

# **Diet of Montagu's Harrier in Poland - studies on arable land population.**

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## Studies on Montagu's harrier diet in Europe

- The only study in Poland was carried out on population from calcareous marshes near Chełm (SE Poland) (Tabor M. & Tabor J. 2005);
- Iberian Peninsula – differences in populations from grasslands and arable lands. Orthoptera species – key role for the arable land population (82% of prey number, 26% of biomass). Grassland population – more diverse and bigger prey items. (Corbacho et al. 2005);

## Studies on Montagu's harrier diet in Europe

- Netherland – strong dependence on vole abundance manifested in number of breeding pairs, clutch size, laying date, population growth. Voles constituted over 52% of prey biomass (Koks et al. 2007)
- Western France – population of Montagu's harrier was also dependent on voles availability. Vole densities influenced settlement of birds and their breeding success. (Butet & Leroux 2001 )

## Studies on Montagu's harrier diet in Europe

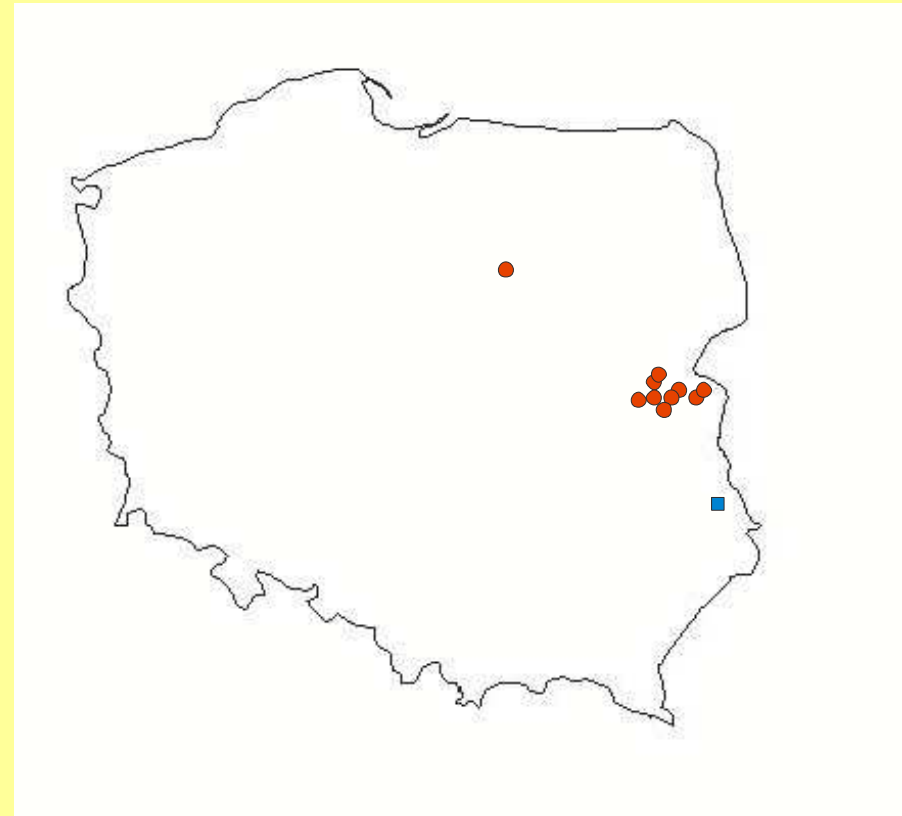
- Central Spain – Lagomorphs and birds dominated in diet during the nestling period. Availability of birds and grasshoppers increased throughout the season – and the birds responded well. Montagu's harrier appeared to act like opportunistic specialist feeding on most abundant prey, but also showed a preference for lagomorphs and birds. (Arroyo 1997).

## Montagu's harrier arable land population in Poland

- First cases of breeding in arable crops were registered in 1981 in the North-East part of Poland (North-Podlasie region)
- In 1989 and 1990's – other cases of breeding in arable crops were documented in other parts of Poland – South Podlasie, Silesia, Wielkopolska.

# Study area

- Material collected from 13 nests/colonies by:
  - Dominik Krupiński
  - Jerzy & Marta Lewtak
  - Sebastian Menderski
- Max distance between collection spots – 250 km
- Nests were located in triticale and rye fields



Red circles – arable land population

Blue square – peatbog population near Chełm

# Material & methods

- Diet composition was studied, based on pellets collected from Montagu's harrier nests.
- Pellets were collected in July 2007 (nestling period) from 13 nests.
- 88 pellets were collected.

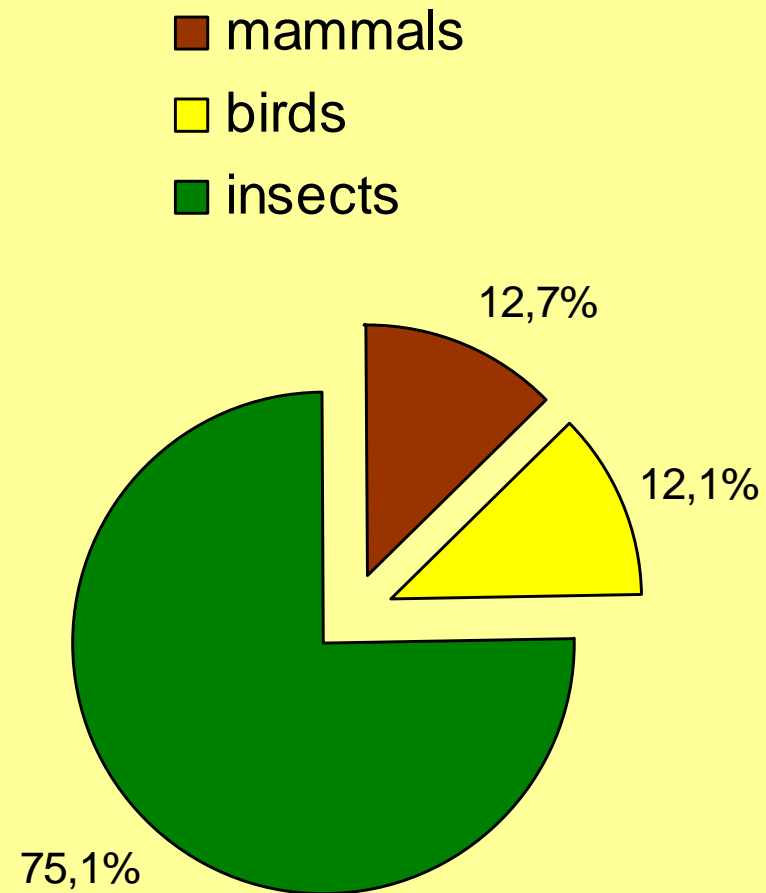
# Material & methods

- Prey remains from pellets were determined with the use of specialist keys (Brown et al. 2006, Pucek 1984) and sometimes consulted with the specialist from particular taxon. Vertebrates were determined to species level if possible.
- Biomass calculations were done according to data from: Jędrzejewska B. Jędrzejewski W. 1998, Szyszko unpubl.



# Results - numbers

<u>prey item</u>	<u>number</u>
Microtus arvalis	17
Microtus sp.	13
Apodemus agrarius	1
Mammalia sp.	9
Mammals together	40
Motacilla flava	4
Alauda arvensis	8
Passeriformes sp.	24
Aves sp.	2
Birds together	38
Coleoptera nieozn.	67
Orthoptera nieozn.	168
Insects together	235
ALL TOGETHER	313



# Results - frequency

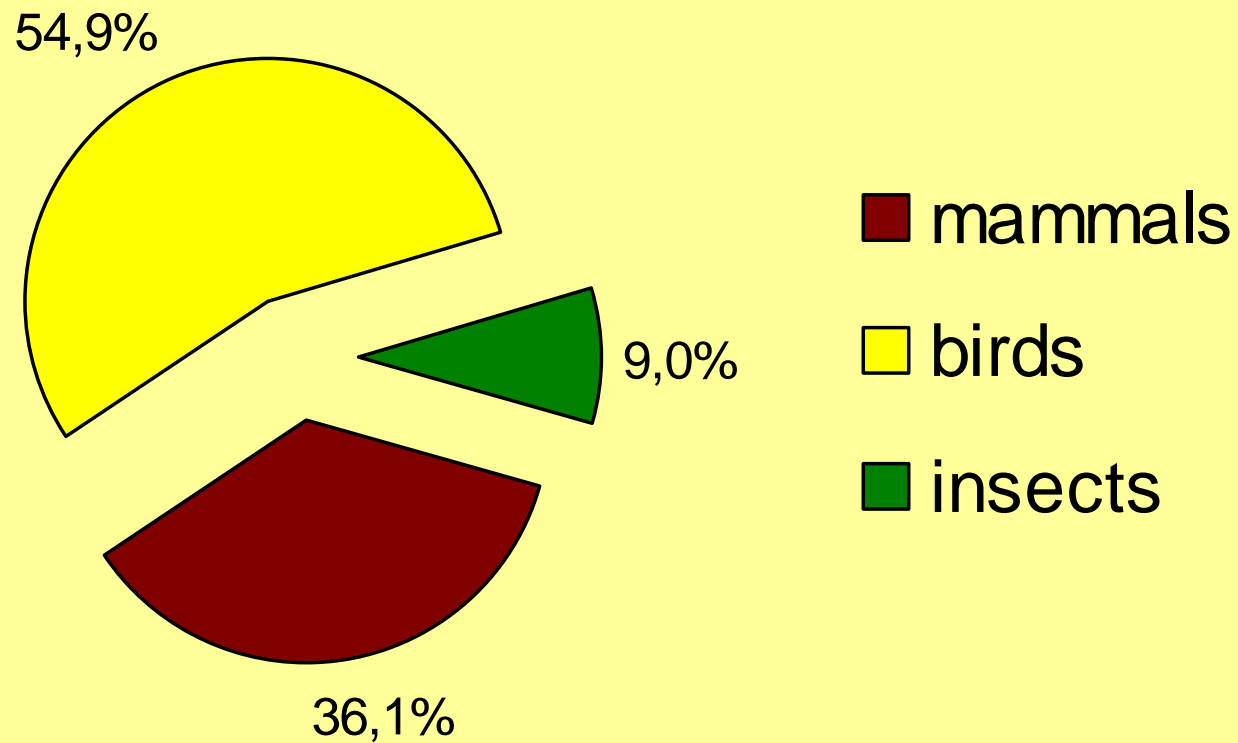
1. Orthoptera – 54,5 %
2. Coleoptera – 51,1 %
3. Microtus arvalis – 19,8 %  
/ Microtus sp. 29,5 %
4. Alauda arvensis – 9,1 %
5. Motacilla flava – 4,5 %

**Insects – 81,8 %**

**Mammals – 45,5 %**

**Birds – 42 %**

# Results - biomass



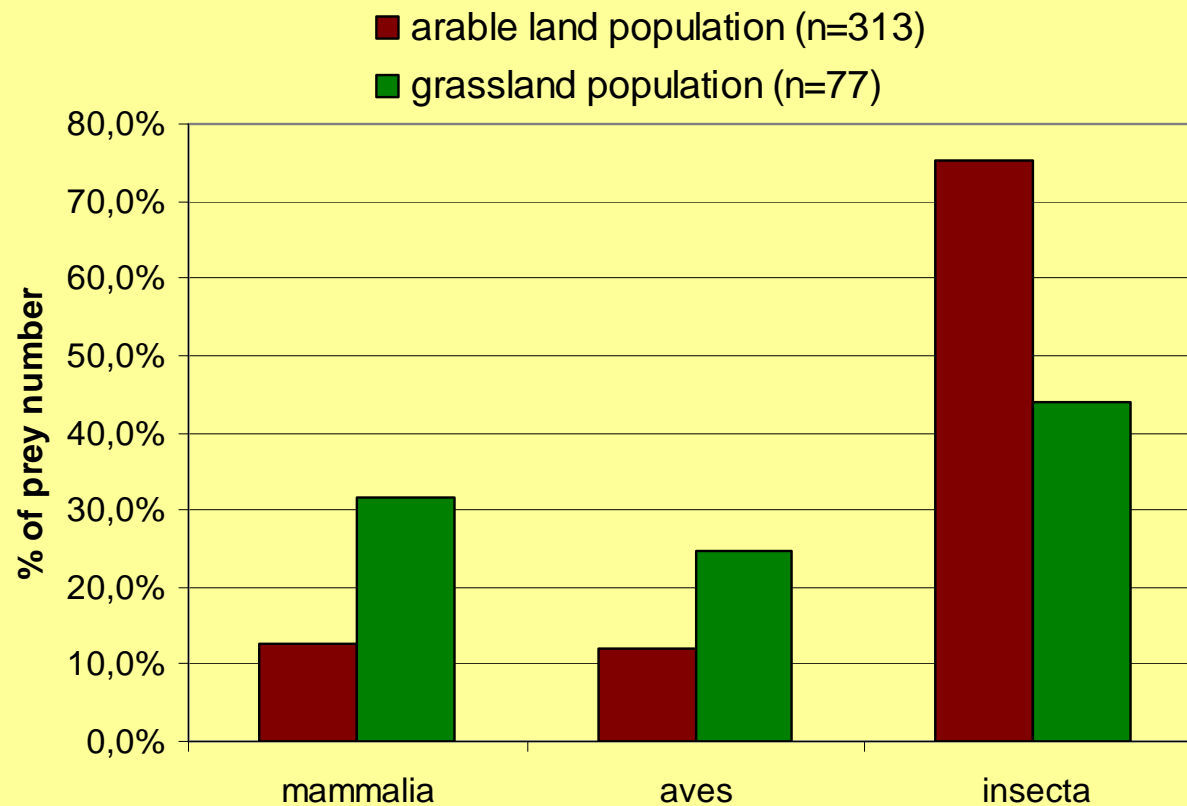
# Orthoptera

- High biomass of individuals
- Highest frequency in pellets !
- 11 % of pellets contained > 5 grasshoppers (up to 24!)
- 25 % of pellets contained only insects (grasshoppers predominated)



Photo: D. Krupiński

# Comparison of Montagu's harrier diet composition in the nestling period between two polish populations.



# Conclusions

- Montagu's harrier seems to act like generalist species, feeding on the most abundant prey in the agricultural landscape: skylarks, common vole and grasshoppers.
- Arable land population feeds often on the voles, but their share in the prey biomass doesn't imply the strong dependence in this case (but only nestling period was studied).

# Conclusions

- Grasshoppers are the important prey items in agricultural landscape, which reveals in their frequency and partly in their share in biomass.
- Arable land population feeds more on insects, than population from natural grasslands (calcareous marshes).

## In future ...

- Continue the diet studies on material collected in 2008.
- Collect the material from incubation and post-nestling period.
- Catch and weight grasshoppers for biomass calculations.



Thank You for your attention !



# References

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