

Process analyses of game damage survey in the field of behavioural research.

Preparation of Data for further
research.



Content

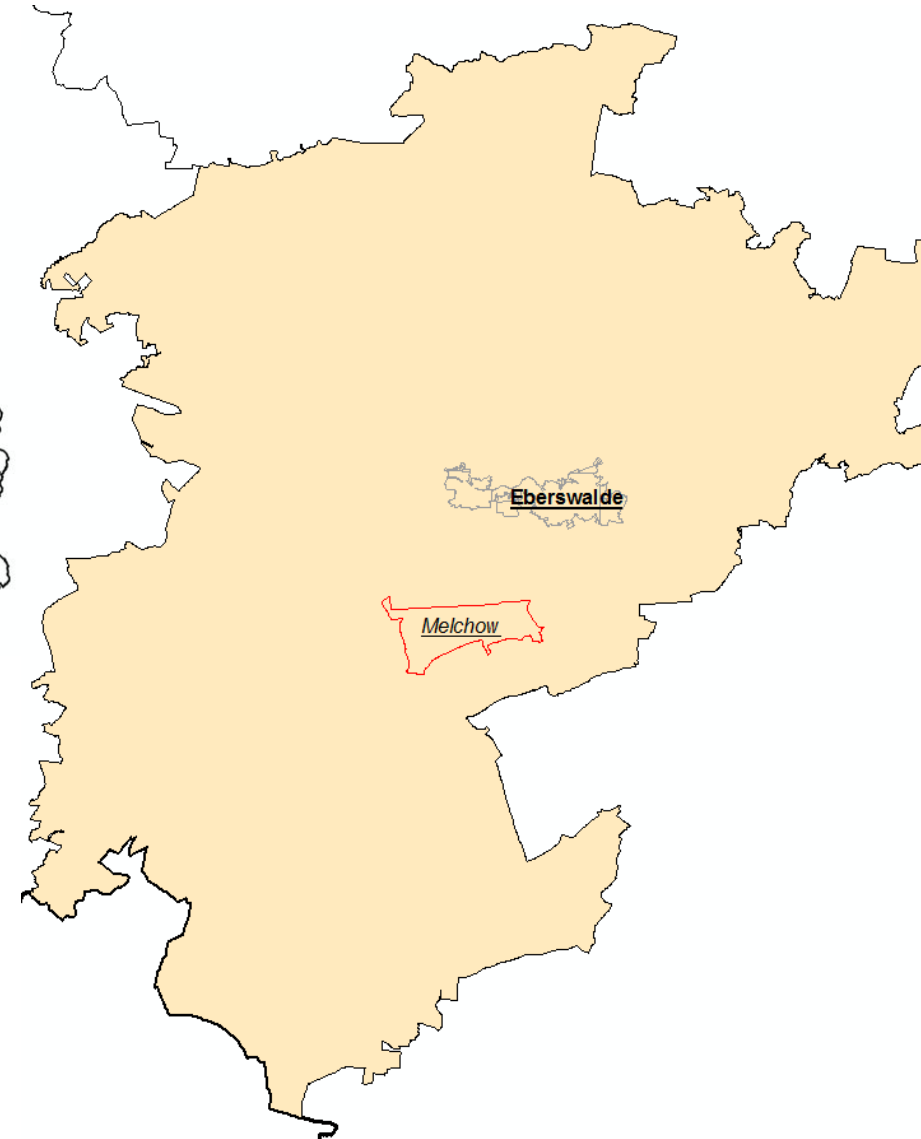
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Problem description - Objectives

Main question: If and how the easily accessible food supply, as offered by energy wood plantations, changes the manner of game animals referring to the forest-field-border and day-night behaviour.

Analyse EFFICIENCY of existing game damage survey approaches in the field of behavioural research.

Study Area



- Federal State Brandenburg
- Administrative District Barnim



- Schönholz , commune
Melchow
- Forestry office
Eberswalde/Chorin –
District Schönholz

Biodem Project

- HNEE Project (2006)
- > 20 experimental sites in Brandenburg
- Schönholz areas – founded 2010 (till 2014)
- *Salix spec.*, *Populus spec.*
(*Robinia pseudoacacia*, *Alnus incana*,
Alnus altissima)
- groundwater availability, soil quality,
previous use (local climatic influence)



SOURCE: [www.hnee.de/Projekte-aktuell\[...\]htm](http://www.hnee.de/Projekte-aktuell[...]htm)



Source: Google Maps 2013



Source: Friederike Borges



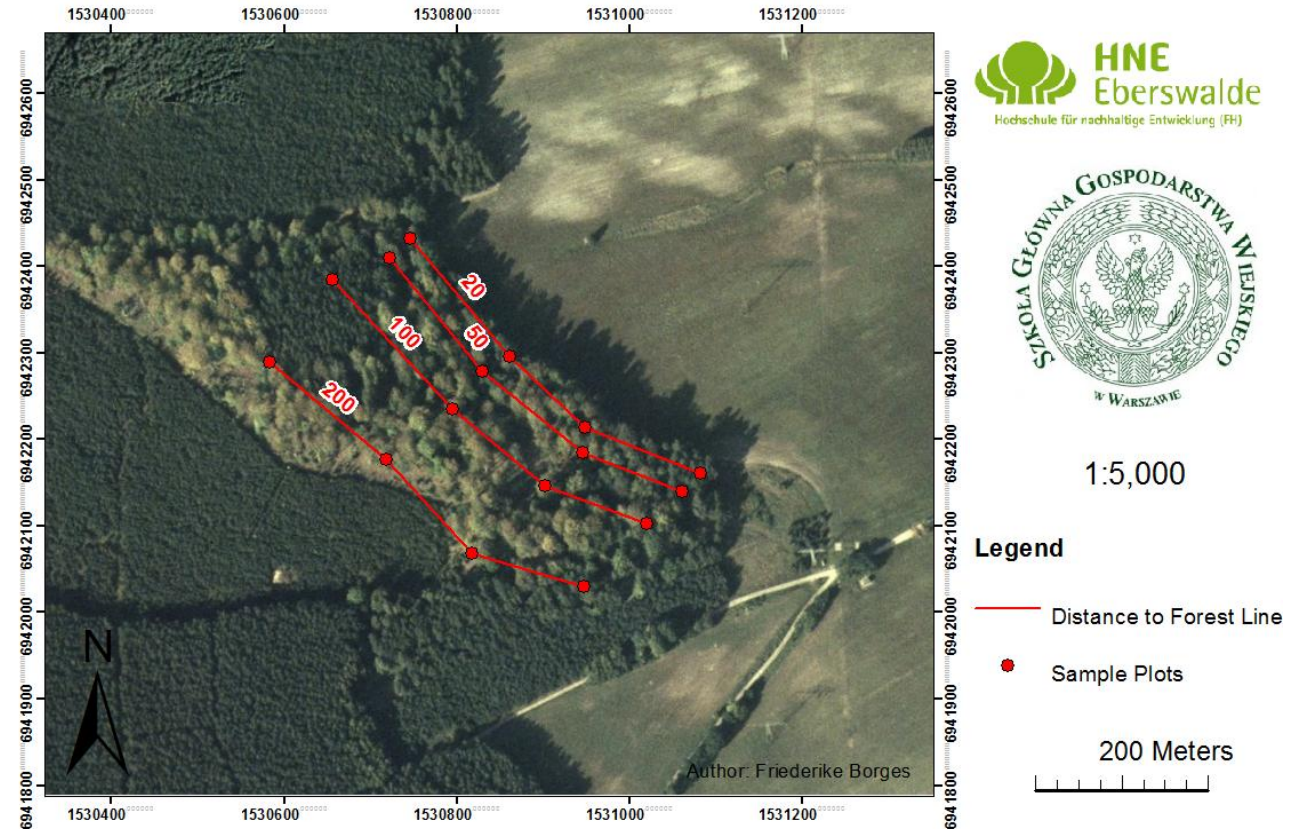
Source: Friederike Borges

Data - Collection

- sample plots established on long-term base
- location measured with GPS-handheld



Source: Friederike Borges



Categorisation of Seedlings

Height-Class		Damage-Class Browsing/Peeling		Damage caused by hoofed game/hare	
HC - 1	up to 20cm	B - 1	apical shoot or apical shoot and side shoot/-s	S	Hoofed Game
HC - 2	21 - 40 cm	B - 2	only side shoot/-s	H	Hare
HC - 3	41 - 80 cm	B - 3	no damage	Z	combination
HC - 4	81 - 130 cm	P - 1	noticeable peeling		
HC - 5	130cm and above	P - 2	no damage		

- equipment: yardstick, string
- seedling in 3 m/5 m radius registered
- categorised by tree species, height , damage and animal species that caused damage



Source: Friederike Borges



Source: Friederike Borges

Pre-Processing

- Visualization – Arc Map 10
- Manual entered – Microsoft Excel

- Edited – R

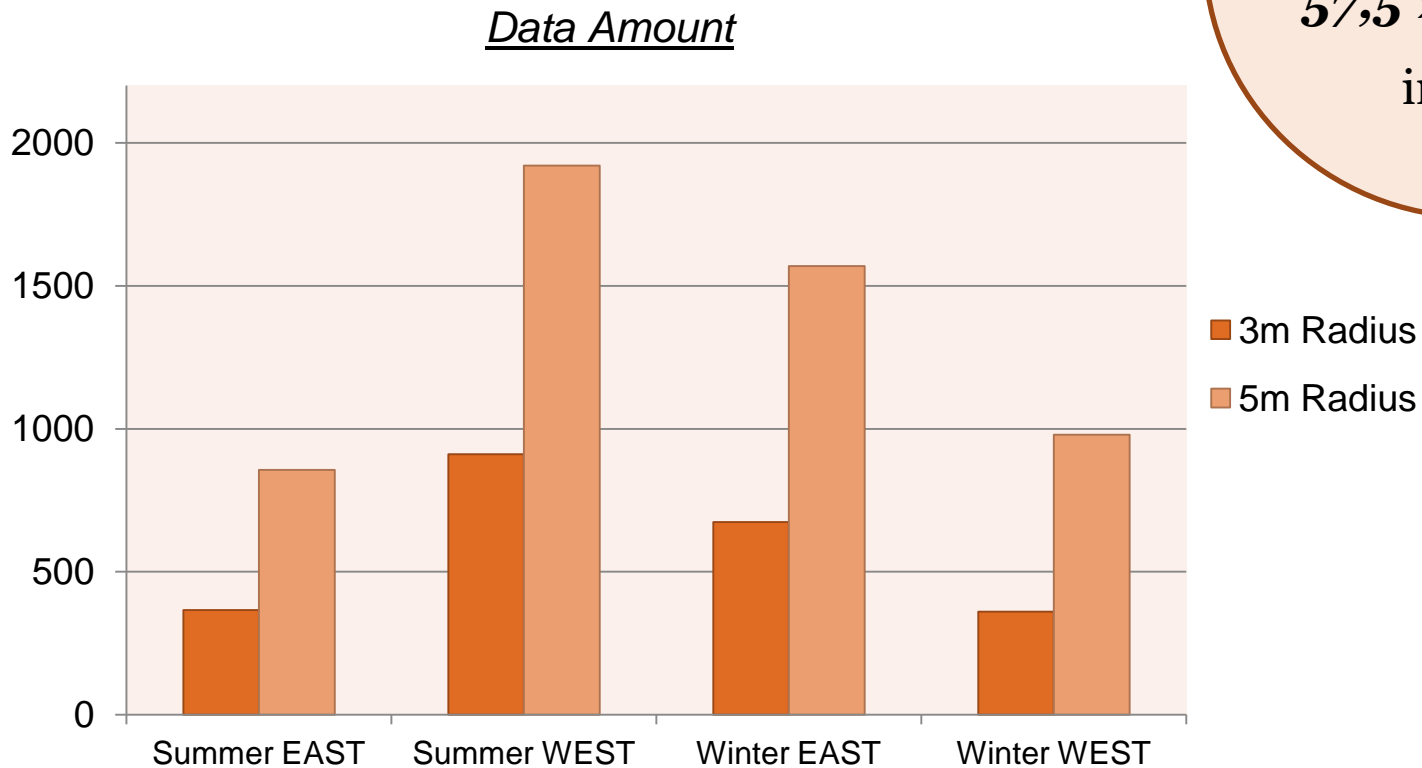
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> df.xp=df[rep(row.names(df),df$Number),1:7]
```

```
> write.table(df.xp,"c:/R/winter_east.csv",sep=","|
```

- Statistical approach – SPSS/Microsoft Excel

	A	B	C	D	E	F	G
1	Plot Number	Radius	Tree Species	Height Class	Number	Damage Class	Hoofed Game/Rabbit
2	1	3	WLI	1	2	3	O
5	1	3	SEI	1	2	3	O
6	1	3	AH	3	15	3	O
26	3	3	RBU	1	7	3	O
75	11	5	RBU	4	2	3	O
76	11	5	RBU	1	2	3	O
78	12	3	GES	1	2	3	O
98	14	3	HBU	3	7	3	O
100	14	3	RBU	3	2	3	O
103	14	5	HBU	3	40	3	O

Results - Data Amount

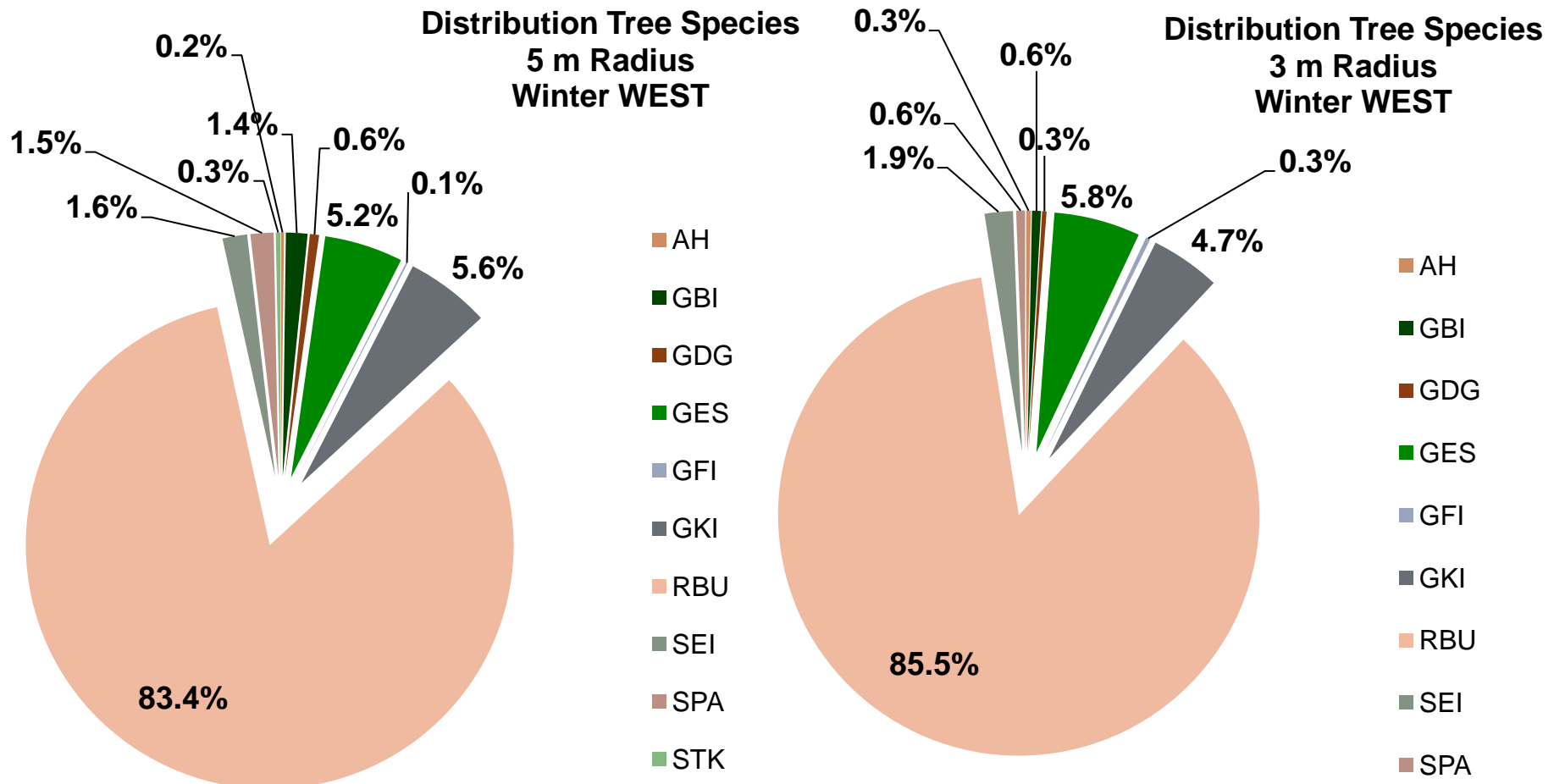


3m Radius

-

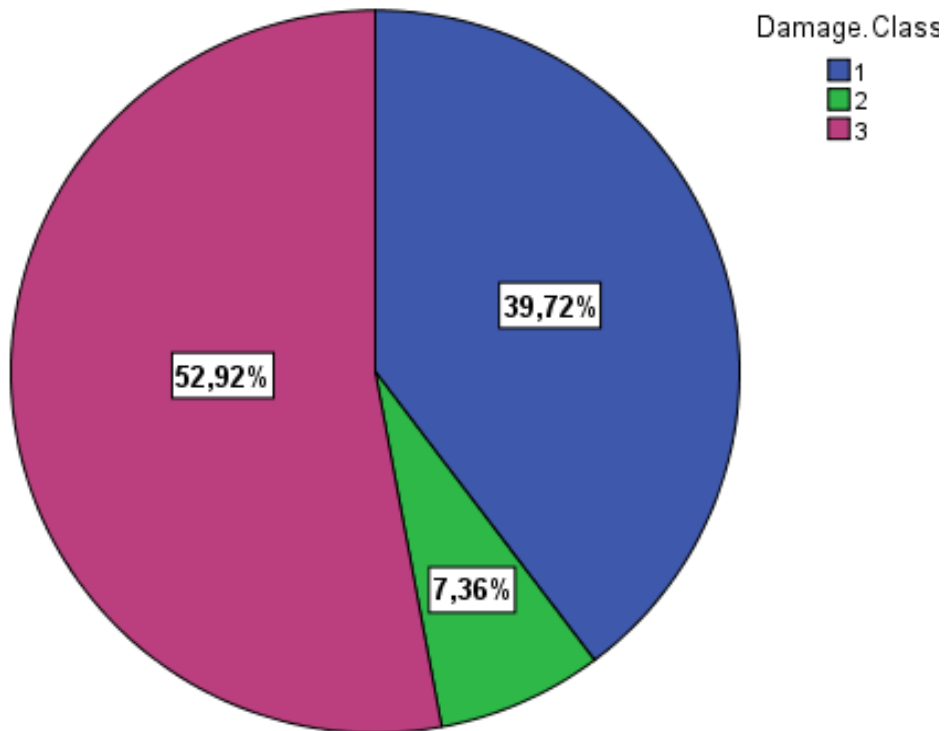
57,5 % less data
in total

Results - Tree Species Distribution

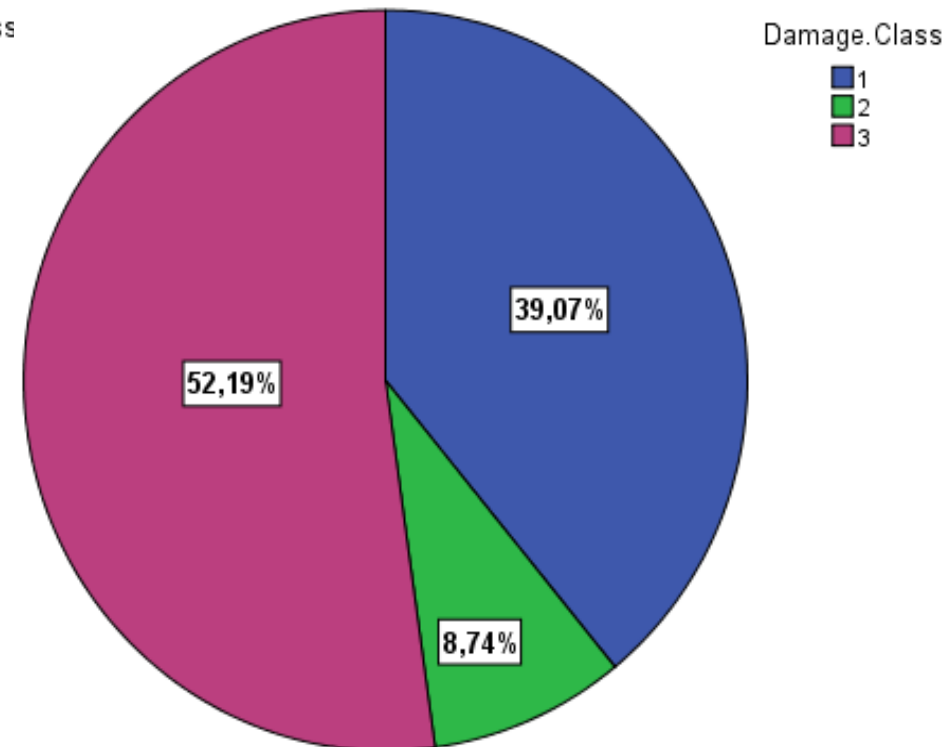


Results - Damage Class Distribution

Distribution Damage Classes - 5 m Radius



Distribution Damage Classes - 3 m Radius

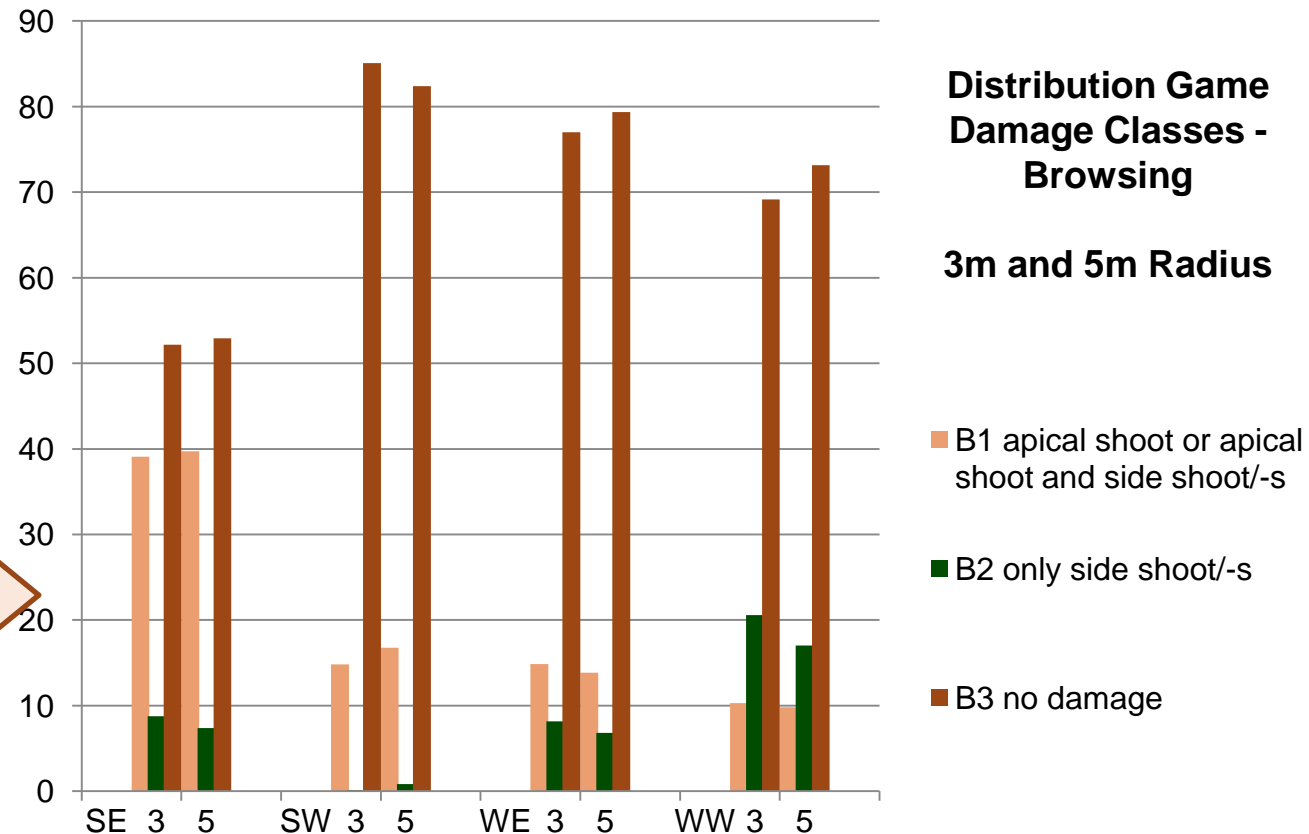


Example: Examination Side – Summer East

Results - Damage Class Distribution

97,1 % equal
distribution
in average

Variations
because of
**total not relative
numbers**



Discussion - Outlook

Challenges:

- long-term survey – not all data collected!
- insufficient amount of data for appropriate statistical approaches!
- one sample side – result at other forest stands similar?

Further Research:

- Produce a user friendly method to handle data outcome for continuous research.
- Examine the effect of a plantation of fast-growing tree species to the behaviour of game damage to the surrounded forest.
- Explore influence of energy wood plantations on migration behaviour of hare and hoofed game.

References

- Szukiel, E.: Damage caused by hares in forest and ways of its reduction. Ecol. A. mgmt. of Europ. hare pop., Warsawa 1976
- Friedrich, M.; Schreiber, R.: Wildverbiss mit Weiserflächen beurteilen. LWF-Merkblatt Nr. 25, 2009
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- Müller, P.: Game Conservancy Deutschland e.V., Lebendige Natur durch nachhaltige Nutzung. GCD-Nachrichten, 18.Jahrgang Heft 1, P.1-4
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- Biodem Project Main Page: <http://www.hnee.de/Projekte-aktuell/Forschungsgruppe-Agrarholz/BIODEM/BIODEMVersuchs-und-Demonstrationsflaechen-zum-Anbau-schnellwachsender-Baumarten-im-Kurzumtrieb-K3641.htm>

Thank you for your kind attention!

Do you have Questions ?

A decorative graphic consisting of several horizontal lines of varying lengths and colors (dark green, light green, white) extending from the right side of the slide towards the center.