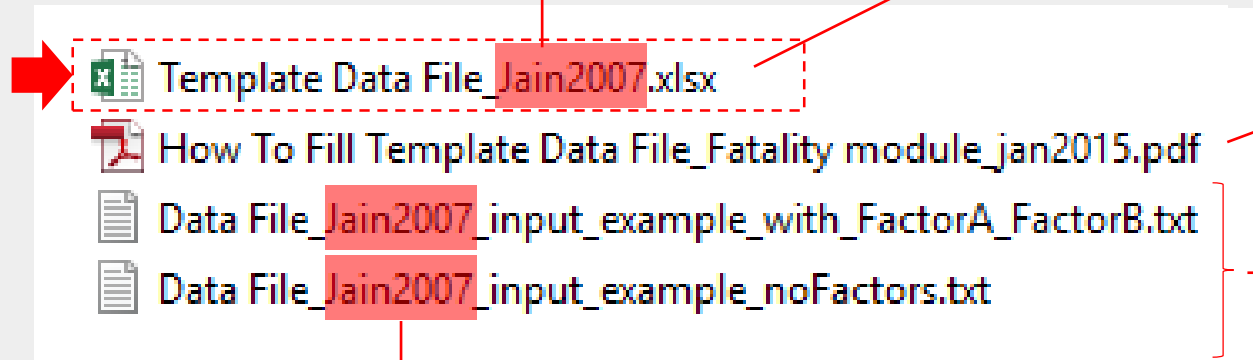
Preparing your data

1. Open the excel file “Template Data File_XXX.xls” contained in the downloaded zip file “WFE_XXX_Instructions_and_Template.zip”. Depending on the estimator that you choose, the template will be different:

Reference to the selected estimator
(Jain2007, Huso2010 or Korner2011)

Reference to the selected estimator
(Jain2007, Huso2010 or Korner2011)

Open this excel file to edit your data



This tutorial. Make sure you have the last version
(download it regularly from the website) since they are
updated regularly.

Examples of how datafile
to be uploaded in the
platform should look like

Reference to the selected estimator
(Jain2007, Huso2010, Korner2011)

2. Input data according to each estimator:
All the estimator use the same type of parameters (observed fatality, carcass removal correction factor and search efficiency factor), but differ either in the type of information or in the parameter name (differences are highlighted in blue):

	Jain et al. (2007)	Huso (2010)	Korner-Nievergelt et al. (2011)
Observed Fatality	C – Number of carcasses found	C – Number of carcasses found	C – Number of carcasses found
Carcass removal correction factor	Sc – Mean persistence rate	Average_t – Mean persistence time (in days)	s – Daily persistence rate
Search efficiency correction factor	Se – Carcass detection probability	p – Carcass detection probability	f – Carcass detection probability

Excel Template Data File for Jain *et al.* (2007) estimator:

C – Number of carcasses found

Sc – Mean persistence rate

Attention:

When using Jain's estimator, the removal correction factor Sc must account the search interval.

Date – Date of the search

Se – Carcass detection probability

Make sure Date is in dd-mm-yyyy format

FactorA, FactorB – Columns referring to the dependent variables of interest.

Mandatory columns
 Optional columns

	A	B	C	D	E	F
1	Date	C	Sc	Se	FactorA	FactorB
2	01-01-2012	0	0.4	0.5		
3	01-01-2012	0	0.5	0.7		
4	01-01-2012	0	0.6	0.9		
5	01-02-2012	0	0.4	0.5		
6	01-02-2012	1	0.5	0.7		
7	01-02-2012	1	0.6	0.9		
8	01-03-2012	1	0.4	0.5		
9	01-03-2012	1	0.5	0.7		
10	01-03-2012	1	0.6	0.9		
11	01-04-2012	1	0.3	0.5		
12	01-04-2012	1	0.4	0.7		
13	01-04-2012	2	0.5	0.9		
14	01-05-2012	1	0.3	0.5		
15	01-05-2012	2	0.4	0.7		
16	01-05-2012	2	0.5	0.9		

Important notes:

- Maximum of 4 levels per factor. Do not use spaces in the level names.
- Do not change column names.

Examples:

- Season (levels: Winter, Spring, Summer, Autumn)
- Carcass size (levels: 1,2,3,4 or small, medium, large)

Excel Template Data File for **Huso (2010)** estimator:

C – Number of carcasses found

Average_t – Mean persistence time (in days)

p – Carcass detection probability

FactorA, FactorB – Columns referring to the dependent variables of interest.

Date – Date of the search

Make sure Date is in dd-mm-yyyy format

Important notes:

- Maximum of 4 levels per factor. Do not use spaces in the level names.
- Do not change column names.

Examples:

- Season (levels: Winter, Spring, Summer, Autumn)
- Carcass size (levels: 1,2,3,4 or small, medium, large)

Legend:

- Mandatory columns
- Optional columns

	A	B	C	D	E	F
1	Date	C	Average_t	p	FactorA	FactorB
2	01-01-2012	0	4	0.5		
3	01-01-2012	0	5	0.7		
4	01-01-2012	0	6	0.9		
5	01-02-2012	0	4	0.5		
6	01-02-2012	1	5	0.7		
7	01-02-2012	1	6	0.9		
8	01-03-2012	1	4	0.5		
9	01-03-2012	1	5	0.7		
10	01-03-2012	1	6	0.9		
11	01-04-2012	1	3	0.5		
12	01-04-2012	1	4	0.7		
13	01-04-2012	2	5	0.9		
14	01-05-2012	1	3	0.5		
15	01-05-2012	2	4	0.7		
16	01-05-2012	2	5	0.9		
17	01-06-2012	2	3	0.5		

Excel Template Data File for *Korner-Nievergelt et al. (2011)* estimator:

C – Number of carcasses found

s – Daily persistence rate

f – Carcass detection probability

Date – Date of the search

Make sure Date is in dd-mm-yyyy format

Attention:
Korner-Nievergelt's estimator requires regular search intervals.

Mandatory columns

Optional columns

	A	B	C	D	E	F
1	Date	C	s	f	FactorA	FactorB
2	03-01-2012	0	0.6	0.5		
3	03-01-2012	0	0.7	0.7		
4	03-01-2012	0	0.8	0.9		
5	31-01-2012	0	0.6	0.5		
6	31-01-2012	1	0.7	0.7		
7	31-01-2012	1	0.8	0.9		
8	28-02-2012	1	0.6	0.5		
9	28-02-2012	1	0.7	0.7		
10	28-02-2012	1	0.8	0.9		
11	27-03-2012	1	0.5	0.5		
12	27-03-2012	1	0.6	0.7		
13	27-03-2012	2	0.7	0.9		
14	24-04-2012	1	0.5	0.5		
15	24-04-2012	2	0.6	0.7		
16	24-04-2012	2	0.7	0.9		

FactorA, FactorB – Columns referring to the dependent variables of interest.

Important notes:

- Maximum of 4 levels per factor. Do not use spaces in the level names.
- Do not change column names.

Examples:

- Season (levels: Winter, Spring, Summer, Autumn)
- Carcass size (levels: 1,2,3,4 or small, medium, large)

3. Copy/paste the data to a .txt file:

Example of .txt datafile to use for
Korner-Nievergelt *et al.* (2011)
estimator with 2 factors, A and B

File	Edit	Format	View	Help		
Date	C	s	f	FactorA	FactorB	
03-01-2012		0	0.6	0.5	Level1	Level1
03-01-2012		0	0.7	0.7	Level1	Level2
03-01-2012		0	0.8	0.9	Level1	Level3
31-01-2012		0	0.6	0.5	Level1	Level1
31-01-2012	1		0.7	0.7	Level1	Level2
31-01-2012	1		0.8	0.9	Level1	Level3
28-02-2012	1		0.6	0.5	Level1	Level1
28-02-2012	1		0.7	0.7	Level1	Level2
28-02-2012	1		0.8	0.9	Level1	Level3
27-03-2012	1		0.5	0.5	Level2	Level1
27-03-2012	1		0.6	0.7	Level2	Level2
27-03-2012	2		0.7	0.9	Level2	Level3
24-04-2012	1		0.5	0.5	Level2	Level1
24-04-2012	2		0.6	0.7	Level2	Level2
24-04-2012	2		0.7	0.9	Level2	Level3
22-05-2012	2		0.5	0.5	Level2	Level1
22-05-2012	2		0.6	0.7	Level2	Level2

Example of .txt datafile to use for
Korner-Nievergelt *et al.* (2011)
estimator with no factors

File	Edit	Format	View	Help
Date	C	s	f	
03-01-2012		0	0.6	0.5
03-01-2012		0	0.7	0.7
03-01-2012		0	0.8	0.9
31-01-2012		0	0.6	0.5
31-01-2012	1		0.7	0.7
31-01-2012	1		0.8	0.9
28-02-2012	1		0.6	0.5
28-02-2012	1		0.7	0.7
28-02-2012	1		0.8	0.9
27-03-2012	1		0.5	0.5
27-03-2012	1		0.6	0.7
27-03-2012	2		0.7	0.9
24-04-2012	1		0.5	0.5
24-04-2012	2		0.6	0.7
24-04-2012	2		0.7	0.9
22-05-2012	2		0.5	0.5

4. Your .txt file is ready to be uploaded to the platform. Just follow the steps to get your estimates.

References

This module is based on the work from the following authors:

Huso, M. (2010). An estimator of wildlife fatality from observed carcasses. *Environmetrics*, 22: 318-329.

Jain, A., Kerlinger, P., Curry, R. & Slobodnik, L. (2007). Annual Report for the Maple Ridge Wind Power Project: Postconstruction Bird and Bat Fatality Study - 2006. Final Report. Curry and Kerlinger, LLC.

Korner-Nievergelt, F., Korner-Nievergelt, P., Behr, O., Niermann, I., Brinkmann, R. & Hellriegel, B. (2011). A new method to determine bird and bat fatality at wind energy turbines from carcass searches. *Wildlife Biology*, 17:350-363.

How to contact us in case of platform inquiries or assistance

Please send us an email with your questions/suggestions referring “WFE platform” on your email’s subject field:
info@bioinsight.pt