Assessment of feeding preferences of wild animals in forage resources

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CONTEXT

- In many areas excessive presence of wild animals can produce negative effects on herbaceous crops or woody species
- To face this, habitat improvements are performed to recreate suitable environments for animal species and to reduce damages in cultivated crops or natural resources
- A common example of these interventions is represented by grassland restoration, often necessary for the reduction of open areas due to the decline of grazing activity

OBJECTIVES

Main objectives of the present research are the following:

- **to assess wild animals feeding preferences;**
- **to monitor animal intake on forage species;**
- **to use different methods of monitoring for animal utilization (*vegetation survey* and *camera traps*).**

MATERIALS AND METHODS

The experiment was set up on April 2015 and consisted in sowing of 2 pure stands and 4 mixtures in a RCB design (3 reps):

- **pure stands were sainfoin and lucerne;**
- **mixtures varied in number (from 6 to 12) and kind of species, comprising commercial mixtures and also specific combination for faunistic purposes.**

The area is in a hilly area (about 400 m asl) and 15 km north of Florence inside historical "Parco Mediceo di Pratolino".

1: *Onobrychis viciifolia*

2: *Medicago sativa*

3 (commercial):

Festuca arundinacea
Dactylis glomerata
Lolium perenne
Medicago sativa
Onobrychis viciifolia
Lotus corniculatus

4 ("fauna selvatica"):

Secale cereale
Lolium italicum
Trifolium pratense
Trifolium repens
Medicago sativa
Onobrychis viciifolia
Fagopyrum esculentum
Vicia villosa
Lupinus angustifolius
Pisum sativum
Ornithopus compressus
Brassica napus

5 ("caprioli"):

Lolium perenne
Lolium italicum
Secale cereale
Trifolium pratense
Trifolium repens
Medicago sativa
Onobrychis viciifolia
Trifolium ladino
Trifolium alexandrinum
Lotus corniculatus
Raphanus sativus

6 ("pollinator"):

Hedysarum coronarium
Lotus corniculatus
Medicago sativa
Onobrychis viciifolia
Trifolium pratense
Trifolium repens
Brassica napus

VEGETATION SURVEY

Botanical composition was assessed by means of linear transect on each plots in order to obtain:

- **relative abundant presence of a given species (SRA_i). *i.e.* the percentage presence of each species;**

- **browsing intensity of animals, by visual observation along a transect, to obtain animal intake on each species and on total plant community.**

ASSESSMENT OF ANIMAL INTAKE

Animal utilization was visually estimated on occurring plants with a scale ranging from 0 (no sign of browsing) to 3 (high signs of browsing).

Data elaboration produced:

- contribution to defoliation rate (CDR), as percentage contribution for a given species to total observed browsing;
- utilization rate (UR), percentage of observed browsing with respect to the potential, for each plot;
- CDR_i/SRA_i, ratio used to define if a species is actively searched (>1).

VIDEOTRAPPING

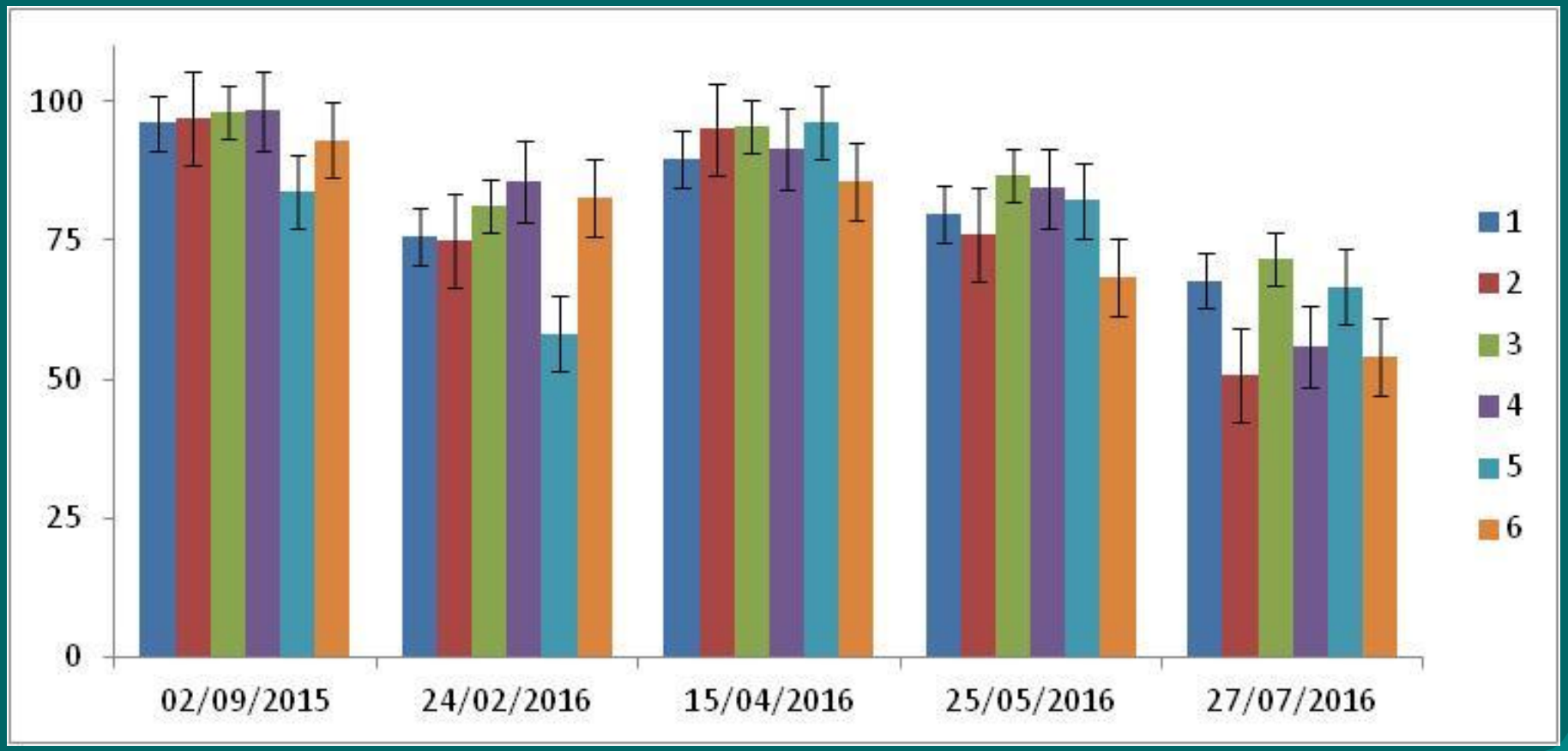
Six camera traps were located along the perimeter of the sown area.

Camera traps produced videos that were analyzed:

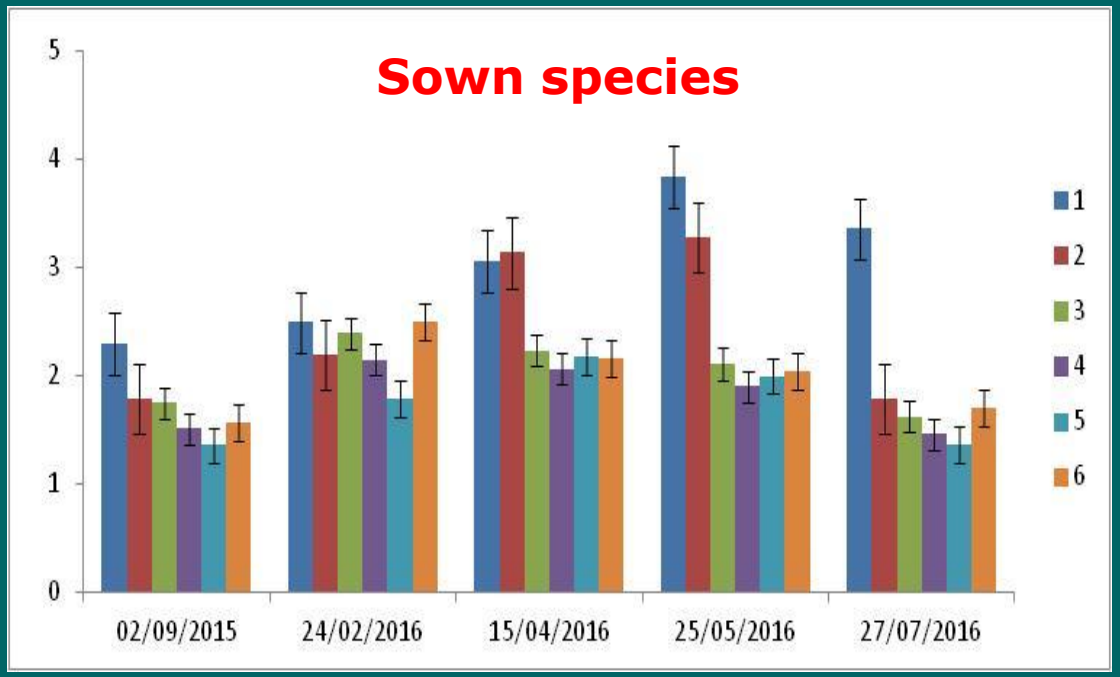
- to monitor animal species utilizing the plots;
- to evaluate animal preferences for pure stand/mixtures.

RESULTS

CDR of sown species (%) to animal browsing



Significance:
Data **

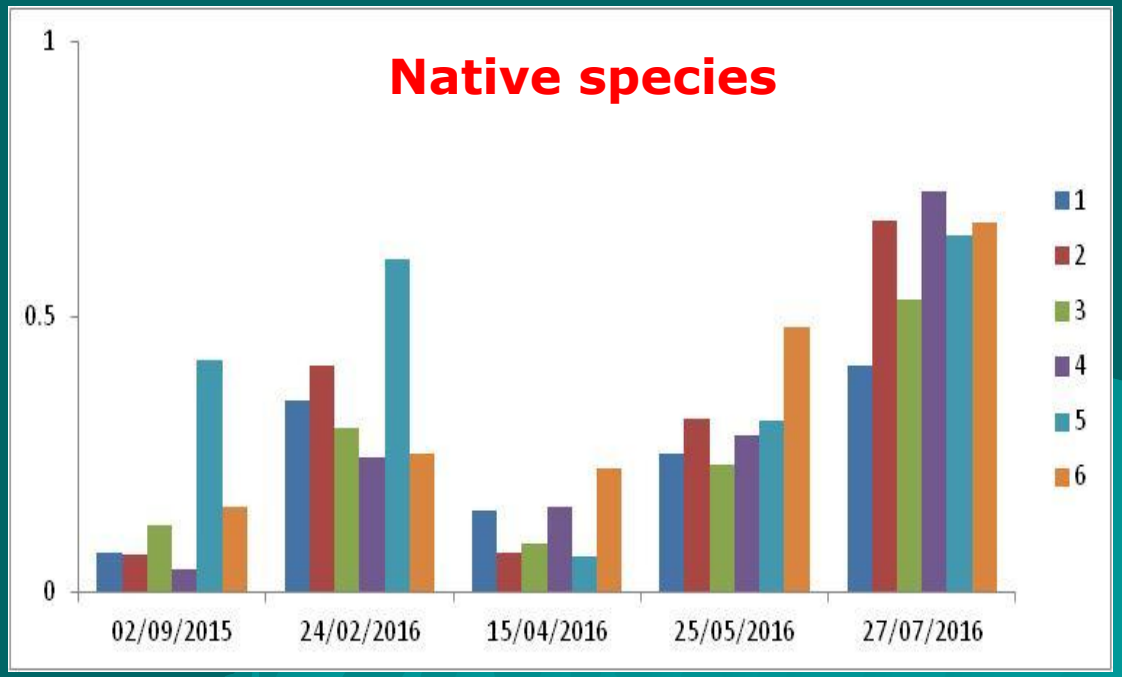


CDR/SRA for <u>sown</u> species (in total) is always greater than 1

Significance:
Data **
Species/mixture **
Interaction *

CDR/SRA for <u>native</u> species (in total) is always lower than 1

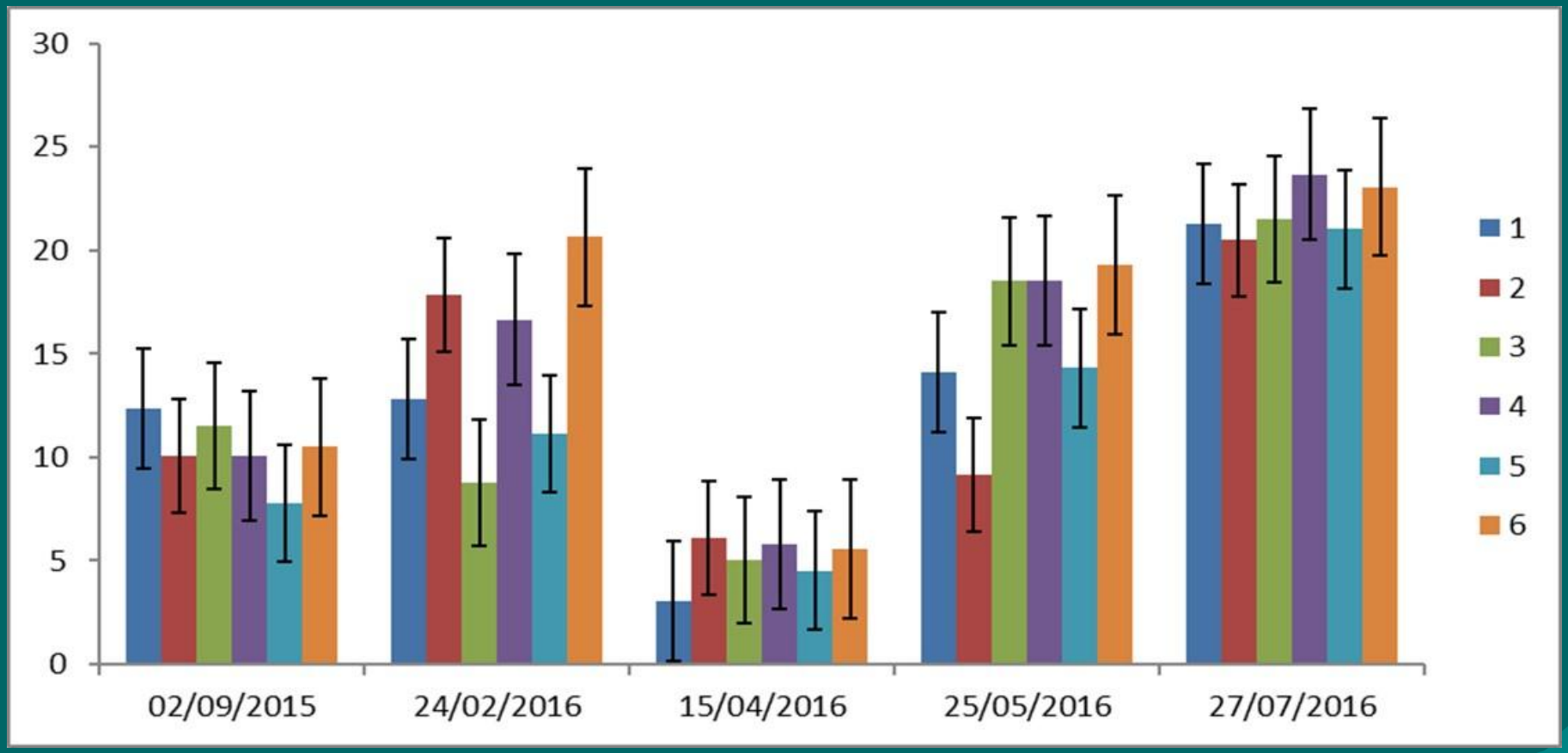
Significance:
Data **



CDR/SRA for main species

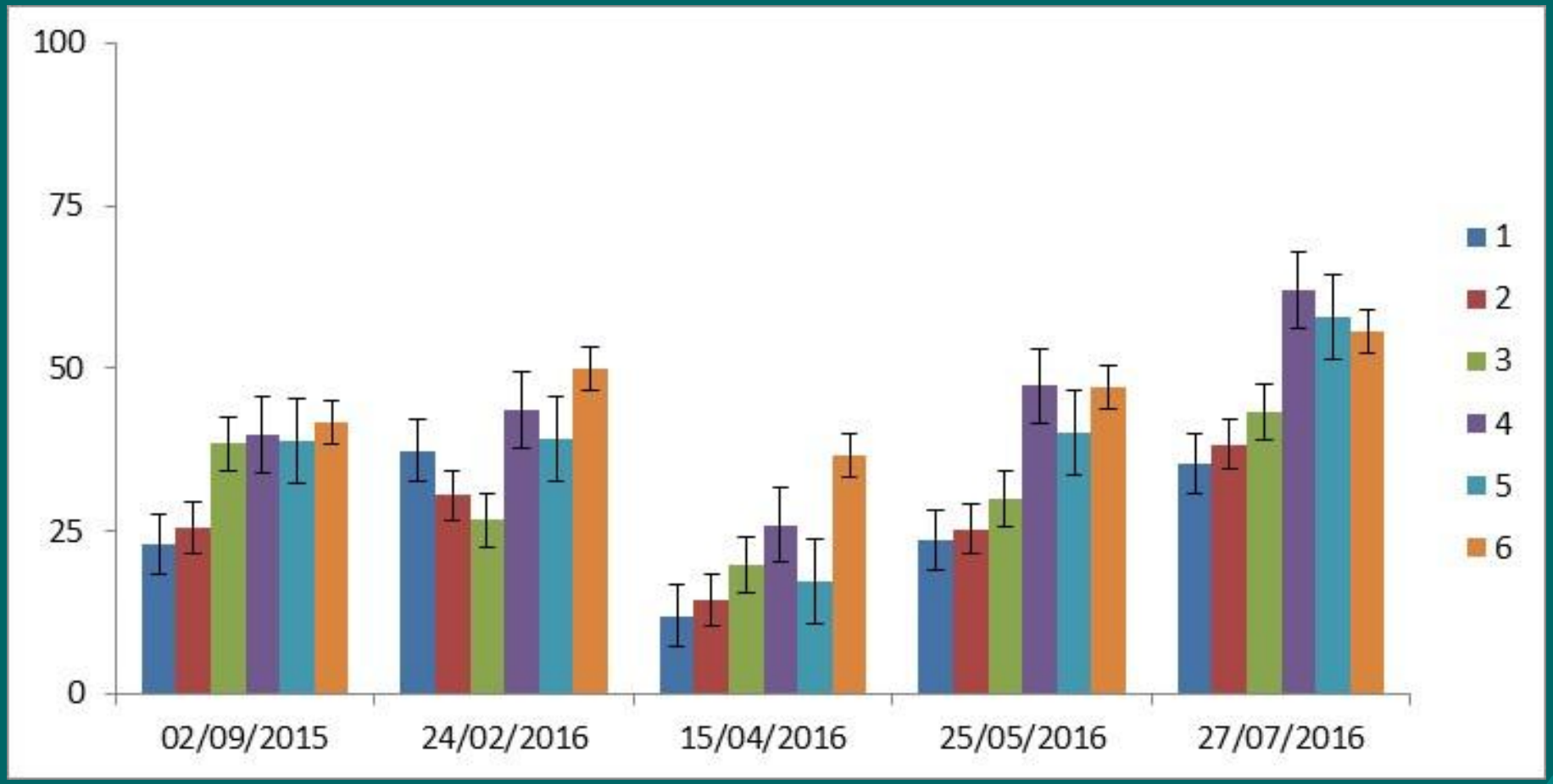
CDR/SRA	2/9/15	24/2/16	15/4/16	25/5/16	27/7/16
Sown species					
Onobrychis viciifolia	2.87	2.31	1.54	3.54	3.06
Medicago sativa	1.42	2.73	4.41	2.07	1.47
Dactylis glomerata	2.65	-	-	-	1.96
Native species					
Cichorium intyibus	1.03	-	-	-	1.72
Daucus carota	-	-	-	0.08	0.30
Picris hieracioides	-	-	0.27	0.36	0.88
Plantago lanceolata	0.49	1.69	0.39	0.82	0.49
Sanguisorba minor	0.12	0.45	-	0.66	0.32

Utilization rate (%)



Significance:
Data **

Percentage of browsed species



Effects:

Data **

Species/mixture **

Camera traps results

wild boar

pheasant

hare

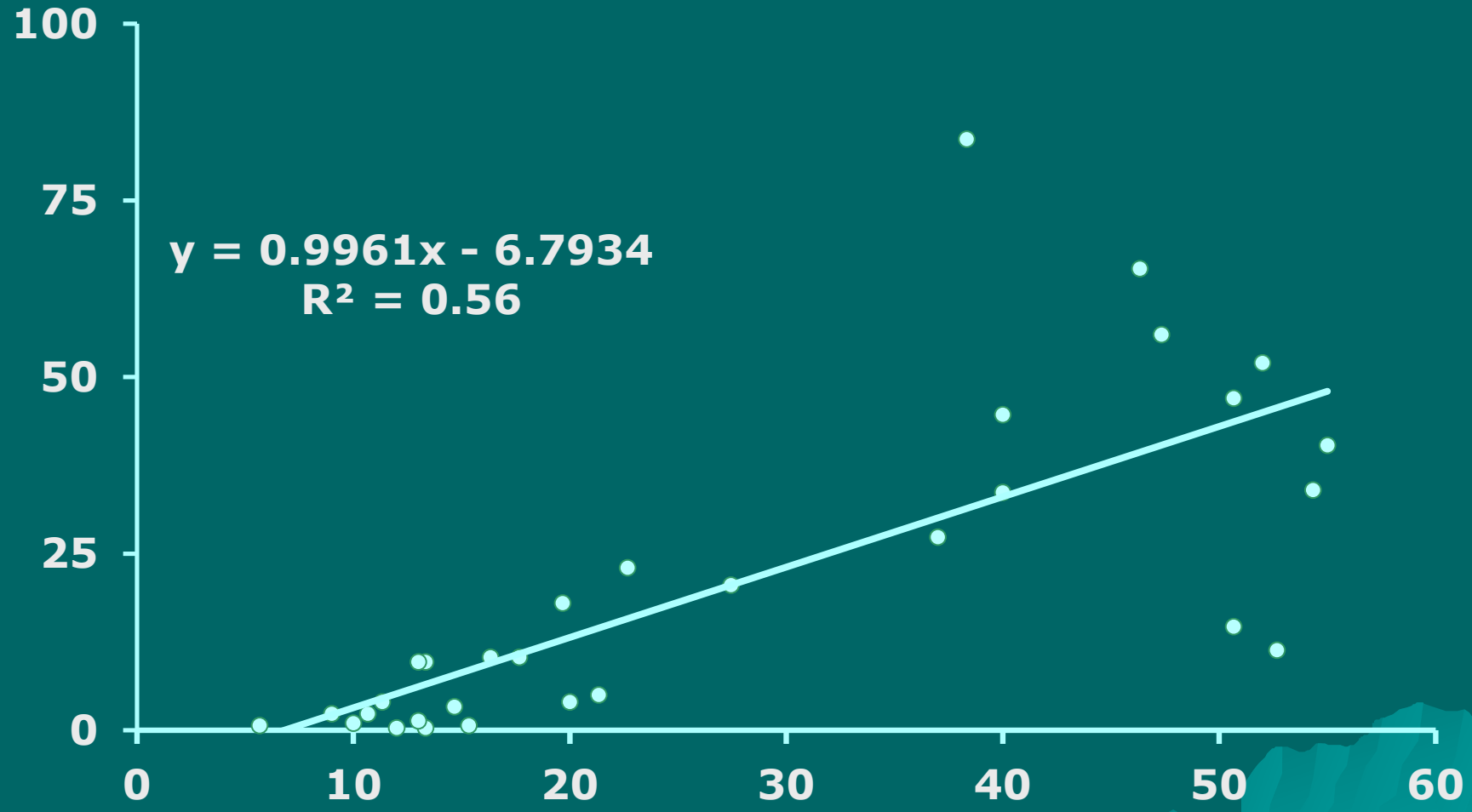
roe deer

Video recorded

Species/mixture	Number of videos	%
1	481	26,1
2	276	14,9
3	367	19,8
4	203	11,0
5	176	9,5
6	346	18,7
total	*1849*	*100*

Almost all videos concerned roe deer (>96%)

Relationship between number of videos and total browsing



CONCLUSIONS

- Collecting data of **animal browsing** was easy along normal vegetation survey and informative on animal preference: it can be performed in next researches without great time waste
- **Sown species** perform a major role in wild animals intake, even if in some periods also a few **native species** are utilized in a strong way, depending by vegetation context and biomass
- **Camera traps** data were useful to individuate browsing animal species and to produce adequate results related to animal intake
- Results could be used in the future to formulate **specific mixtures** expressly studied for wild animals


Thank you!