

Jackal territoriality, habitat specialist behavior, measurable parameters related to food availability as major ecological factor and limit for jackal movements in Europe **Brief analysis based in Crispus NGO Sibiu experience**

Ovidiu BANEA(Romania), Ivana SELANEC(Croatia), Giorgos Giannatos(Greece), Environmental Ecology

Some animals actively defend a part of their home range against members of the same species. This core area, which does not normally include the peripheral parts of the home range, is the territory (Huggett, 2004). Jackal families hold territories of two to three square kilometers throughout the year, portions of which are marked with urine, either by the male or the female jackal, to ward off intruders (Ivory, 1999). In our studies, we performed acoustic detection of families in a range of 2km ray buffer (12,56Km²). The **expected** groups' number, according to the described jackal territoriality and the area compressed in a monitoring site would be 6 to 4 territorial groups (**3,98 territorial groups/ 10 km²**)

Species differ in their habitat requirements, the span going from habitat generalists, who live virtually anywhere, to habitat specialists, who are very choosy about their domicile (Huggett, 2004). Limiting factors include moisture, heat and nutrient levels (Huggett, 2004) anthropogenic pressure as aggressive hunting activities, bad waste management as positive factor near villages.

The presence of jackals in hunting terrains often occurs in high densities (Lapini & Banea, 2013, in press) and this is supposed to happen due to the loss of the jackal territoriality by elimination of alpha individuals and the enabling of interbreeding of adjacent groups. In southern part of Romania was observed the density of jackal population as being higher after hunting control of the species (Banea, *not published data*). On agricultural use terrain jackals are present during their feeding activities, probably because their main food is represented by small rodents (Lapini & Banea, 2013, in press).

Jackal population density seen with acoustic stimulation in our monitoring sites of Danube Delta, never shown more than 7 territorial groups/ calling station (local density of approx. 21 individuals/12,56km² or **5,57 groups (17 individuals) / 10km² (1000ha)** the lower levels being "0". This variability and heterogeneous jackal density, related to the entire surface elected for each transect, demonstrate habitat specialist behavior and determined us to perform analyses of habitat preferences (Salek et al 2013, *pers comm.*). We admit that several ecological factors are responsible of jackal spreading and habitat plasticity. An innovative study of those possible factors is now part of the following research program of our team.

The jackal-howling technique must be surely considered a useful tool in the monitoring of European golden jackal populations, but at low population levels it should be applied only on the basis of other objective evidences, and integrated by other field methods (Lapini & Banea, 2013, in press).

At the end of March 2013, researchers from Matsalu National Park Reserve Administration, Tartu University in Estonia and Crispus NGO Sibiu, Romania performed bio-acoustic stimulation with positive results in a reed-bed and junipers' scrub habitat of one of the most important bird nature reserve areas from Northern Europe.

Explanation of why jackals established a possible reproductive group in the area is not elucidated two hypothesis of their arrival being now in discussion:

- 1) Natural colonization from Northern Coast of Azov Sea, Donetsk County, Ukraine using Dnieper (Ukraine) and Daugava (Belorussia and Latvia) River Catchments
- 2) Intentionally introduced, 2-3 years ago. Now are done a lot of efforts to establish the biogeography of the species and categorize the species in Estonia.

Jackals reached three important wetland Ramsar Nature Reserves in the last 10-20 years, now with stable populations in Evros and Danube Delta. Matsalu National Park Reserve with Kasari River Delta among other wetlands is an obligatory route and stop for thousands of birds.

Similarities between Evros Delta (Greece), Danube Delta (Romania) and Kasari Delta (Estonia) are specialization of the habitat with a lot of protected refuge areas, immense food resource as carrion, livestock and peripheral hunting terrains which due to bad management of biological tissues and incomplete harvesting of the shot bird game or just injured animals support jackal food necessities during winter time. In Croatia Jackals are present in all 5 Ramsar areas (Kopački rit, Lonjsko polje, Crna mlaka, Neretva delta and Vransko jezero). Some of them have the same with delta we mentioned above salt marshlands. And, interesting observations we did in Croatia that in winter, jackal density in Neretva (e.g.) decreases.

Further studies on jackal density related to ecological factors which determine habitat specialist behavior should be realized, with an interdisciplinary approach including specialized ornithologists, small mammal specialists and environmental ecologist in several years following population dynamic of every species from jackal ecological network.

We propose now determination of jackal presence using bio-acoustic stimulation in wetlands across proposed dispersal routes in hotspots from big river catchments, lakes where hunting has been developed recently.

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Contact: controlecologic@gmail.com , gojage@goldenjackal.eu CRISPUS and GOJAGE report,4.04.2013



Matsalu National Park Reserve, Estonia



Baltic Sea Coast, Kasari Delta, Photo: Tonis Ulm



Kasari Delta, Estonia



Evros Delta, Greece



Danube Delta, Romania



Neretva Delta, Croatia