

# Changes in Golden jackal and Red fox population size in Romania with new records of local density in hunting terrains from Timiș county, Dobruja, and maritime levees from the Danube Delta

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MATE



3RD INTERNATIONAL JACKAL  
SYMPOSIUM  
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GÖDÖLLŐ, HUNGARY



# Background

- H.I.P.D. = **Hunting Indicator of Population Density** (*i.e.*, the total number of individuals eliminated from nature by hunters in 1 km<sup>2</sup>).
- During 2015/2016 hunting season the Red fox H.I.P.D. was analyzed at country-regional scale in Central and Southeast Europe.
- Red Fox hunting bags (HB)
  - **136.182** specimens in Austria and Hungary (similar HIPD of 0,78 / km<sup>2</sup>) and
  - **45.727** specimens in Romania and Bulgaria (HIPD 0,1 and 0,17 / km<sup>2</sup>).
- It was suggested that a very **high abundance of foxes resulted from aggressive hunting might represent a limiting factor for the golden jackal dispersion and survival reproductive clusters establishment** (Banea et al, 2018).

# Background

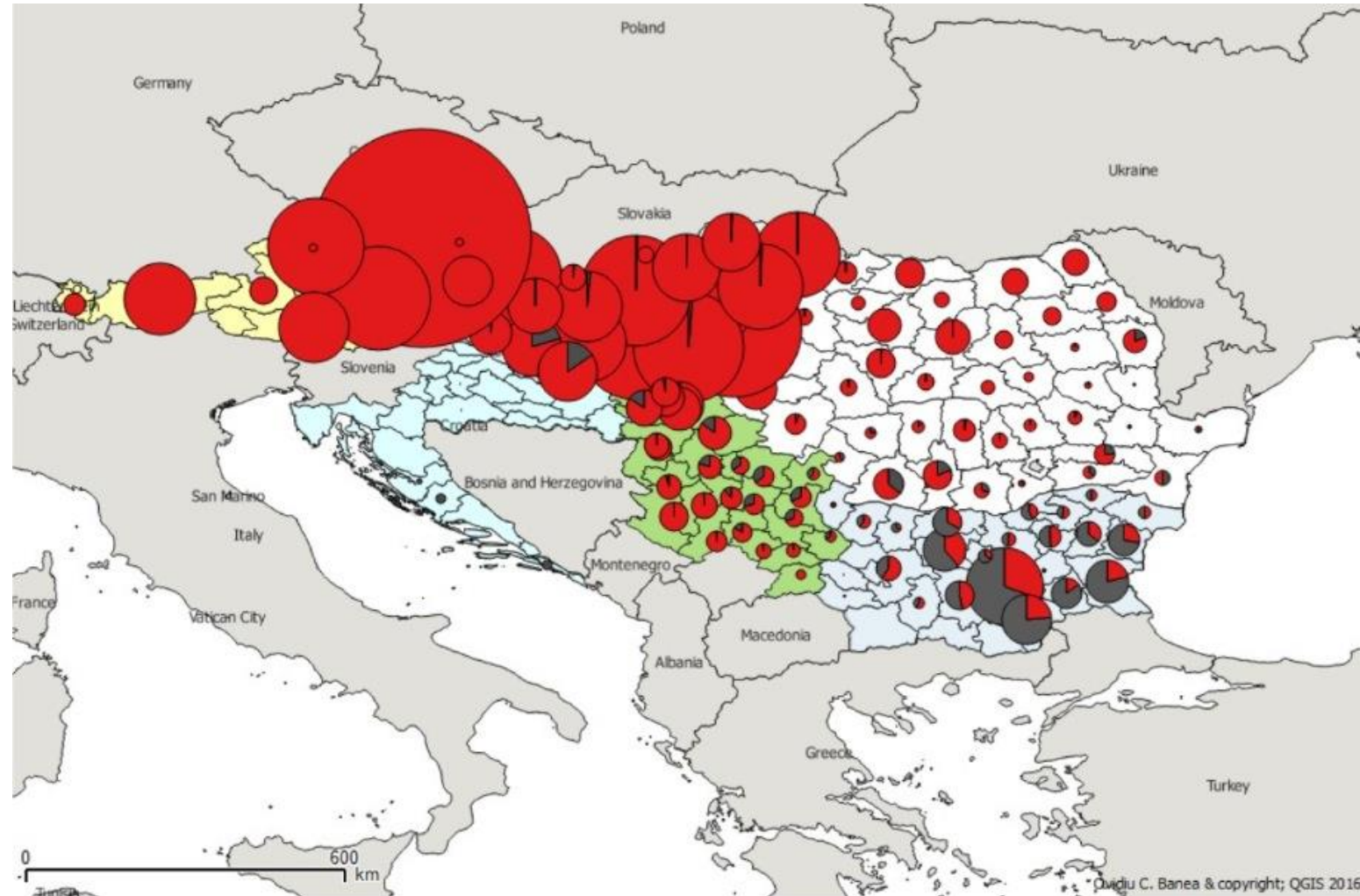
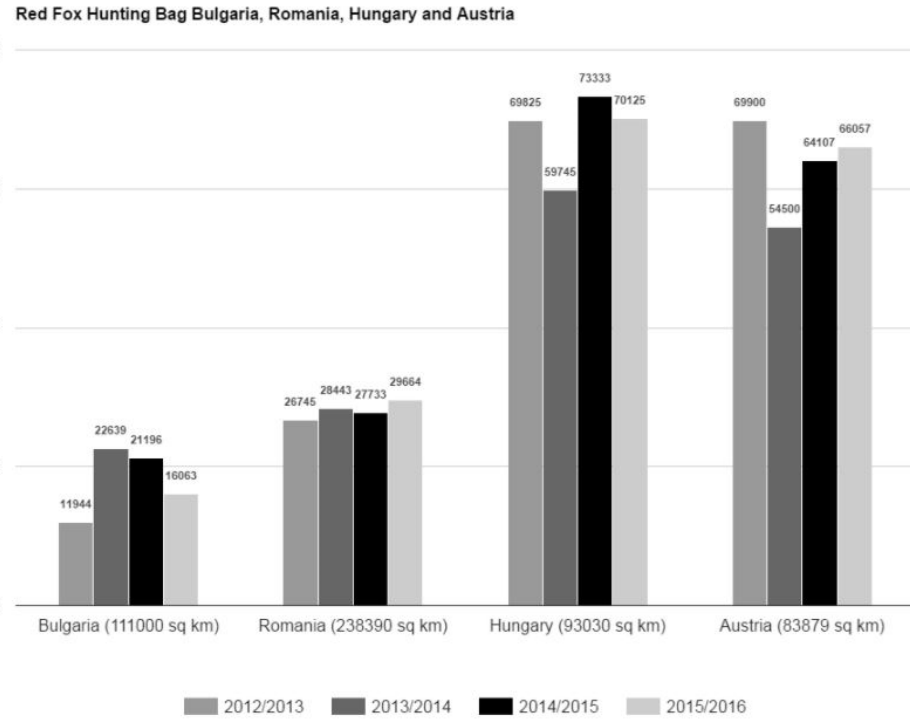
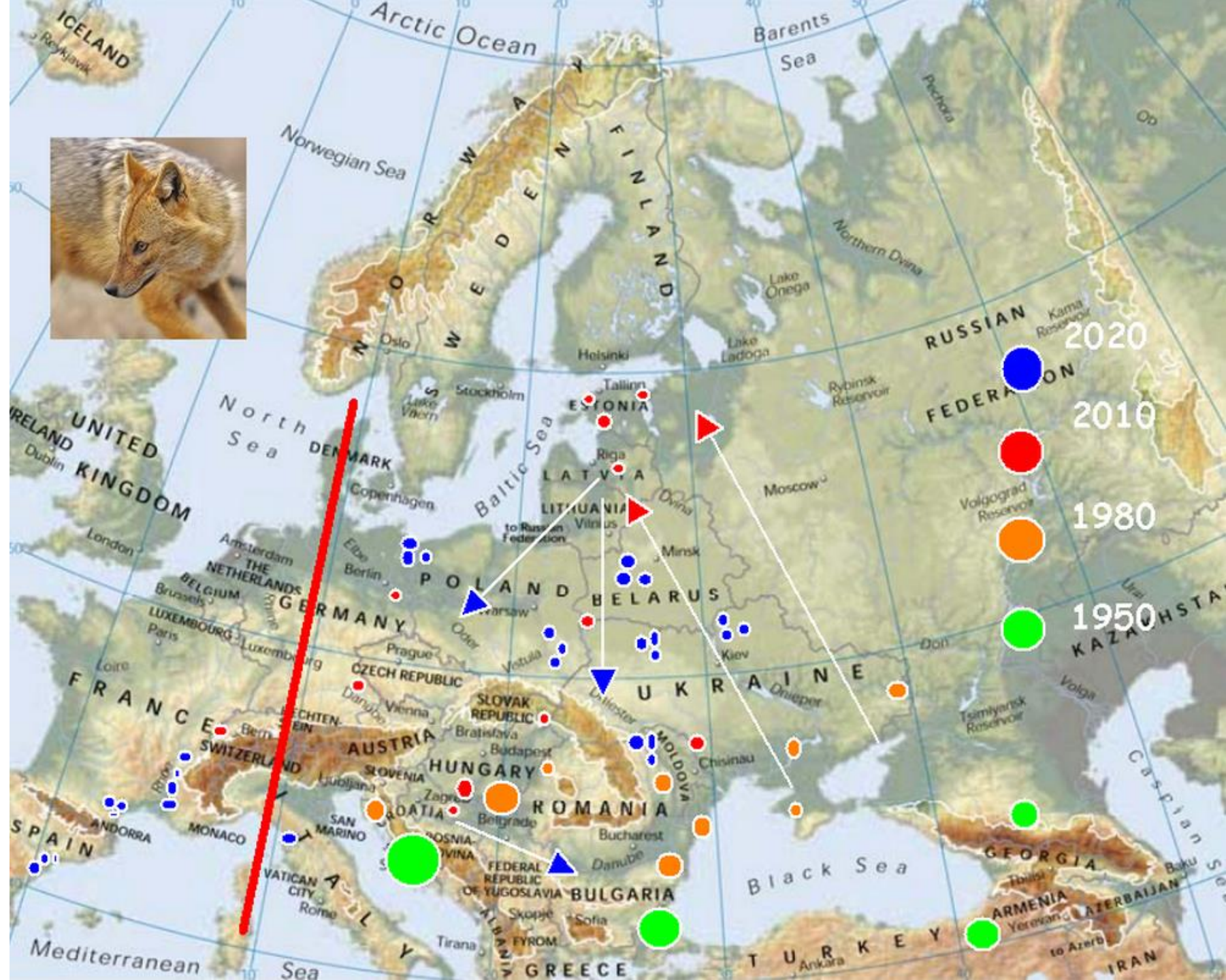


Fig. 1 Red Foxes (red) and Golden Jackal (gray) Harvested in 2014 (Central Europe)

# 2014 Serbia LDD



# Aim of the study

- We aimed at analyzing interannual changes in red fox and golden jackal population size and control rate (CR) at country and loco-regional levels in Romania.
- Additionally, we present new data of golden jackal densities in a hunting ground from western part of Romania and Danube Delta Biosphere Reserve.

# Methods (1)

- We analyzed RF and GJ annual SA and HB for 2006-2022 period from centralized data (MAPM)
- We calculated the **Control Rate** for both species, retrospectively, using a simple mathematical equation.

$$CR=HB/SA,$$

And we assumed this was the **Harvest Quota** realized by Game Management Units (GMU).

$$HQ (\%) = CR \times 100$$

Then, we compared HQ GMU with those imposed by the Government (Gov HQ).

- We also calculated data from four counties with different habitat type and environmental conditions: Giurgiu, Ialomița in Southern parts of Romania, Cluj and Satu Mare inside the Carpathian Arch.

# Methods (2)

- We performed bimodal monitoring surveys with bioacoustic monitoring (Giannatos 2004) and wildlife video camera opportunistic spontaneous trapping in April, August and December 2021:
- Study areas:
  - GMU Nr. 2 Cheglevici, Timis county
  - GMU Nr. 28 Gura Dobrogei, Constanta county
  - Two critical areas from Danube Delta Biosphere Reserve ROSCI0065, Caraorman and Letea maritime levees.
    - Calling stations: 35
    - Surface: 40.000 ha.

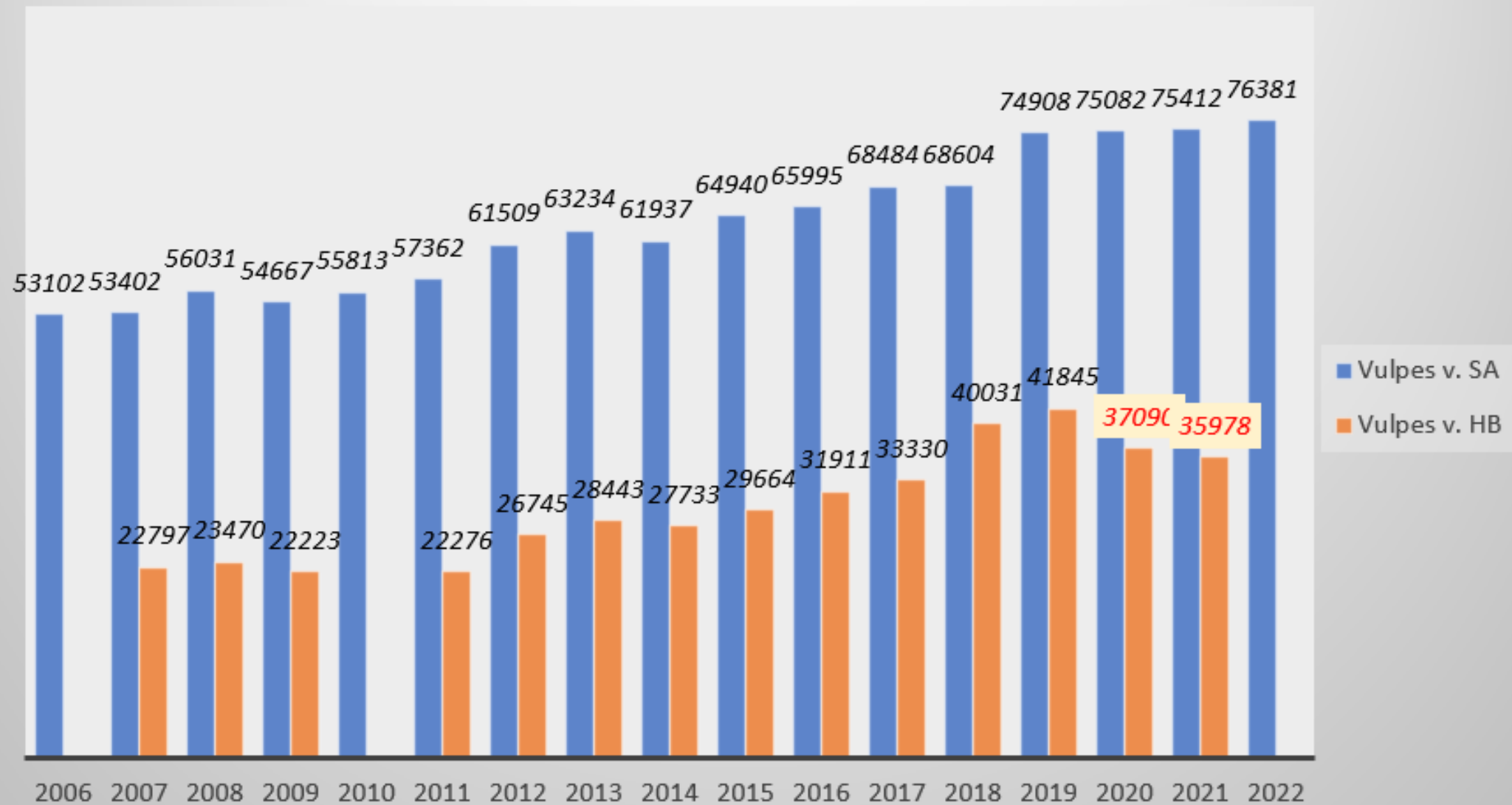
# Results

The **Red Fox** HB in 2007 was 22.797 and this increased gradually until 2019, when it started to decrease from 41.845 specimens in 2019 to 35.978 specimens in 2021 at an estimated population size of **76.381 alive individuals in 2022 (CR 0.48)**.



# Stock Assessment and Hunting Bag Data of Red Fox species (*Vulpes vulpes*) in Romania during 2006-2022 period

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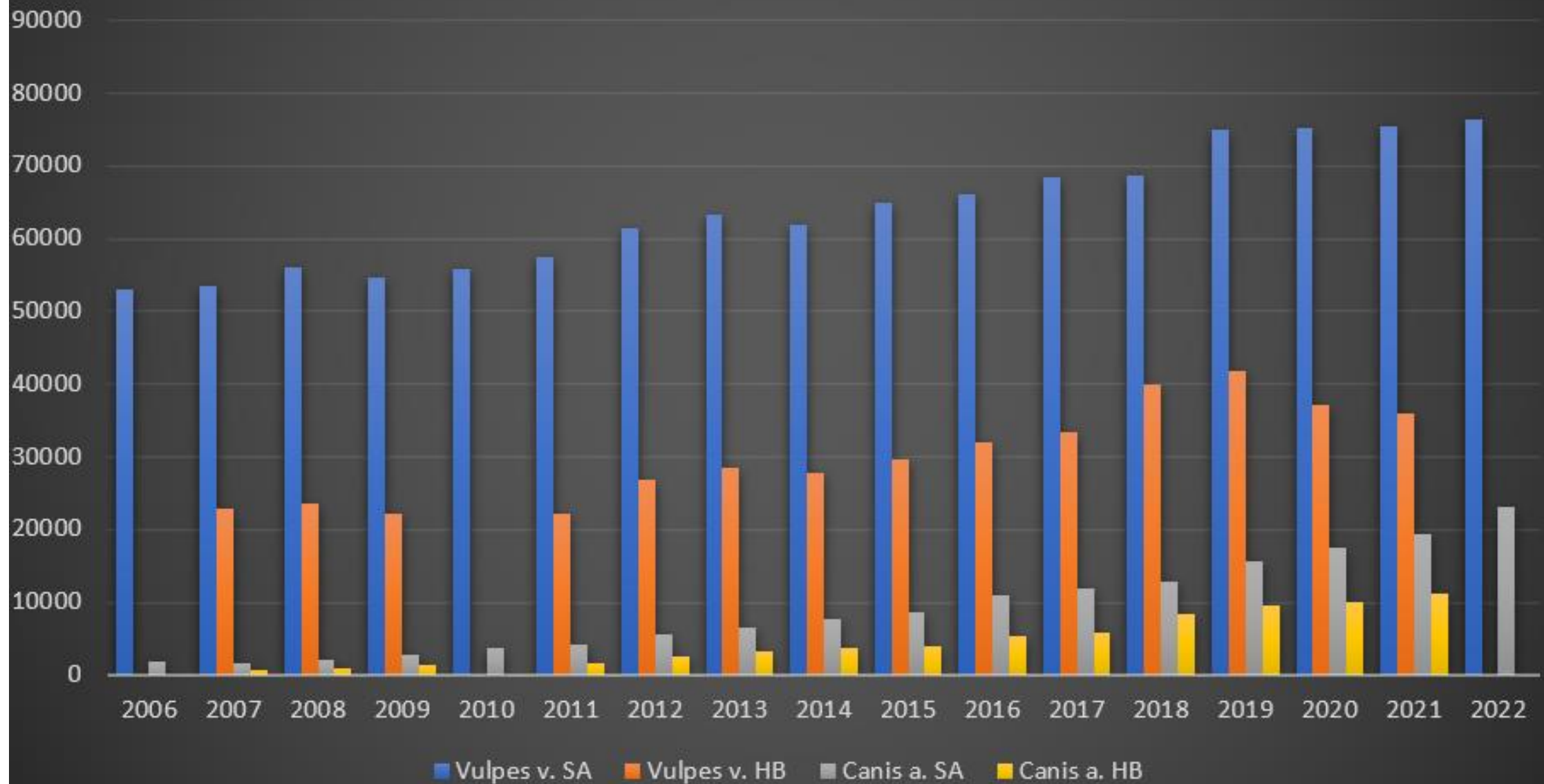


# GOLDEN JACKAL DYNAMICS?

The **Golden Jackal** HB changed from 746 in 2007 to 11.292 shot jackals in 2021, at an estimated population size of **23.042 in 2022 (CR 0.58)**.

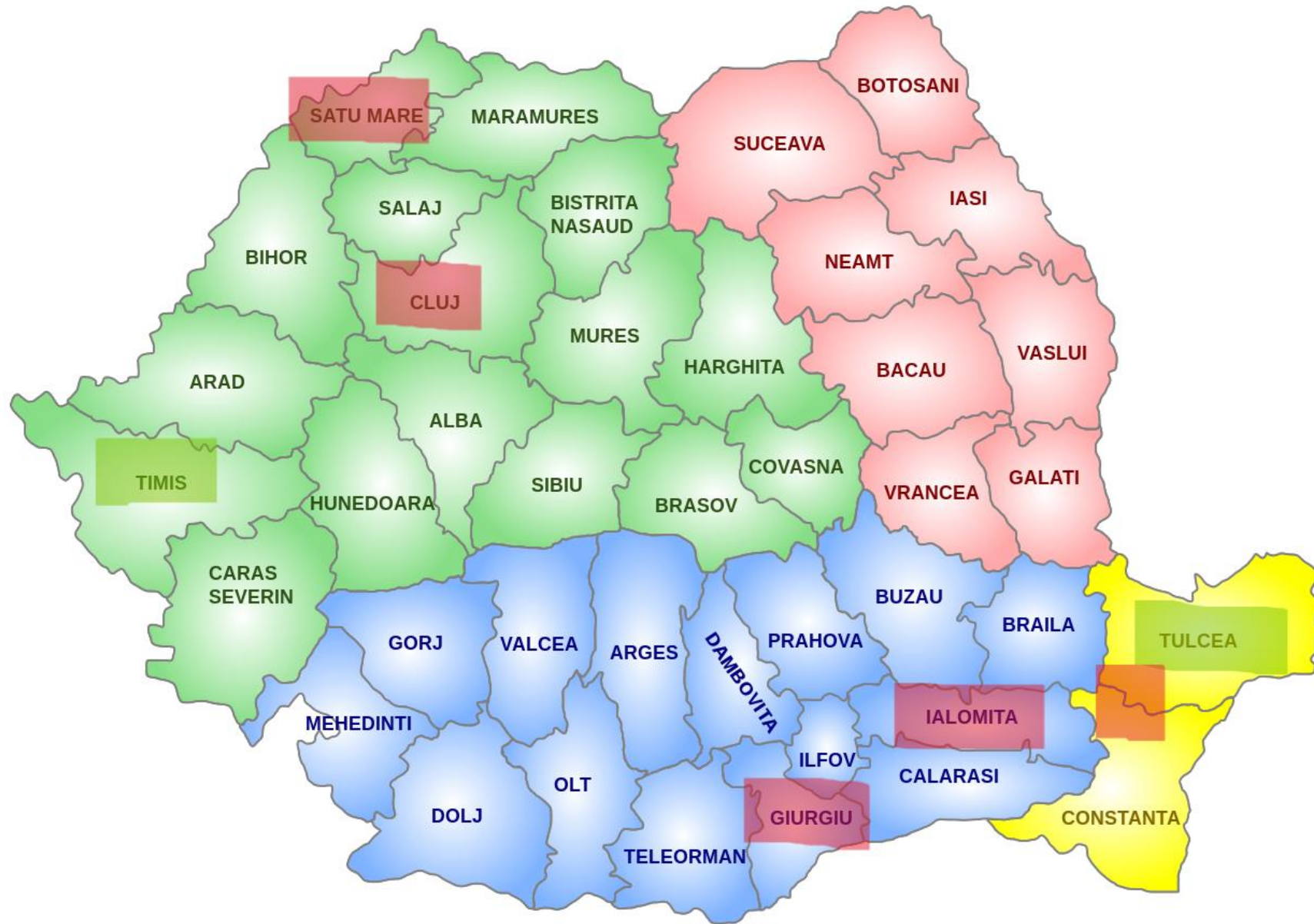
# Numărul de exemplare vii (SA) și împușcate (HB) la vulpe (*Vulpes vulpes*) și hilac (*Canis aureus*) 2006-2022

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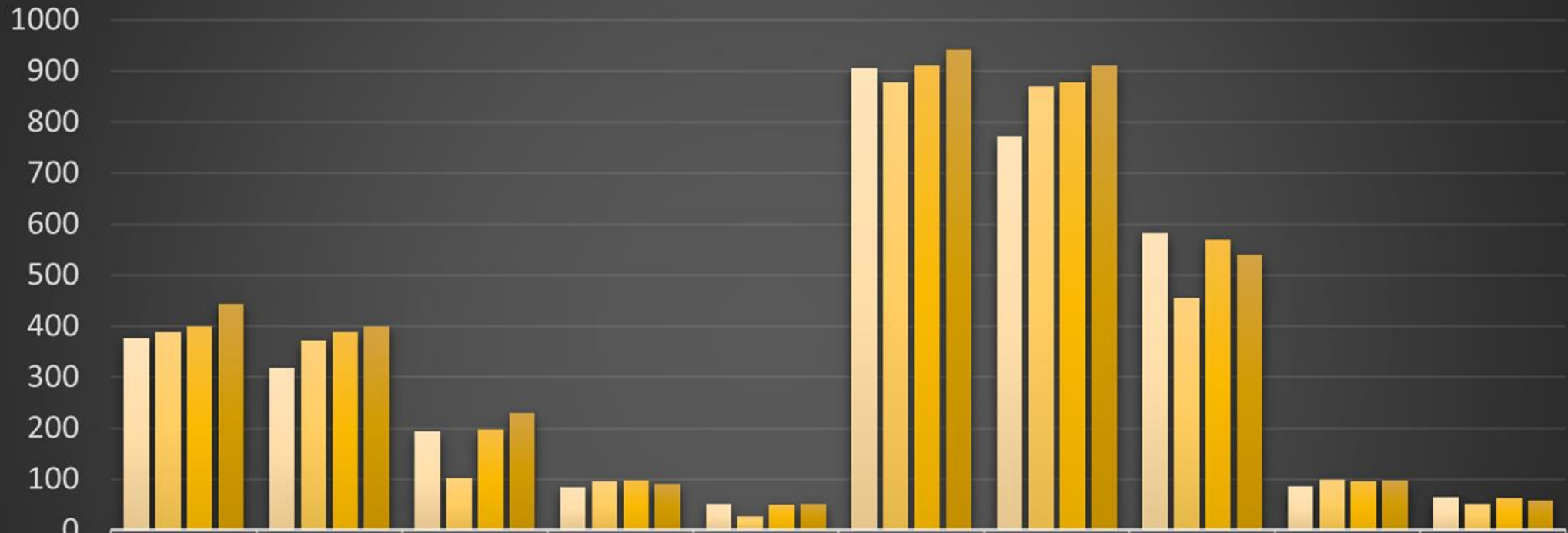
# LOCOREGIONAL

- Giurgiu realized harvest quota of **57.4%**, while **Gov approved 96%**,
- Ialomița realized **64%** (**Gov 99%**),
- Cluj showed HQ of **39,6%** (**Gov 82%**) and
- Satu Mare realized a HQ of **61%** (**Gov 82%**).



# Giurgiu County, Stock Assessment, Harvest Quota and Hunting Bag of C aureus and V vulpes

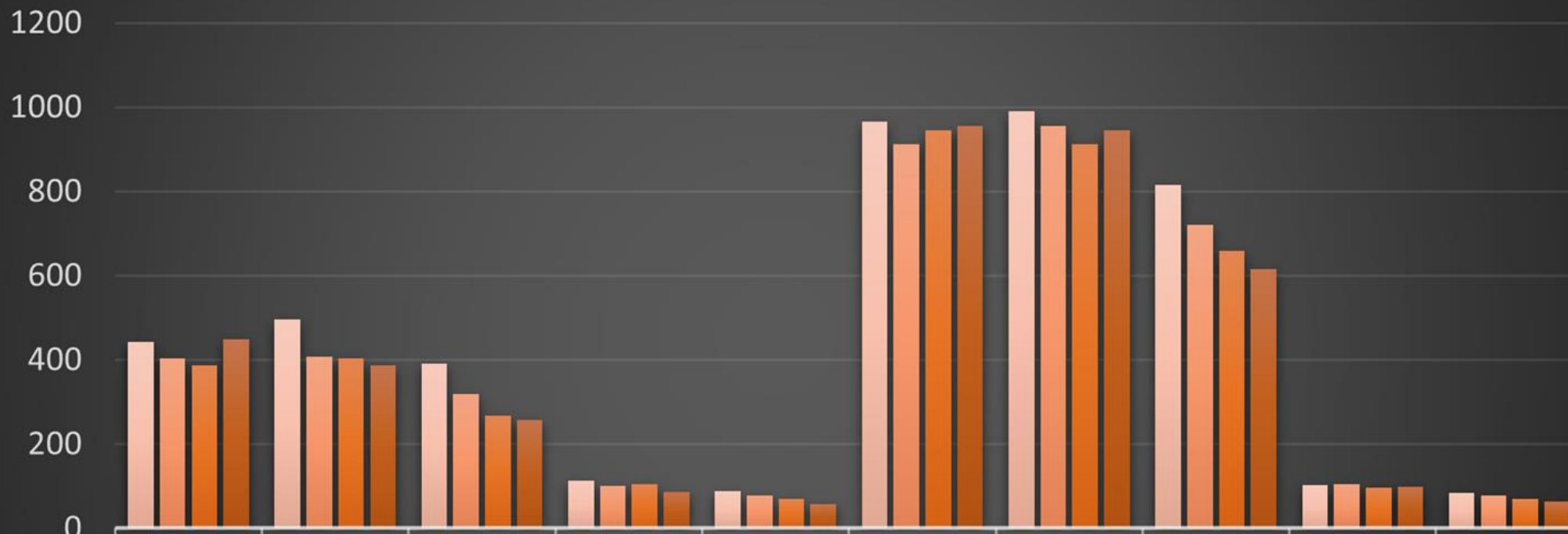
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	SA C aureus	HQ C aureus	HB C aureus	HQ (%) Gov	HQ (%) GMU	SA V. vulpes	HQ V. vulpes	HB V. Vulpes	HQ (%) Gov	HQ (%) GMU
2019	377	318	193	84,35	51,19	905	771	583	85,19	64,42
2020	388	372	102	95,88	26,29	877	870	455	99,20	51,88
2021	400	388	197	97,00	49,25	910	877	569	96,37	62,53
2022	444	400	229	90,09	51,58	941	910	540	96,71	57,39

# Ialomița County, Evolution of *C. aureus* and *V. vulpes* SA, HQ and HB

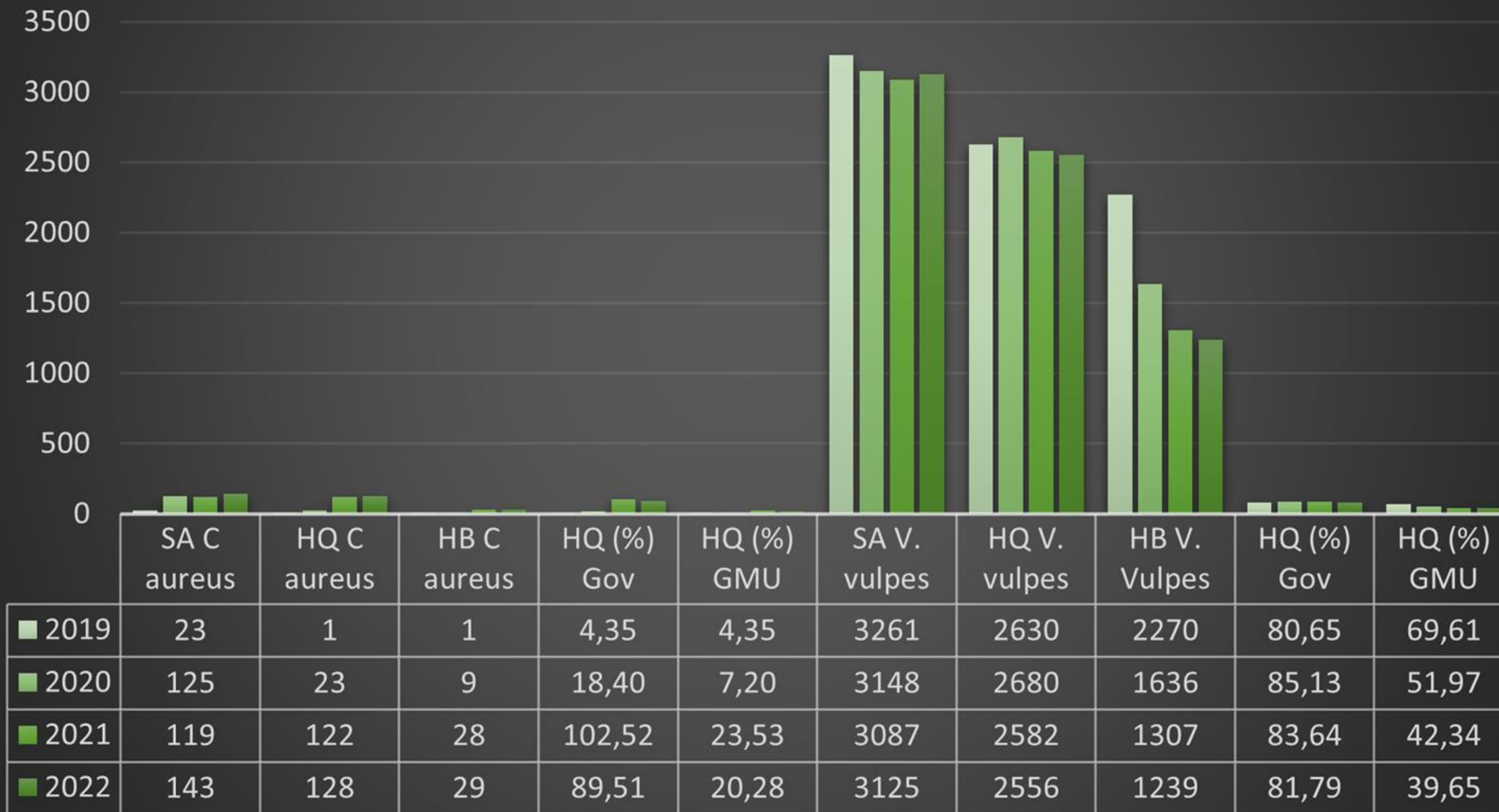
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	SA C aureus	HQ C aureus	HB C aureus	HQ (%) Gov	HQ (%) GMU	SA V. vulpes	HQ V. vulpes	HB V. Vulpes	HQ (%) Gov	HQ (%) GMU
2019	443	496	391	111,96	88,26	966	991	816	102,59	84,47
2020	403	408	318	101,24	78,91	913	956	720	104,71	78,86
2021	386	403	267	104,40	69,17	946	913	658	96,51	69,56
2022	448	386	258	86,16	57,59	955	946	616	99,06	64,50

# Cluj County, Evolution of *Canis aureus* and *Vulpes vulpes* Stock Assessment, Harvest Quotas (imposed and realized) and HB

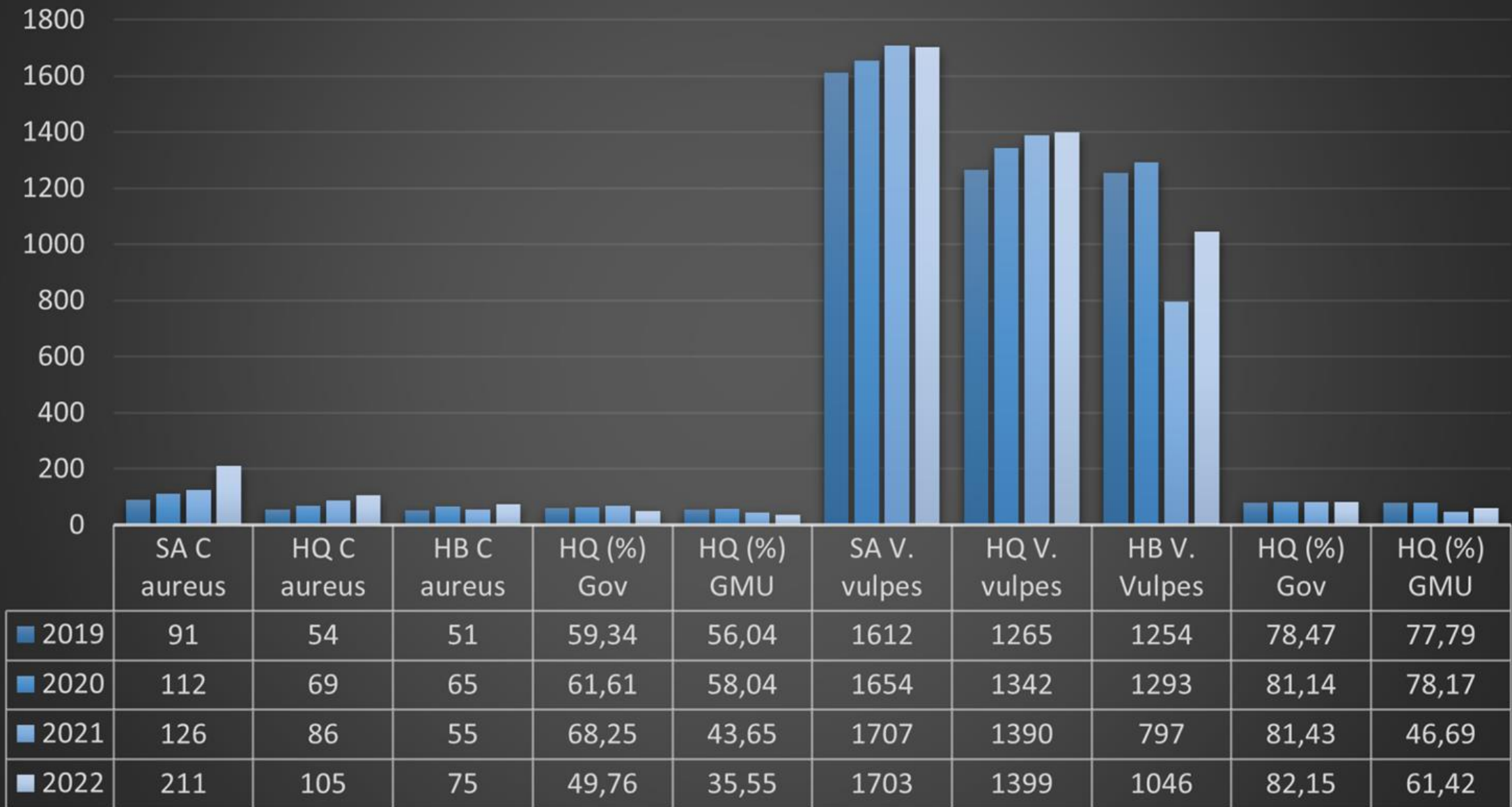
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# Satu Mare County, C aureus and Red Fox

by Ovidiu C. Banea, Crispus NGO Sibiu



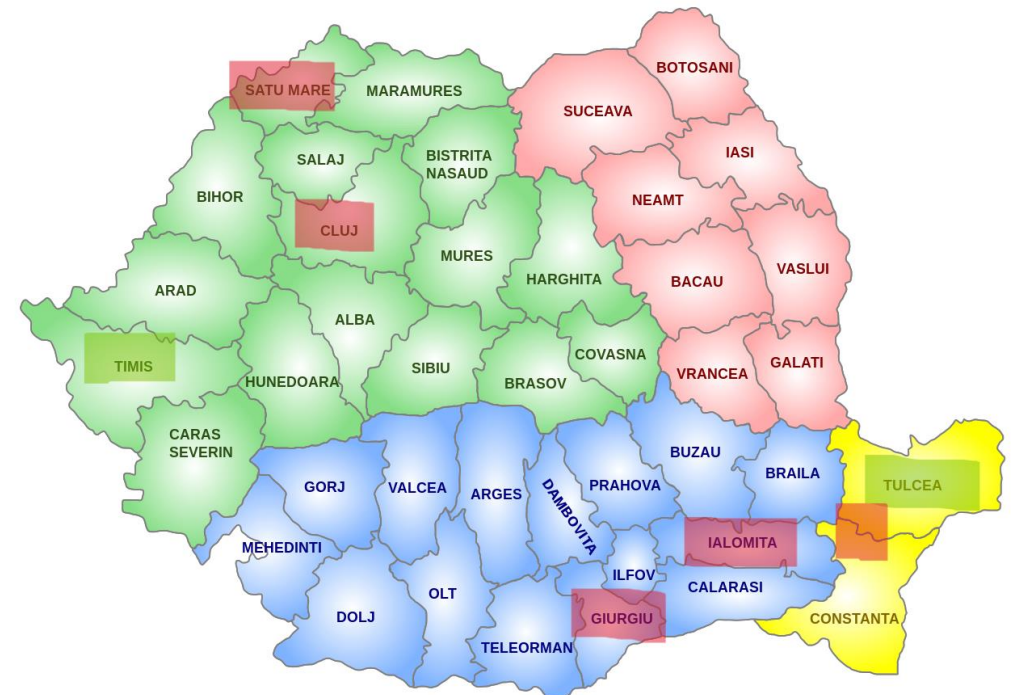
# THE DIFFERENCE, Hypothesis

Jackals showed an increased abundance of up to 258 shot jackals in Ialomita and Giurgiu and remained with less than 29 and 75 individuals removed in Cluj and Satu Mare where the number of shot foxes is almost double (1239 in Cluj and 1046 in Satu Mare) than in the counties from the South; Giurgiu (540), Ialomita (614).

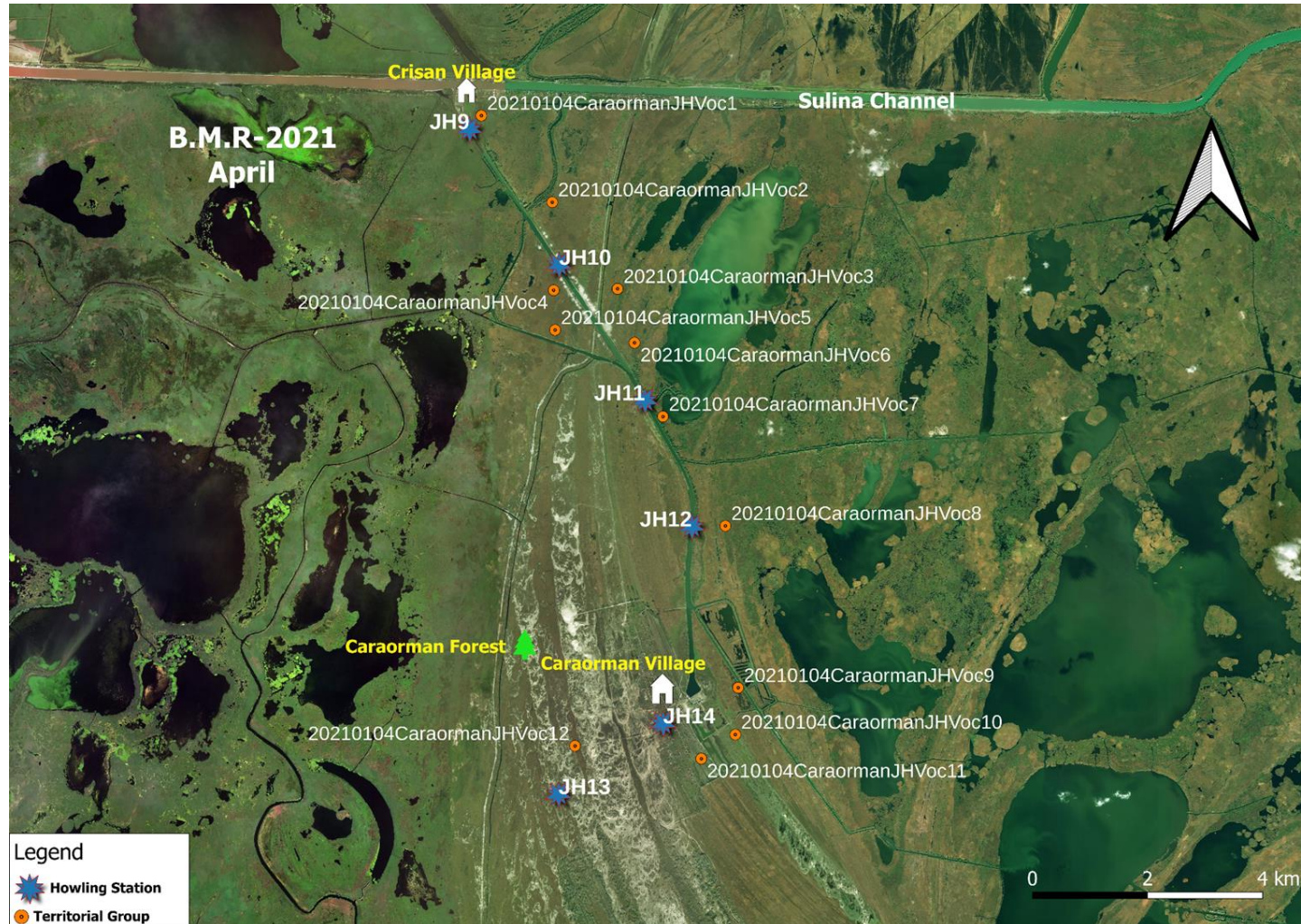
Is Red Fox aggressive hunting and the Red Fox abundance a limiting factor for jackal spreading and establishment?

# LOCAL DENSITIES 2021 and CONTROL AREA

Density derived from BAM was in 2021 between 0,7 in -3,3 territorial groups / 10 km<sup>2</sup>.



# April 2021



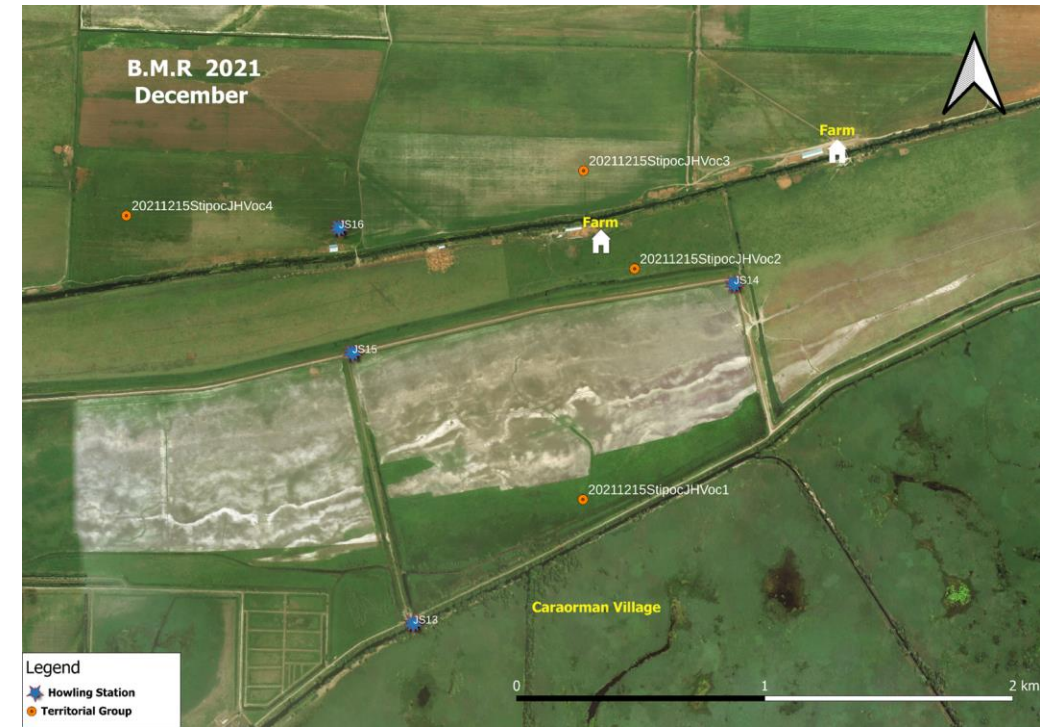
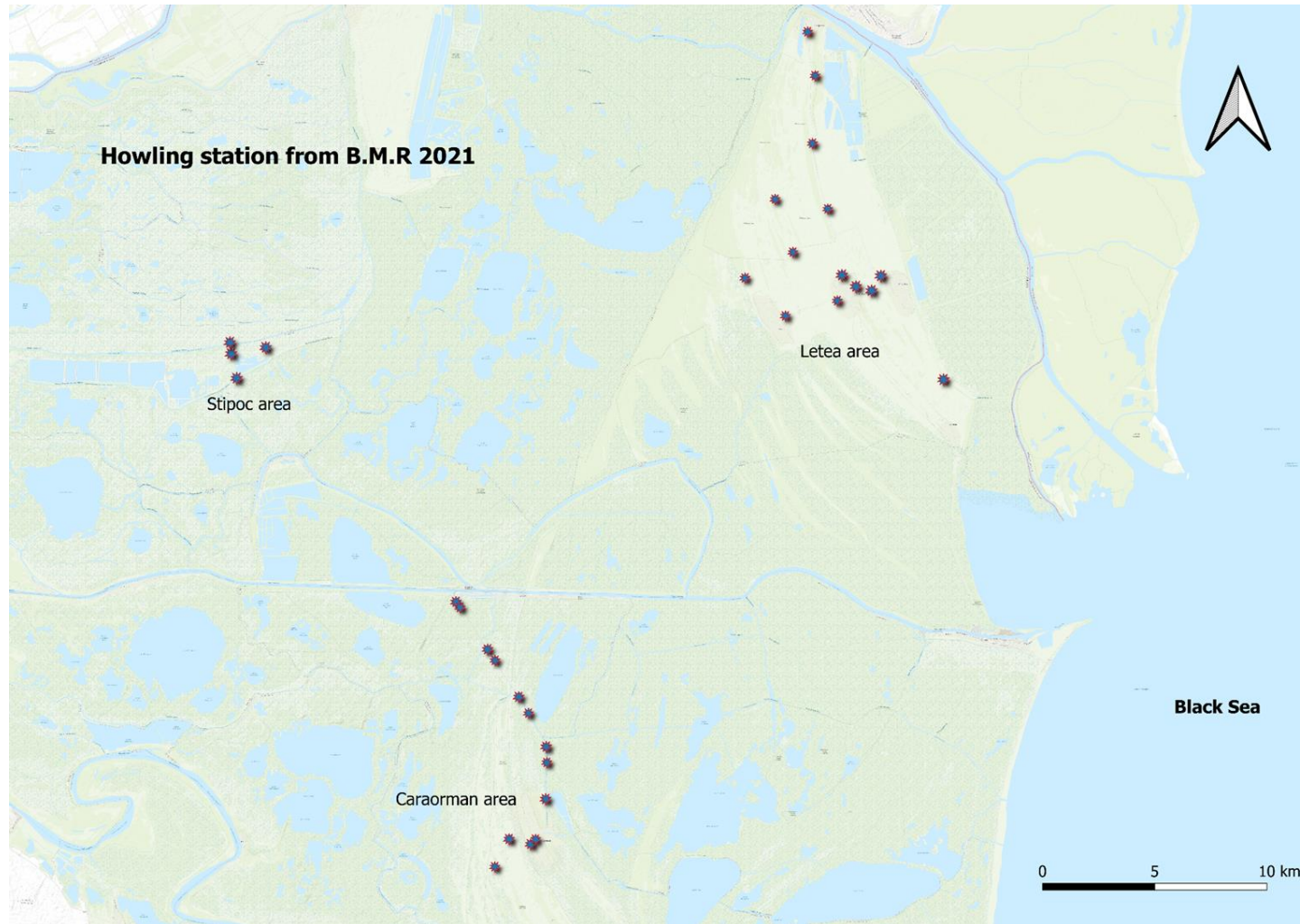
Hunting terrain Cheglevici  
Dudestii Vechi Timis  
1,6 TG / 10km<sup>2</sup>

Grindul Caraorman  
3,3 TG / 10km<sup>2</sup>

Grindul Letea  
1,9 TG / 10 km<sup>2</sup>

CONTROL AREA DOBROGEA  
0.7 TG / 10 km<sup>2</sup>

# December 2021



# December 2021

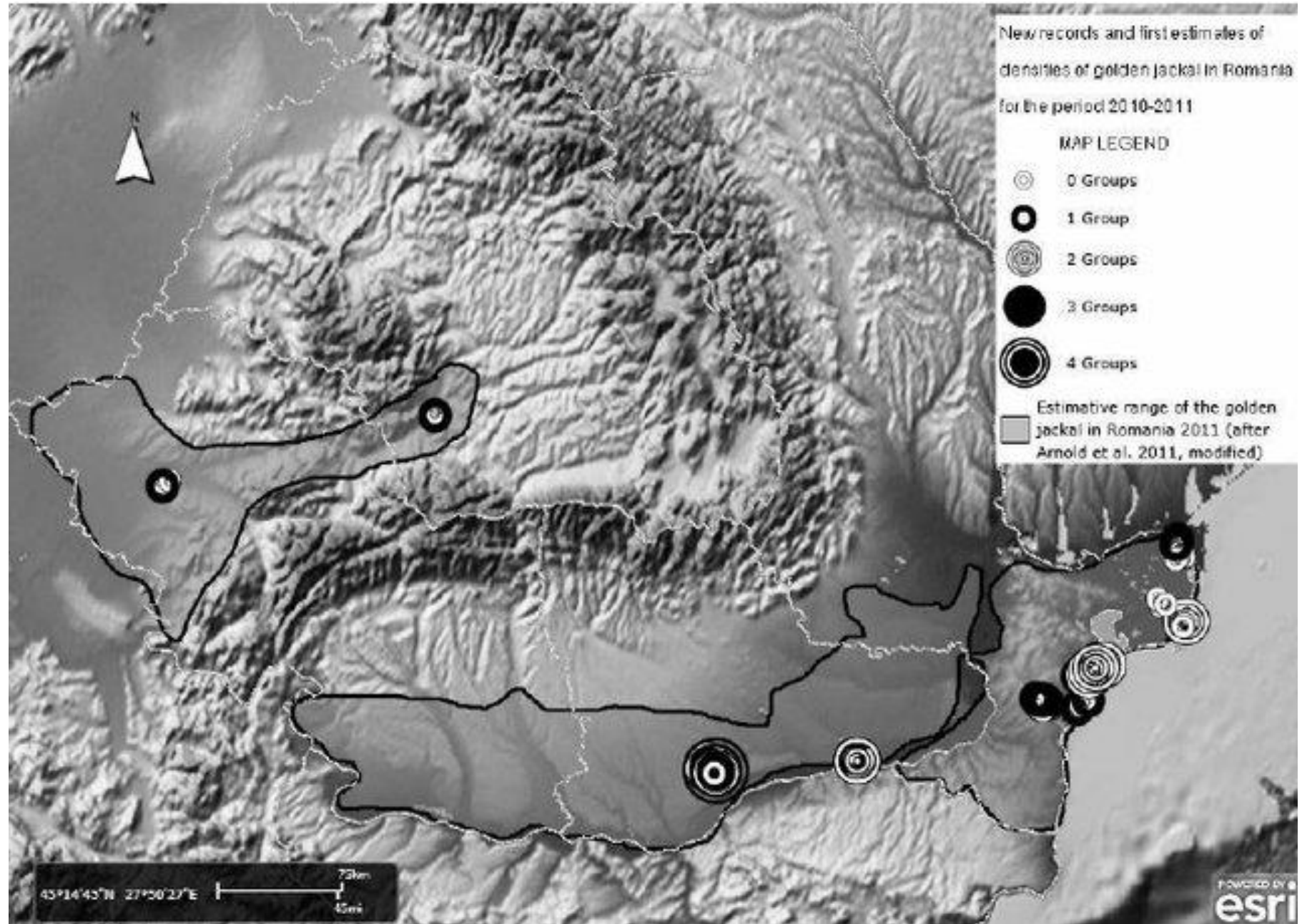
GRIND maritim Caraorman: **0,49 TG / 10 km<sup>2</sup>** (1,47-2,45 ind / 1000 ha)

GRIND maritim Letea: **1,71 TG / 10 km<sup>2</sup>** (5,42-8,85 ind / 1000 ha)

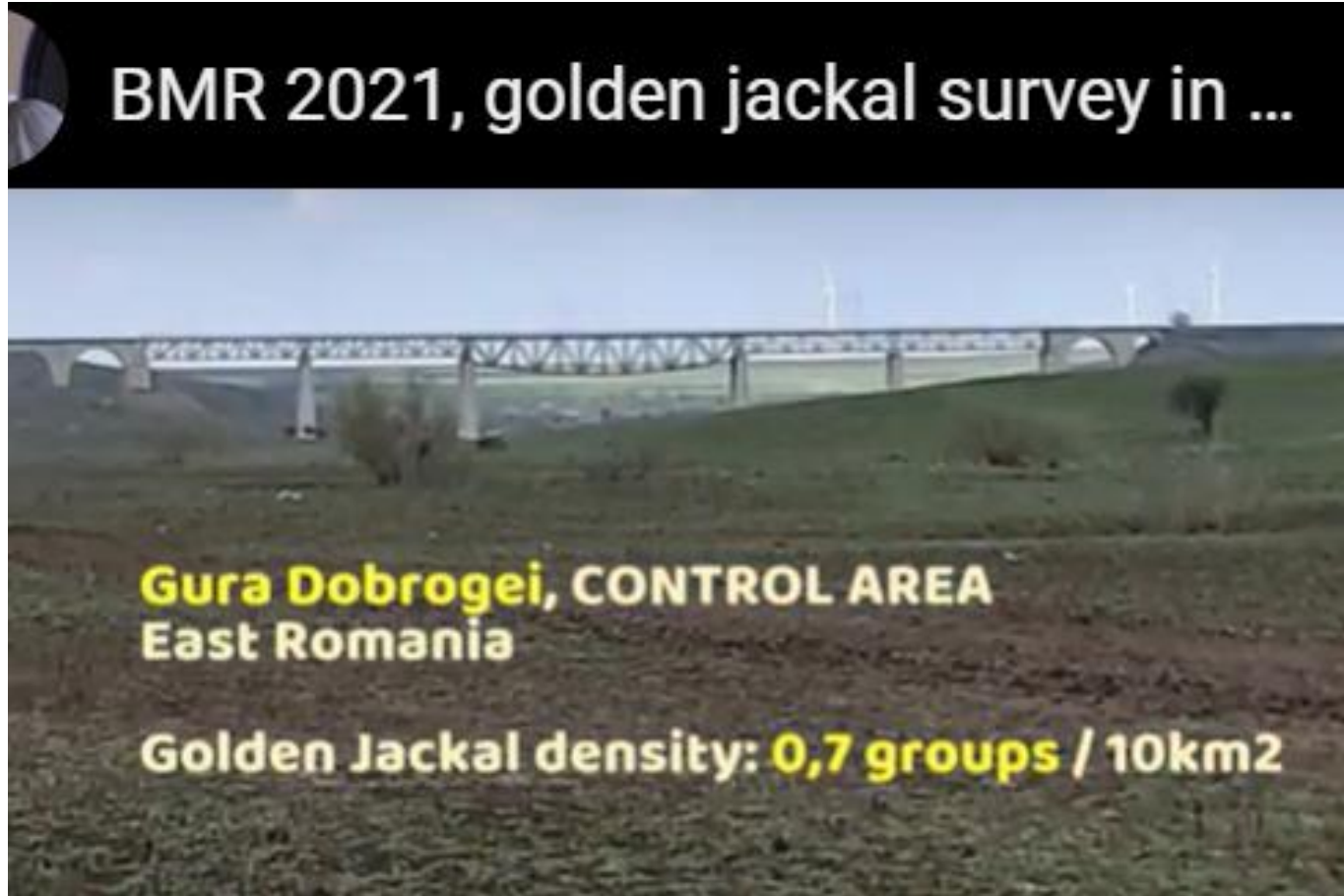
GRIND continental Stipoc (partea estică): **3,18 TG / 10 km<sup>2</sup>** (9,55-15,92 ind / 1000 ha).

# Habitat

Banea *et al* 2012



# CONTROL AREA GURA DOBROGEI



**2011**

0.52 territorial groups/10 km<sup>2</sup>

**2021**

0.7 territorial groups/10 km<sup>2</sup>



# Conclusion

- ❑ The process of golden jackal natural colonization in Romania is constant and shows increasing population from year to year with jackals being now removed from all 41 counties.
- ❑ Red fox population hunting bag started to decrease in the last two years.
- ❑ There are important differences between harvest quotas proposed by the Government and the realized numbers by GMU, the former ones overpassing 100% in many cases.
- ❑ Local density in hunting terrains and in the Danube Delta Biosphere Reserve show fluctuations in different years and the optimum densities are still found in the Danube Delta.

# Thank you!

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Photo: Ovidiu C. Banea



Photo: Alexandra ion