

First record of multiple breeding and communal nursing within one social unit of European golden jackal (*Canis aureus*, L. 1758) in a low density area in NE Italy

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MATE



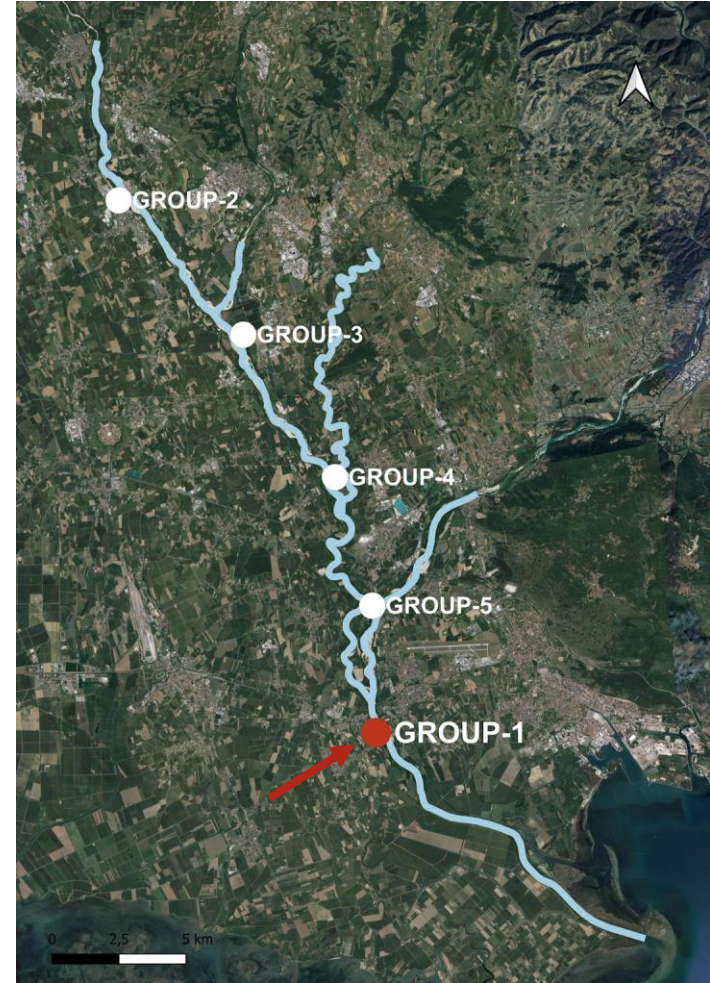
Background

- Golden jackal listed in Annex V of Habitats Directive → EU Member States shall take measures only as a result of surveillance work, to ensure Favorable Conservation Status
- Game management plans are often elaborated without specific data on local density, at official rates overpassing 90–100 % (*i.e.*, Romania)
- Main reproductive parameters of the species not fully understood; lack of knowledge on the species adaptability to aggressive hunting

AIM OF THIS STUDY → to investigate reproductive biology at the den site as a key element in defining lethal control policies / conservation measures

Study area

- Legal status: Fully protected
- Low density (0.53–0.65 groups / 10 km²)
- Low mortality
- Proximity to rivers / streams
- Absence of wolves and winter snow cover
- High human density
- Elevation range: 0–72 m a.s.l.



Multiple breeding was observed in **one group**, in the lower Isonzo River catchment

Materials and Methods

Preliminary survey:

- Local density was calculated with bi-modal technique by combining bioacoustic monitoring method (Giannatos 2004) and reproductive group occurrence with opportunistic camera-trapping

Burrows sampling:

- 24 potentially suitable burrows were investigated with camera-traps during 2021/2022 breeding seasons
- One camera trap (model = Browning Spec Ops Advantage) was active on one burrow occupied by jackals from 20/02/22 to 30/06/22 → 112 camera-trap days (18 days lost due to memory card full)

Results

- 5 groups were found in the study area → density = 0.53–0.65 groups / 10 km²
- Jackals were recorded on 12 burrows during 2021/2022 breeding seasons
- In 2022 one burrow was occupied by a reproductive group of jackals for 49 days (09 April – 28 May) in the Natural Reserve Foce dell'Isonzo
 - **1814** jackals' videos collected during den occupation (**15:12 hours**)
 - Group composed by **3 adults**: the breeding pair and one female with the role of **helper**
 - Breeding of both females (dominant and helper); communal nursing

Results – reproduction and communal nursing

- The dominant ♀ gave birth to 8 cubs between 4th and 9th of April (**first litter**) in an unknown site
- The dominant ♀ occupied the monitored burrow on 9th of April, bringing inside the 8 cubs
- A **second litter** of 4 cubs appeared related to the same den, as result of parturition by the helper ♀ occurred between 29th of April and 2nd of May
- The two females cooperated in rearing the first litter
- Apparently the second litter did not survive

Relevant observations

04/04 – last record of the dominant female **pregnant**

04/09 – **den occupation**: the female brought inside the burrow 8 newborn cubs (**first litter**)

04/10 – a second female (**helper**) was firstly observed at the active den

04/26 – first independent exit from the den of one pup

04/29 – the helper ♀ appeared **pregnant**

05/02 – the helper ♀ was recorded **allo-suckling** for the first time

05/09 – the 8 pups were recorded altogether outside the den for the first time

Relevant observations

05/19 – the two females were recorded **suckling together**

05/20 – the dominant ♀ brought out of the den **3 inept newborn cubs**

Shortly after, the cubs were brought back inside the den by the helper

Later in the day, the dominant ♀ moved away a total of 4 newborn cubs (**second litter**)

05/21 – the helper ♀ brought at least one of the newborn cubs back to the den

05/24 – **last record** of a cub from the second litter

05/28 – the jackals' group leaved the den

Limitations

- Four interruptions of working of the camera-trap affected the sampling
- The corpses of newborns from the 2nd litter were not analyzed by a veterinarian in order to determine the source of their physical inhabitation

Future works

- Camera-trapping is an effective tool to investigate social and reproductive behavior of golden jackal
- Further in-depth studies are needed, combining different research methods

Conclusions

- We documented the first case of **multiple breeding** and **communal nursing** within the same social unit of golden jackal. This social unit was formed by 15 individuals.
- Based on aggressive behaviors from the male toward the helper, polygyny might be excluded
- Our findings open new scenarios and questions about the reproductive biology of the species
- **Applied ecology perspective** → knowledge of main reproductive parameters should be a key element in defining golden jackal management plans with lethal control policies / conservation measures

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