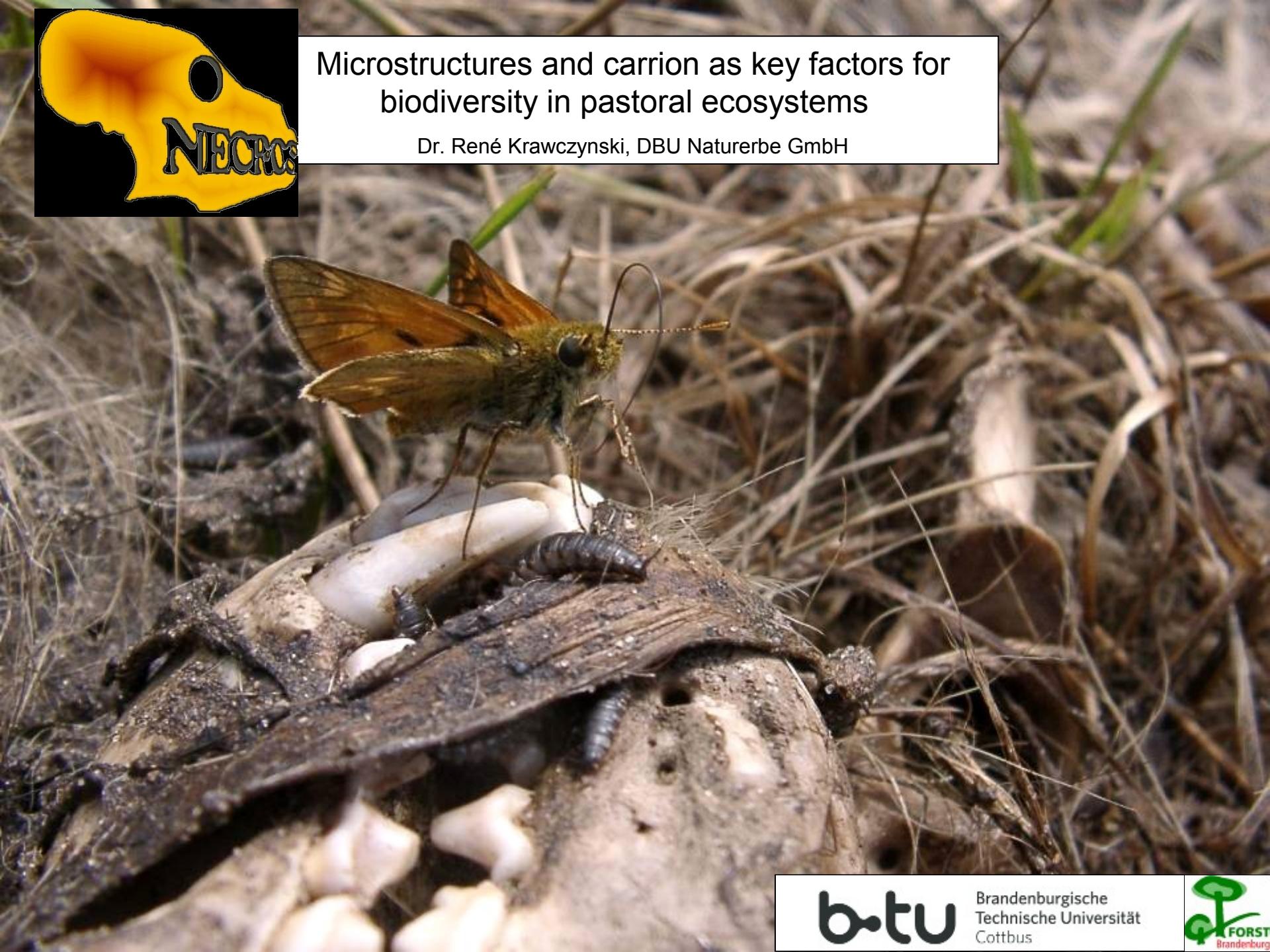




# Microstructures and carrion as key factors for biodiversity in pastoral ecosystems

Dr. René Krawczynski, DBU Naturerbe GmbH



# What do Robins eat?



„Food: Insects and other small Invertebrates, berries in autumn“

BLV Bestimmungsbuch Vögel, p. 237



Ein Foto beweist, daß die anpassungsfähigen Rotkehlchen auch Fische fangen können. Rechts Fotograf Groß

## Jagd im Wasser

### Ein zoologisches Dokument wurde Tierfoto des Jahres

Eigentlich war der Fuldaer Kaufmann und Amateurfotograf Robert Groß im Winter 83/84 losgezogen, um fischende Eisvögel zu fotografieren. Daß er von der Deutschen Gesellschaft für Tierfotografie mit dem 1.

Preis für das beste Tierfoto des Jahres ausgezeichnet wurde, verdankt er keinem Eisvogel, sondern einem fischenden Rotkehlchen.

Über zwei Winter versuchte Groß, das ungewöhnliche Motiv gefällig vor die

Source: „Ein Herz für Tiere“

Linse zu bekommen. Der für die insektenfressenden Rotkehlchen besonders entbehrungsreiche Winter lieferte den Grund, warum ein schlaues Exemplar dieser Art den Eisvögeln das Beutemachen abgeguckt hat. ■

## Where do „Wall Gliders“ breed?



Actually  
„Common Swift“

„Habitat: breeds in houses and natural stone walls; mainly in cities“ BLV Bestimmungsbuch Vögel, S. 175

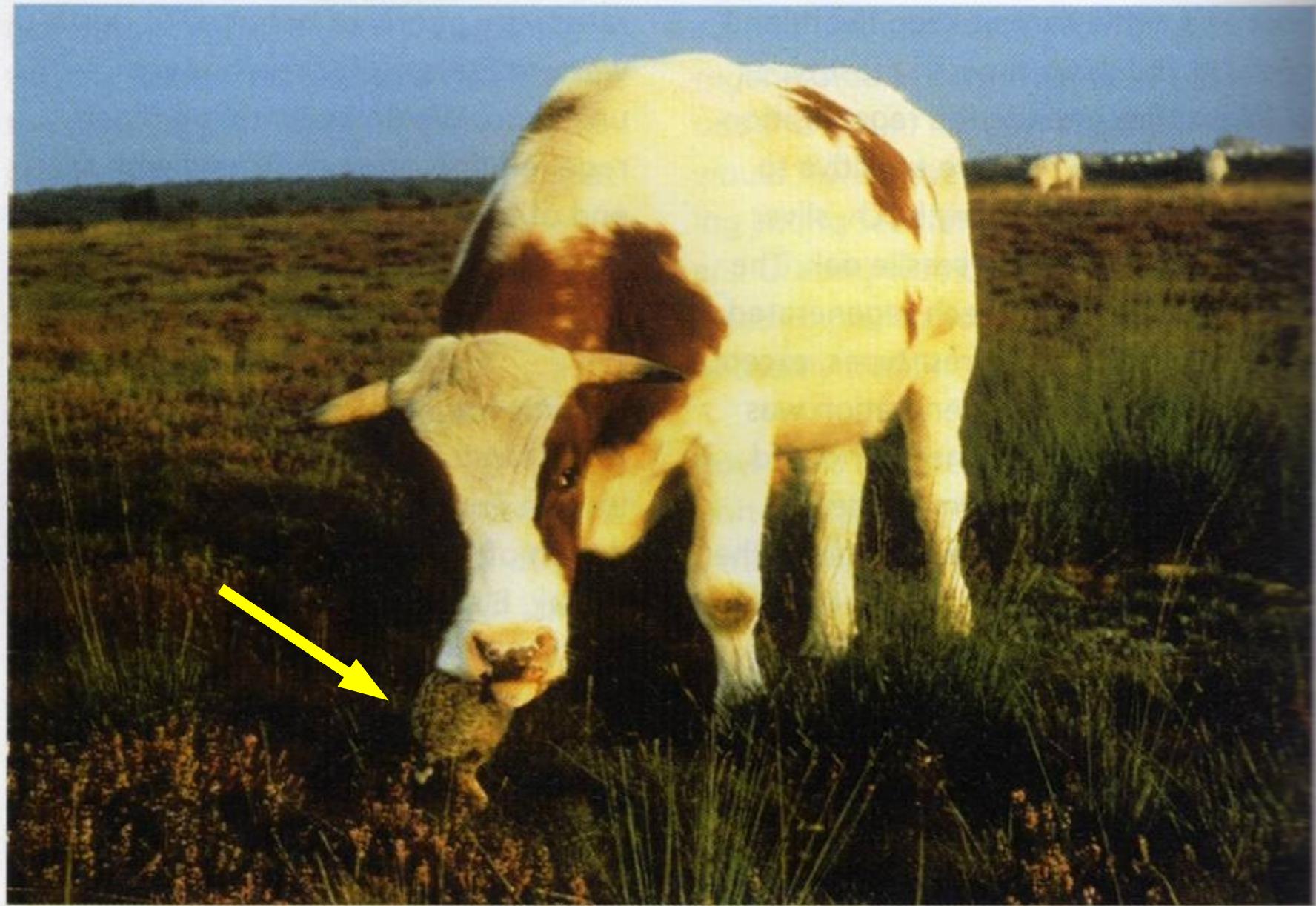
FFH-Area Tauersche Eichen, ca. 1.000 ha



lat. Name in Geßners Thierleben 1669

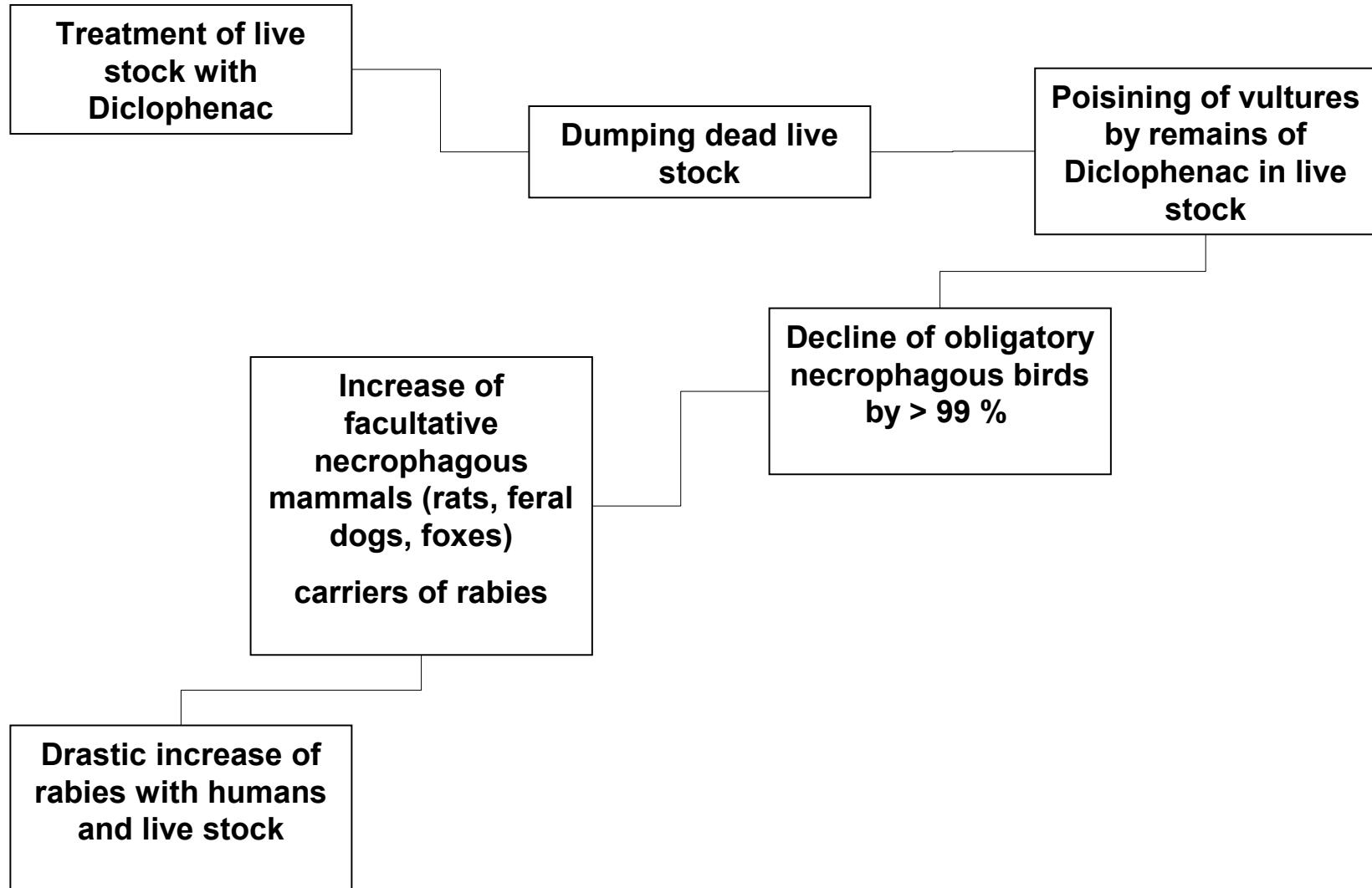
*Hirundo sylvestris*

Foto: Alter



*Poor soils are by definition short on food. This photo shows how a cow resolves the mineral shortage by eating a dead rabbit. Photo: Michiel Wallis de Vries.*

# **Ecological consequences of human interference in carrion food webs** (according to Green et al. 2004)





objectives:

vertebrates using carrion

Microflora

invertebrates using carrion

development of methods

Game killed by accidents  
(hunting, traffic)  
hunted game was opened  
carcasses of wild boar, roe  
deer, fox, muffle, red deer calf

## Material & Methods

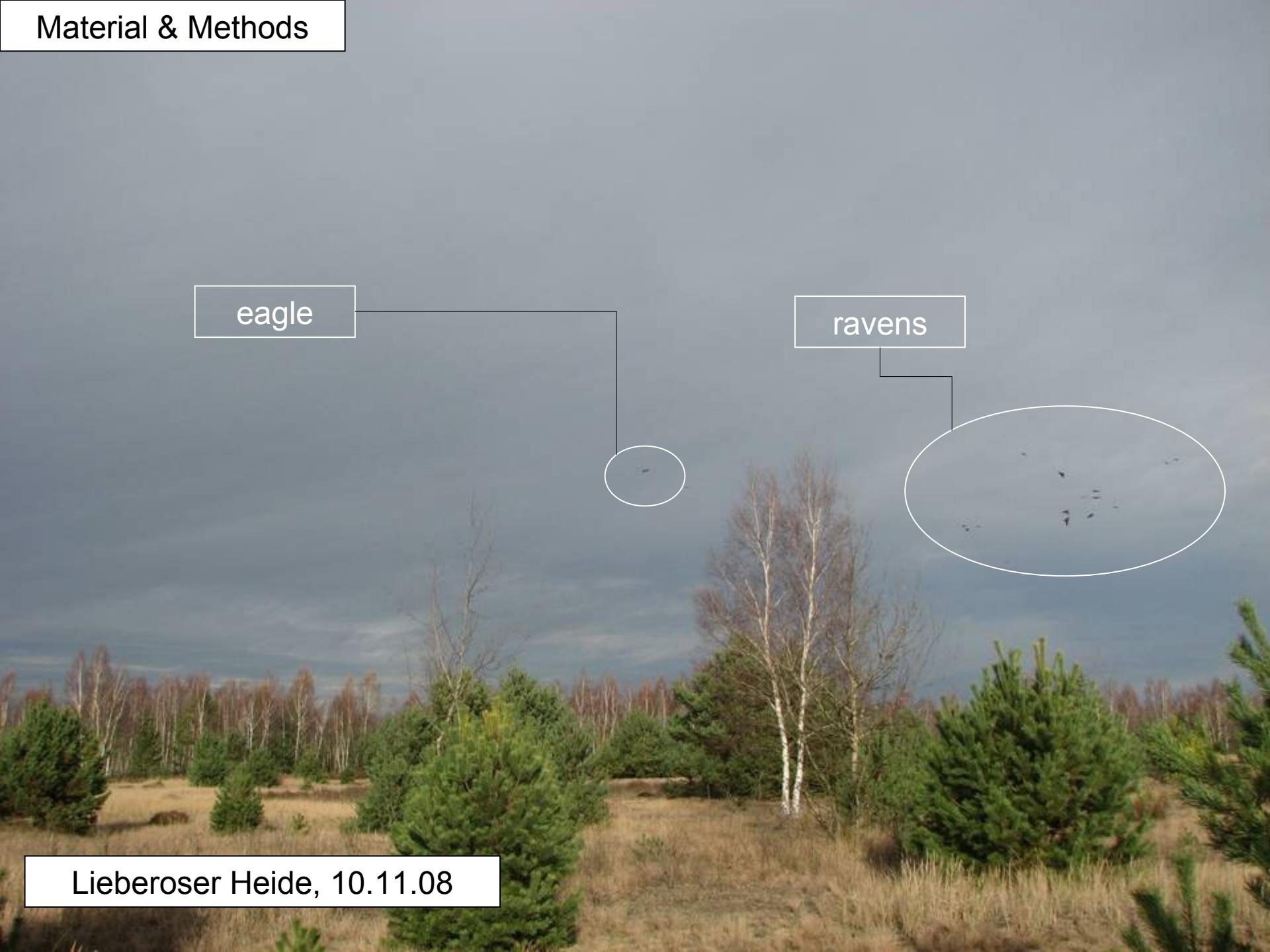


### Lieberoser Heide

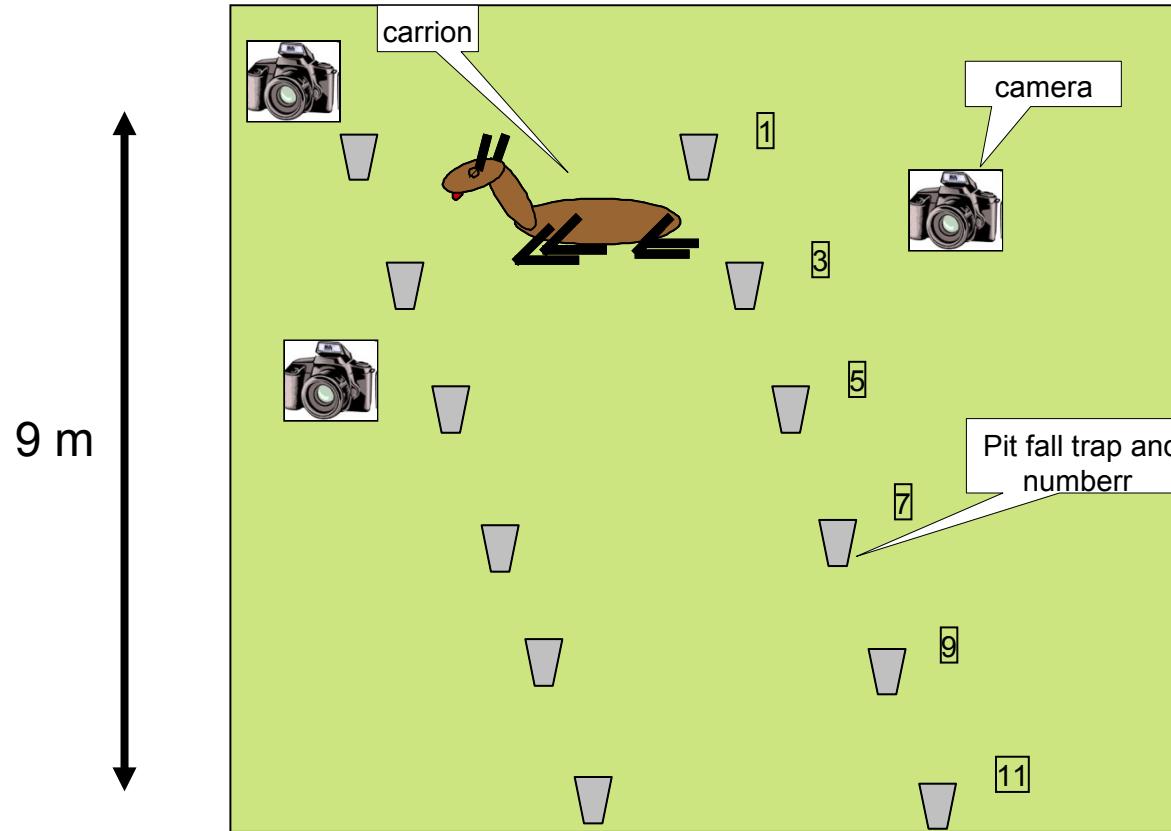
necrophagous vertebrates present (wild boar, fox, white tailed eagle, red kite, black kite, raven, wolf)

few human disturbances  
(former military training area)

## Material & Methods



## Material & Methods



Change of batteries, SD-cards and pitfall traps every Monday, Wednesday and Friday

Results: liverwort *Cephaloziella divaricata*, Lieberoser Heide, November 2008



Mikro fungus,  
unknown to science

results: time to decompose



## Results: vertebrate scavengers



KEEP GUARD

12 22 2008 6:44:23

# Fox puppet hunting insects



Results: dung of a badger



Pine marten looking for carcass under snow



# Raccoon dog looking for carcass under snow



## Results: vertebrate scavengers



In summer,  
crows search for  
insects at the  
carcass

## Results: vertebrate scavengers



Ravens do not eat at the spot  
carry the meat away to hide it.

## Results: vertebrate scavengers



Red kites feed at the carcass but also steal from raven storage.

## Results: vertebrate scavengers



Eagles seemed  
to dominate the  
scene when  
looking only at  
photos.

11/11/2008 12:18 AM

## Results: ravens mobbing other birds



## Results: vertebrate scavengers



01/16/2009 10:44 AM

Black birds and tits feed on the carcasses' fat in winter.

Without large vertebrate scavengers like wolf or vultures it is difficult to open the carcass.



## Results: invertebrate scavengers



Holes of Taurus Beetle (*Typhaeus typhoeus*) under a carcass, Lieberoser Heide,  
7.11.08



*Necrophorus vestigator*

*Necrodes littoralis* RL D 3, BB 3

*Hister quadrinotatus* RL D 3, BB r

*Hetaerius ferrugineus* RL 3

*Saprinus immundus* RL 3

*Necrophorus vestigator* RL BB 3

*Necrophorus sepultor* RL BB 0

*Hister quadrinotatus*



## Results: butterflies

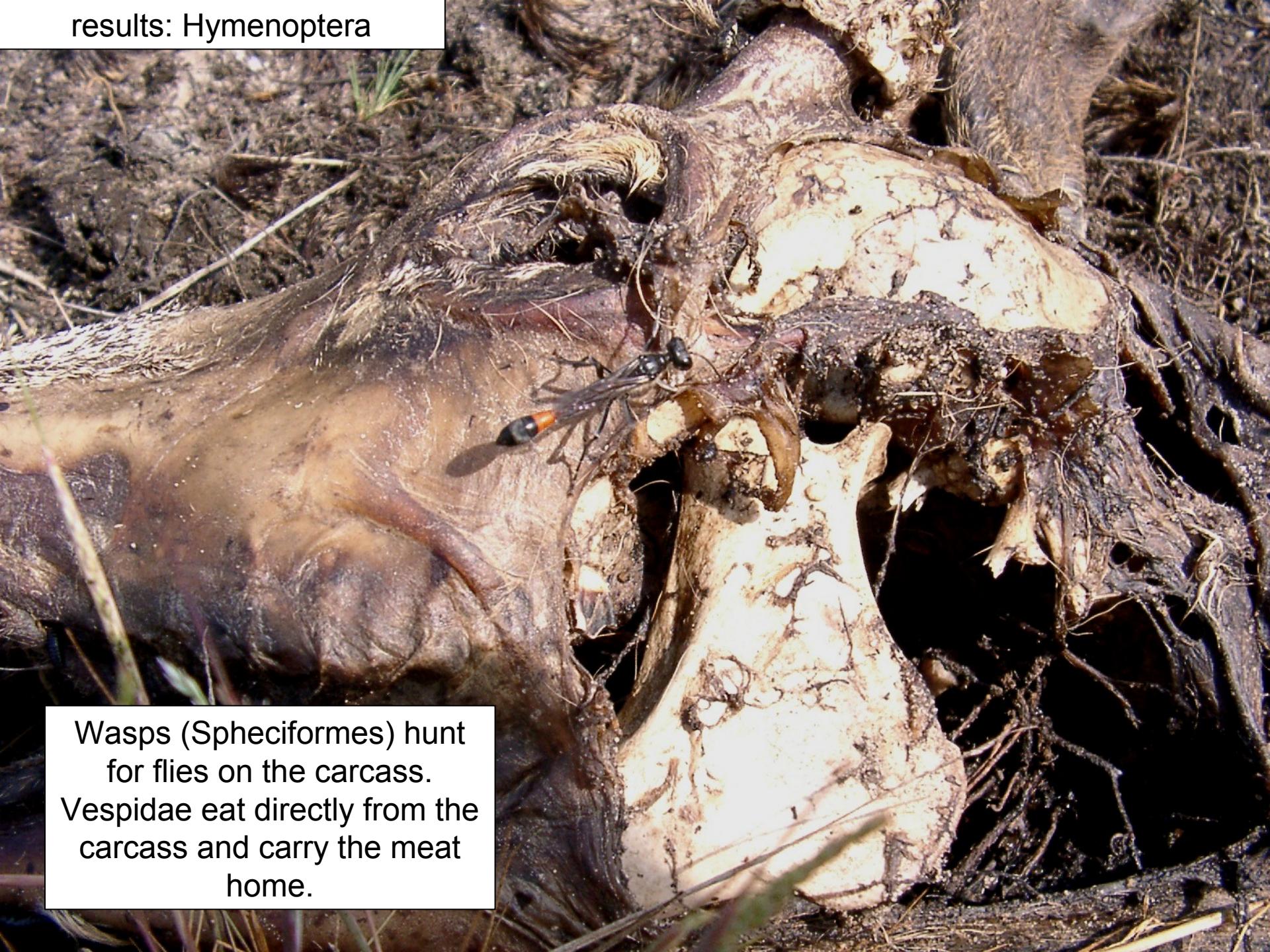


## Results: grasshoppers





results: Hymenoptera

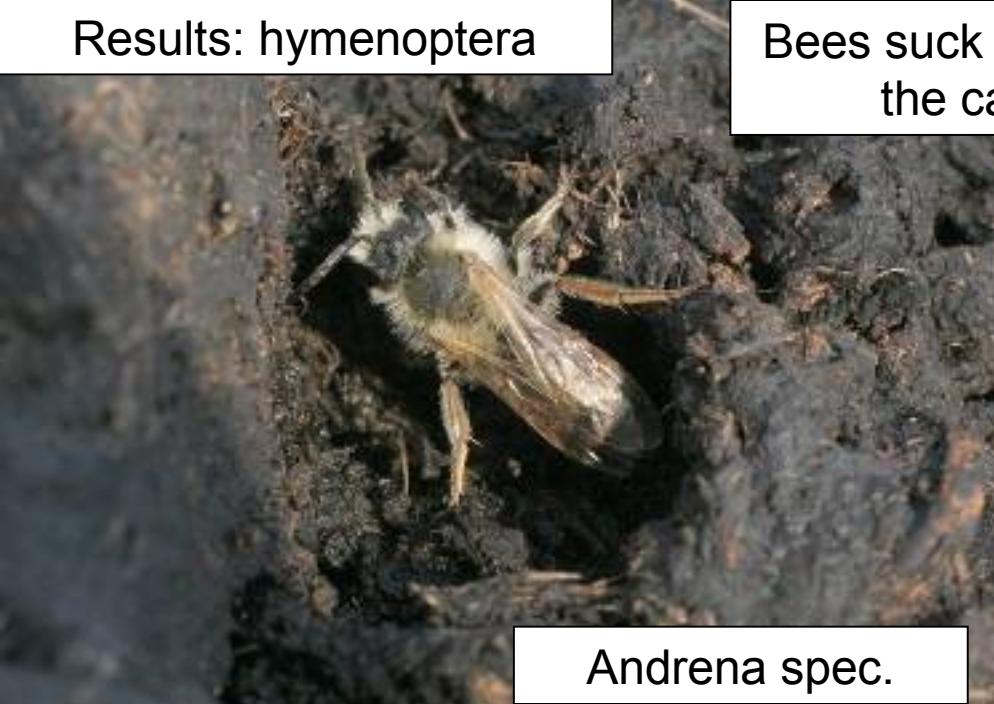


Wasps (Spheciformes) hunt  
for flies on the carcass.

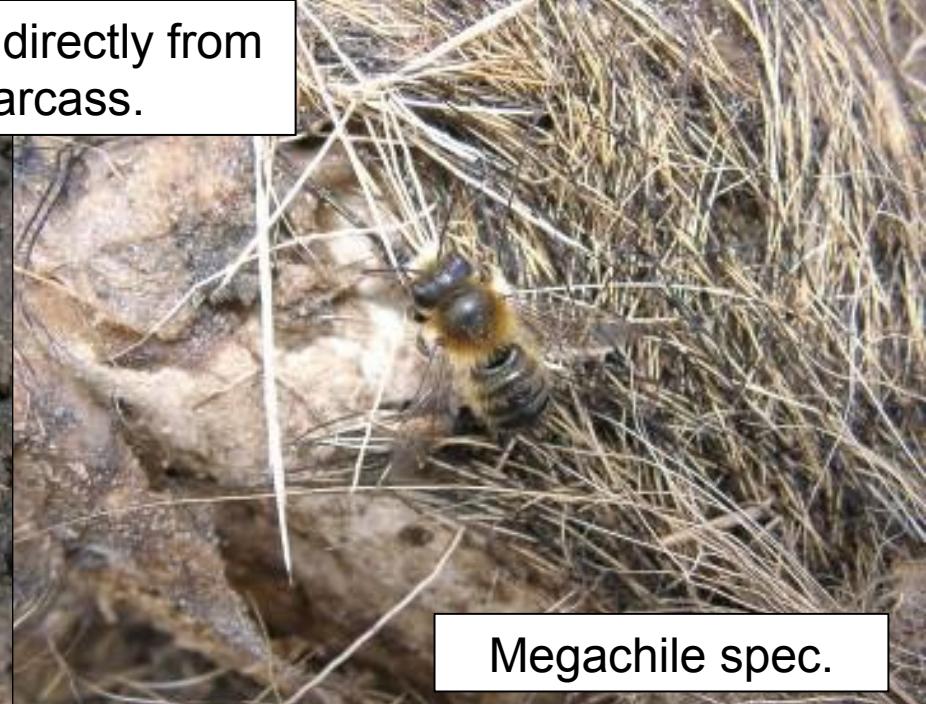
Vespidae eat directly from the  
carcass and carry the meat  
home.

## Results: hymenoptera

Bees suck directly from the carcass.



Andrena spec.



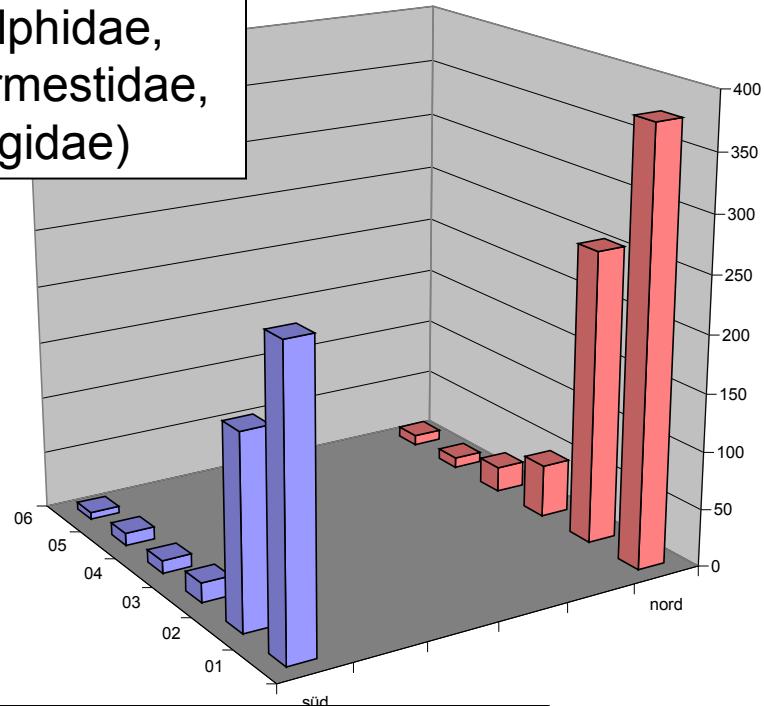
Megachile spec.



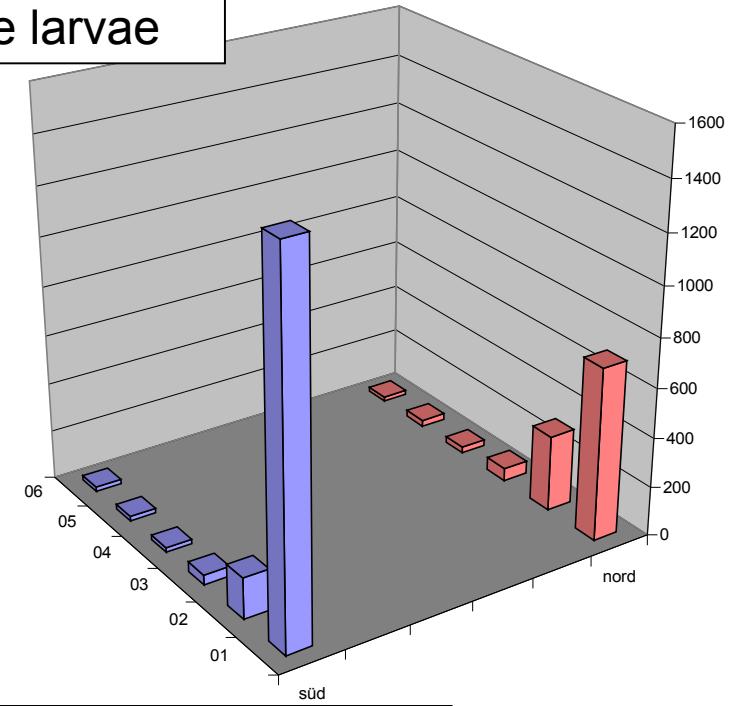
Ants carry away dead insects and hunt small maggots.



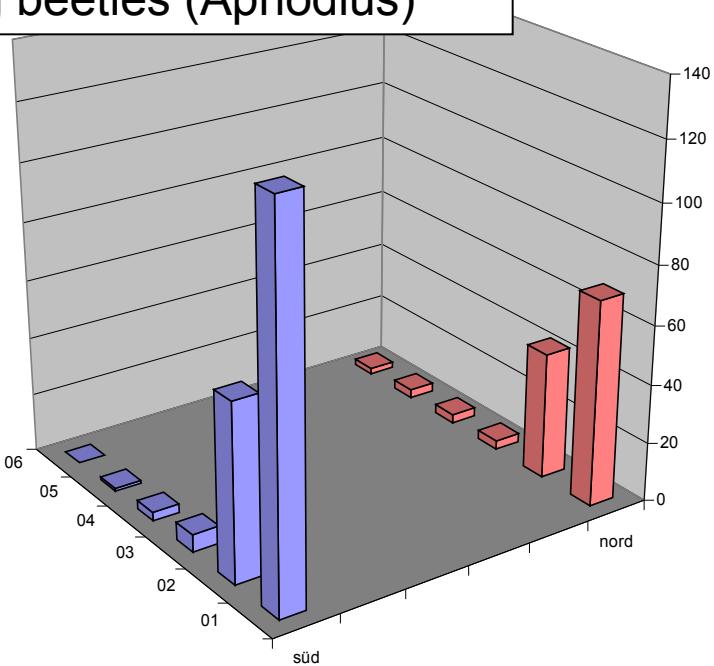
(Silphidae,  
Dermestidae,  
Trogidae)



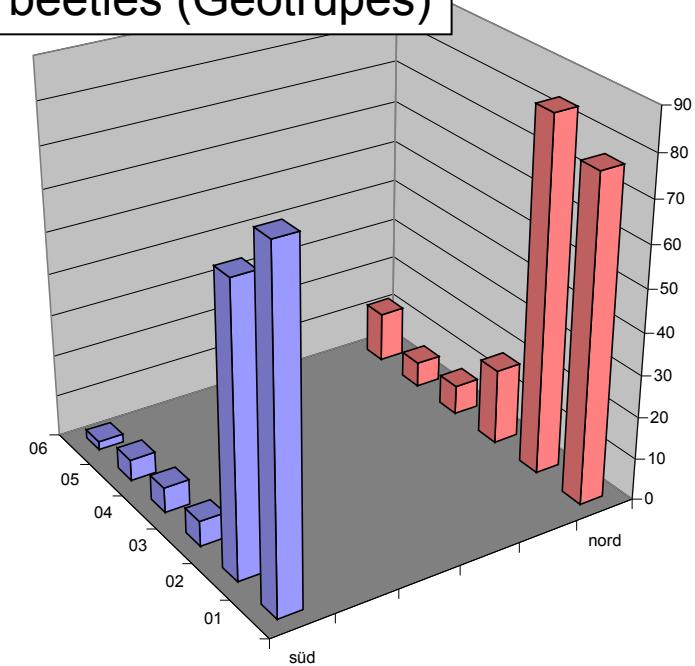
Beetle larvae



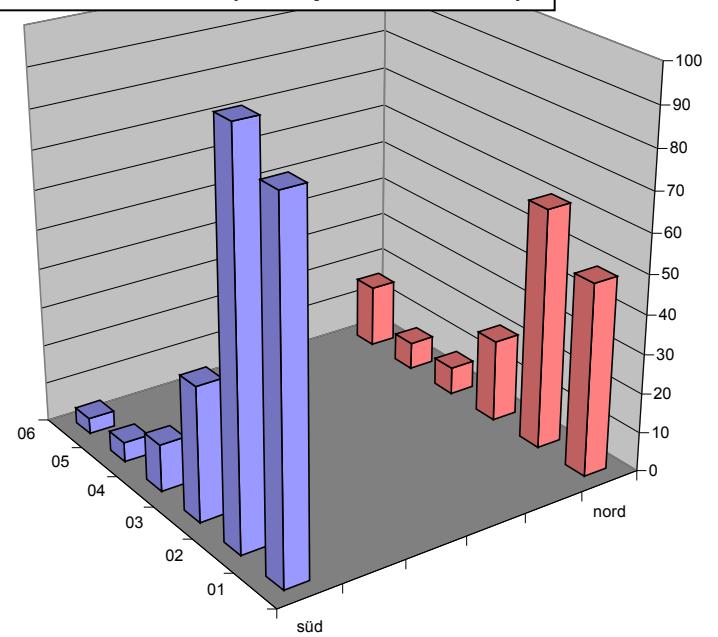
Dung beetles (Aphodius)



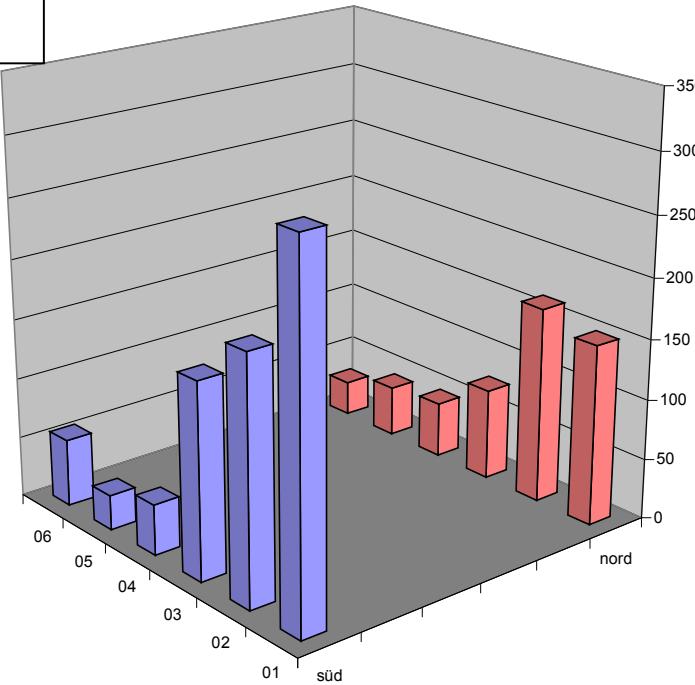
Dung beetles (Geotrupes)



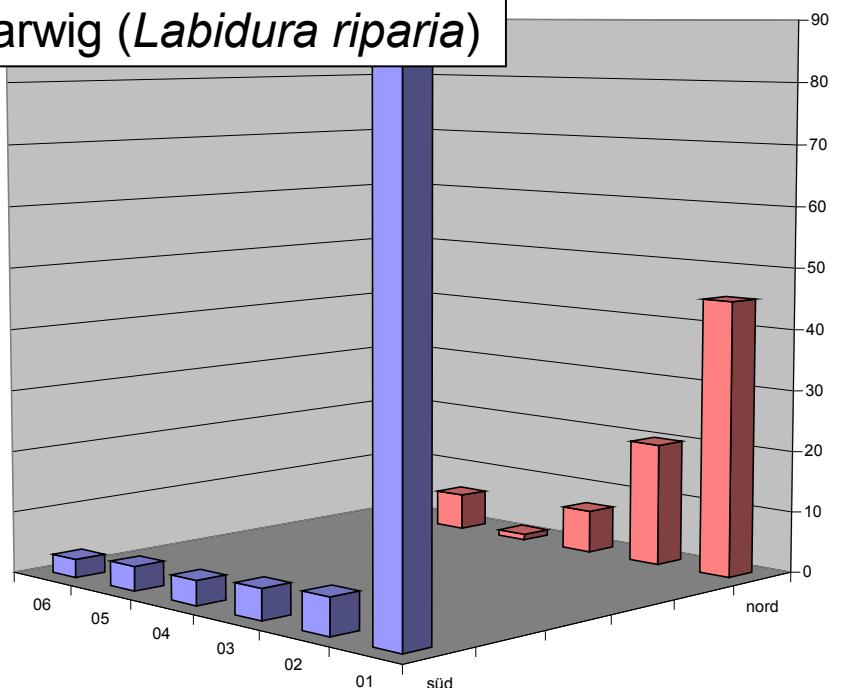
## Rove beetles (Staphinilidae)



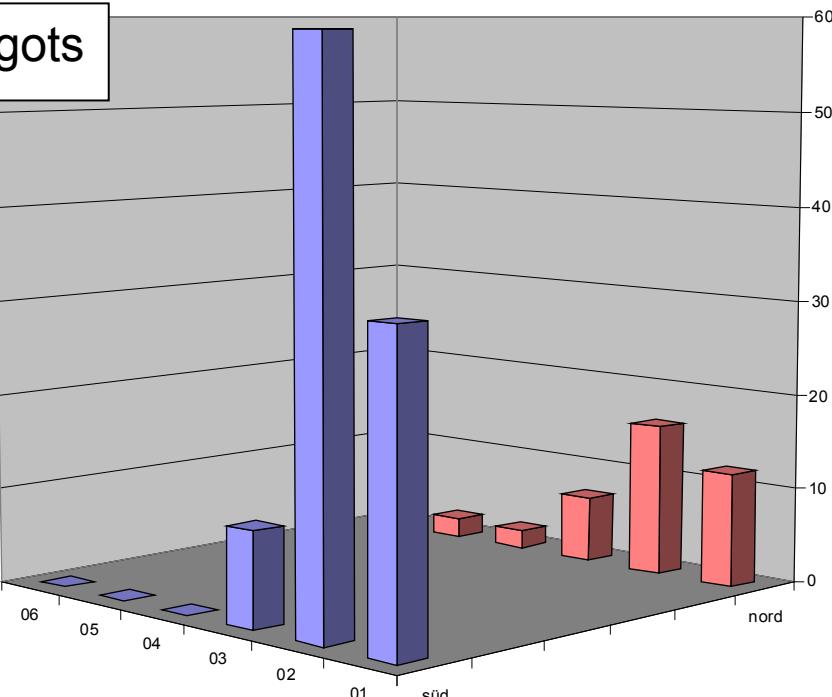
## Flies

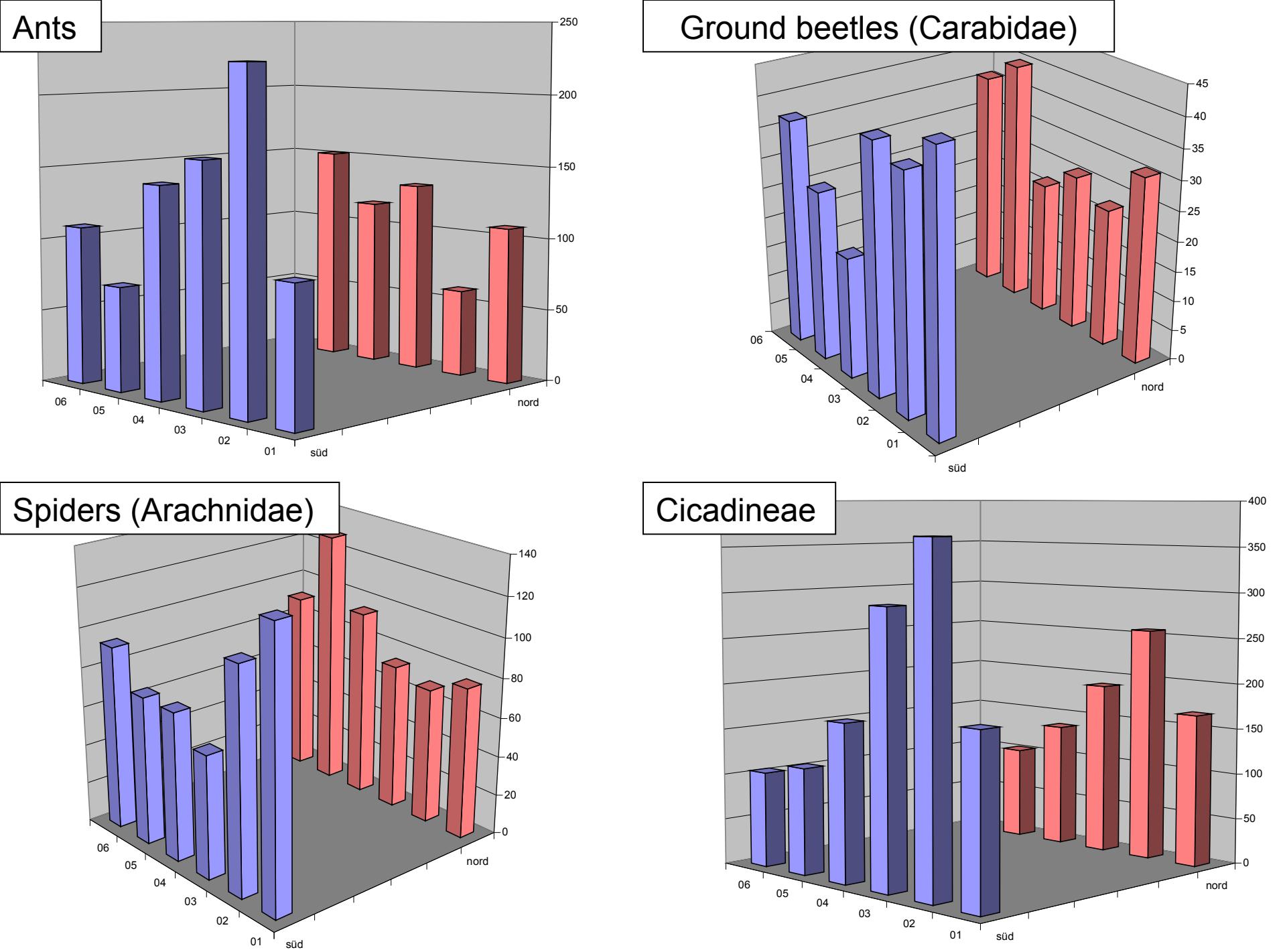


## Earwig (*Labidura riparia*)

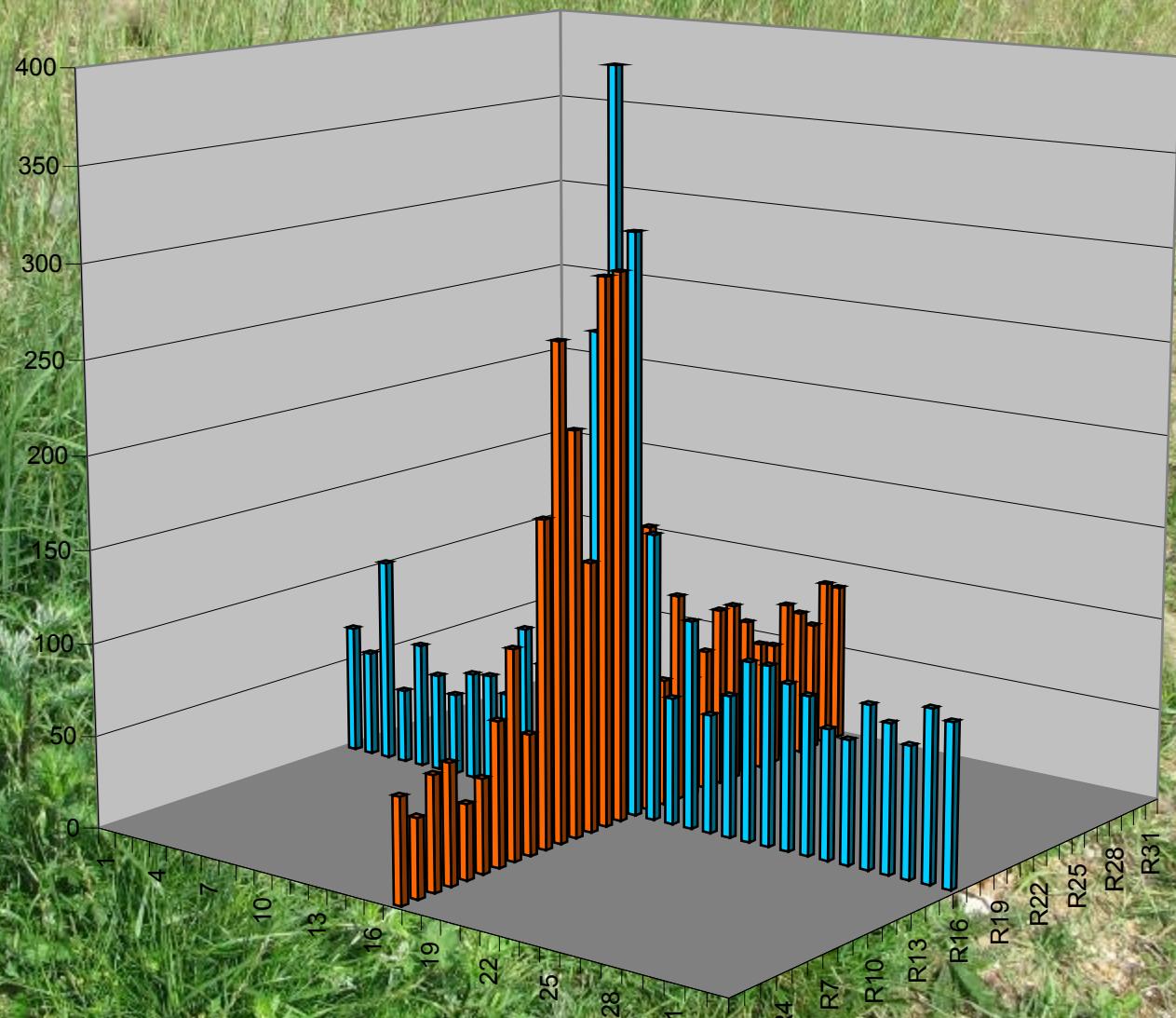


## Maggots





# Diskussion



Soil conductivity after 3 months of decomposition of a carcass.

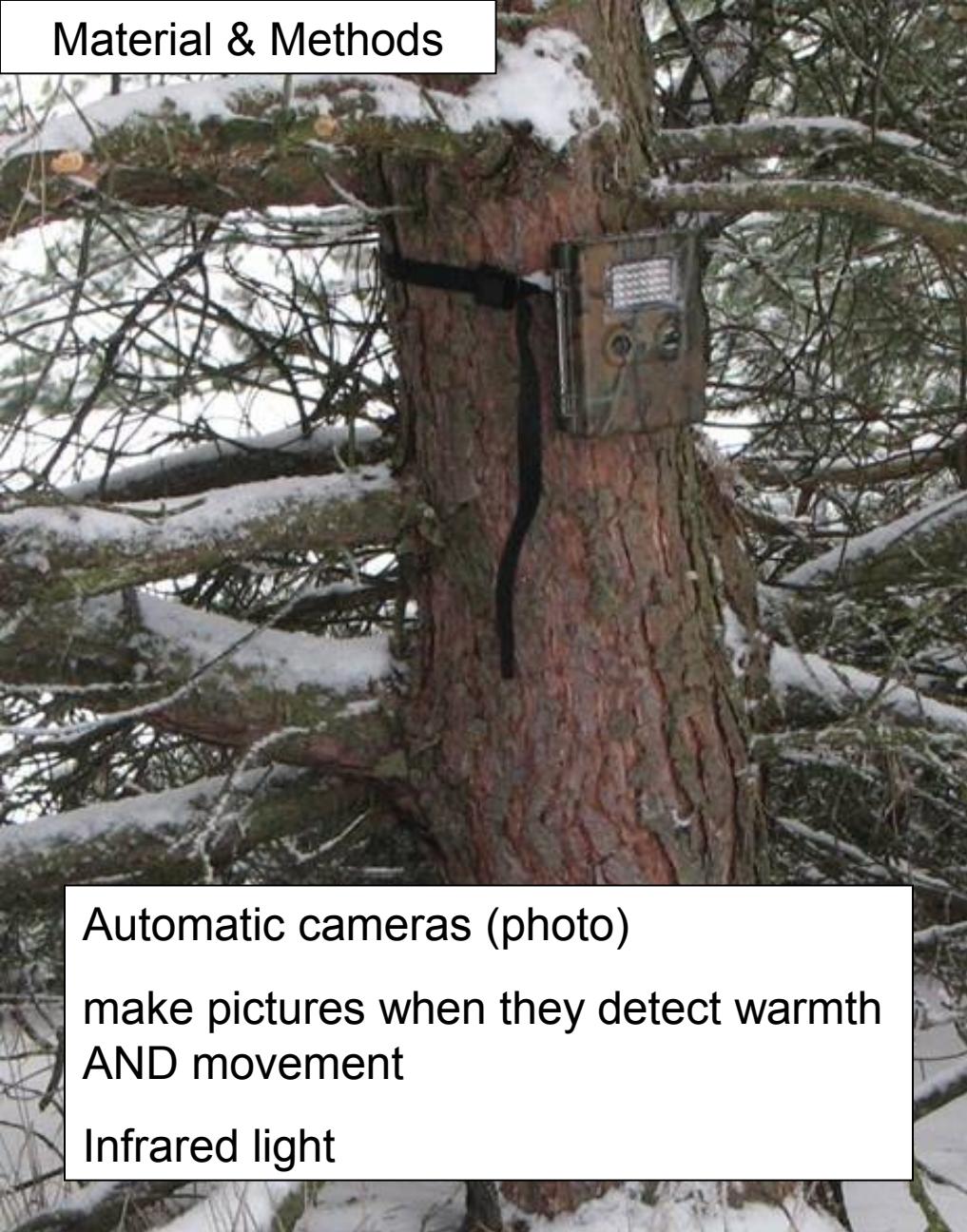
Similar to this fox dragging a stinking carcass home  
I want us to drag some knowledge into European  
policy.

Thanks for your attention!



04/07/2009 01:41 PM

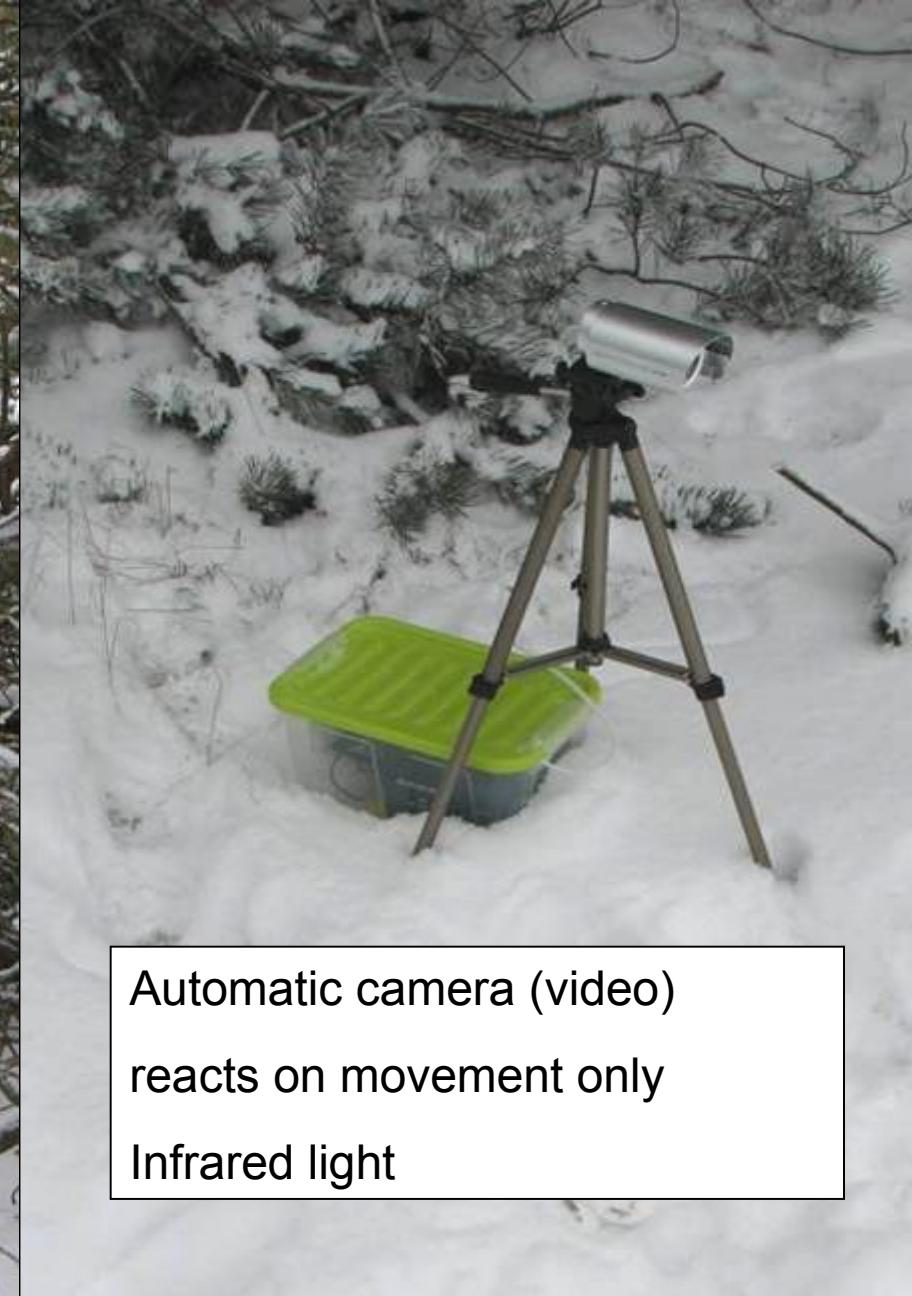
## Material & Methods



Automatic cameras (photo)

make pictures when they detect warmth  
AND movement

Infrared light



Automatic camera (video)

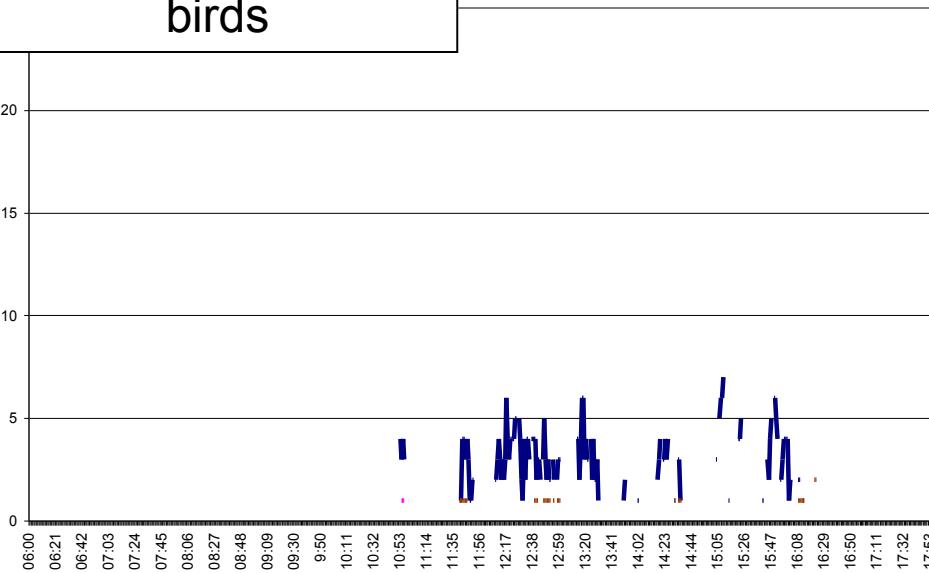
reacts on movement only

Infrared light

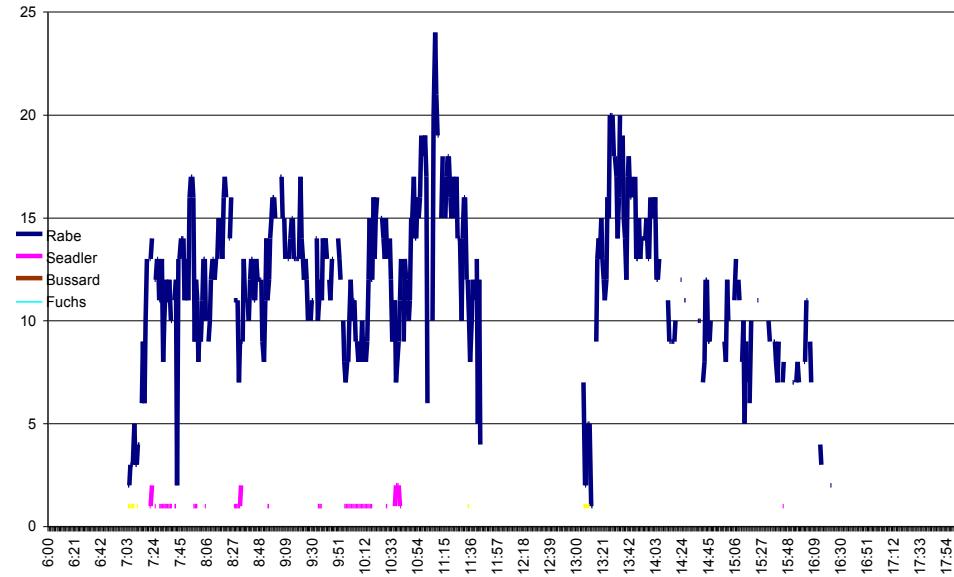
Sponsored by A.M.G. Alarmtechnik (Sachsen-Anhalt)

# Results: activities of birds

9.11.08

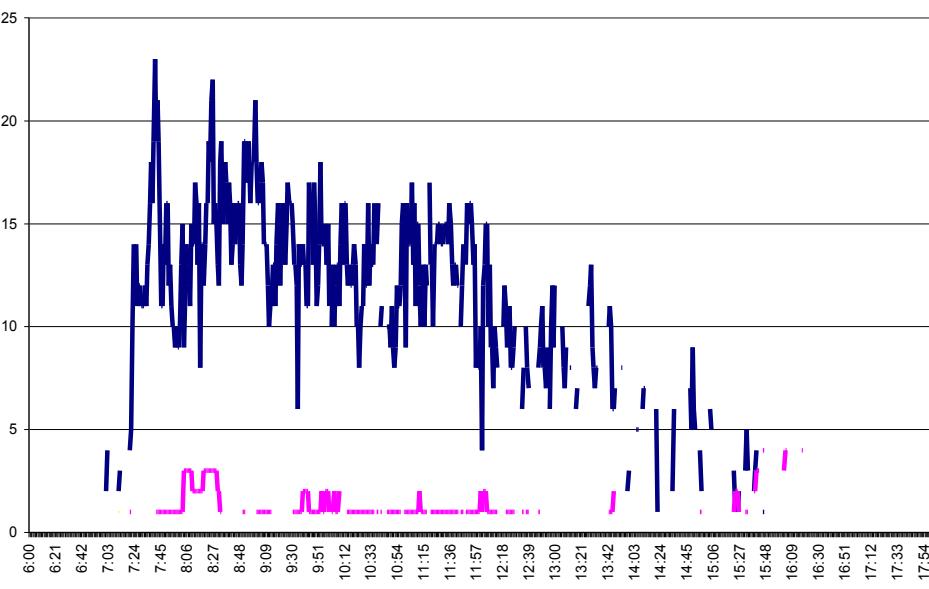


10.11.08



Activities of ravens and eagles at the first carcass

11.11.08



13.11.08

