



# ESA ANNUAL MEETING 2016

Fort Lauderdale, Florida

Sunday, August 7 – Friday, August 12, 2016

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## Meeting Information

When: August 7 - 12, 2016

Where: Fort Lauderdale, FL

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## COS 55-4 - Canid guild changes in Europe: Evidence for a continental-scale mesopredator release of golden jackal (*Canis aureus*)

*Wednesday, August 10, 2016: 2:30 PM*

*222/223, Ft Lauderdale Convention Center*

**Nathan Ranc**<sup>1,2</sup>, Francisco Álvares<sup>3</sup>, Ovidiu Banea<sup>4</sup>, Tomaz Berce<sup>5</sup>, Francesca Cagnacci<sup>1,2</sup>, Jaroslav Cervinka<sup>6</sup>, Dusko Cirovic<sup>7</sup>, Nada Cosic<sup>7</sup>, Sándor Csányi<sup>8</sup>, Giorgos Giannatos<sup>9,10</sup>, Miklós Heltai<sup>8</sup>, Gjorgji Ivanov<sup>11</sup>, József Lanszki<sup>12</sup>, Luca Lapini<sup>13</sup>, Luigi Maiorano<sup>14</sup>, Danijela Malesevic<sup>15</sup>, Dime Melovski<sup>11</sup>, Despina Migli<sup>16</sup>, Jasna Mladenovic<sup>17</sup>, Ilya A. Pankov<sup>18</sup>, Alexandra Penezic<sup>7</sup>, Anelia Petrova<sup>19</sup>, Martin Sálek<sup>20,21</sup>, Ivana Selanec<sup>22</sup>, Aleksandar Stojanov<sup>11</sup>, Stoyan Stoyanov<sup>23</sup>, László Szabó<sup>8</sup>, Igor Trbojevic<sup>15</sup> and Miha Krofel<sup>17</sup>, (1)Biodiversity and molecular ecology, Fondazione Edmund Mach, San Michele all'Adige, Italy, (2)Department of Organismic and Evolutionary Biology, Harvard University, Cambridge, MA, (3)Research Center in Biodiversity and Genetic Resources, CIBIO/InBio, Vairão, Portugal, (4)Ecology Department, Crispus NGO, Sibiu, Romania, (5)Slovenia Forest Service, Ljubljana, Slovenia, (6)Nature Conservation Agency of the Czech Republic, Trebon, Czech Republic, (7)Faculty of Biology, University of Belgrade, Belgrade, Serbia, (8)Institute for Wildlife Conservation, Szent István University, Budapest, Hungary, (9)Department of Biology, Section of Zoology and Marine Biology, University of Athens, Athens, Greece, (10)Ecostudies PC - Environmental studies, Athens, Greece, (11)Macedonian Ecological Society, Skopje, Macedonia, The former Yugoslav Republic of, (12)Department of Nature Conservation, University of Kaposvar, Kaposvár, Hungary, (13)Zoology Section, Friulian Natural History Museum, Udine, Italy, (14)Dipartimento di Biologia e Biotechnologie, La Sapienza University of Rome, Roma, Italy, (15)Faculty of Science, University of Banja Luka, Banja Luka, Bosnia and Herzegovina, (16)School of Biology - Department of Zoology, Aristotle University of Thessaloniki, Thessaloniki, Greece, (17)Department of Forestry, University of Ljubljana, Ljubljana, Slovenia, (18)National Museum of Natural History (NMNHS), Bulgarian Academy of Science, Sofia, Bulgaria, (19)School of Biological Sciences, University of East Anglia, Norwich, United Kingdom, (20)Institute of Vertebrate Biology, Academy of Sciences of the Czech Republic, Brno, Czech Republic, (21)Department of Zoology, University of South Bohemia, České

*Budejovice, Czech Republic, (22)Association BIOM, Zagreb, Croatia, (23)Wildlife Management Department, University of Forestry, Sofia, Bulgaria*

### **Background/Question/Methods**

The golden jackal's *Canis aureus* range in Europe is expanding rapidly and populations have increased significantly during the last decades. The presence of this new carnivore could impact existing animal communities and is already receiving high interest among wildlife managers. The decrease and fragmentation of previously dense grey wolf *Canis lupus* populations by humans have been suggested as potential trigger for such pattern. Historical trends in the populations of both canids and local evidence of golden jackal disappearance in areas recently recolonized by wolves tend to support this hypothesis. In this study, we developed species distribution models (SDMs) at a continental scale to investigate the golden jackal environmental niche and identify the potential influence of wolf presence on jackal habitat suitability. Since jackals are highly mobile and opportunistic animals, dispersers can temporarily move through nearly any habitat type. To prevent overestimation of the species' environmental niche, we restricted our study to established territorial jackal groups sampled by means of acoustic stimulation. Nine different SDM algorithms were calibrated and evaluated within the core distribution range of the species. We used environmental variables relevant to the species ecology: annual snow cover duration, land-cover and wolf presence; all uncorrelated and mapped at a 5 km resolution.

### **Results/Conclusions**

We surveyed a total of 2,497 distinct locations across 11 European countries and detected 820 territorial jackal groups. GBM and Maxent algorithms performed best (average AUC = 0.91). Snow cover duration accounted for the highest variable contribution (37.2%), followed by wolf presence (20.8%). Forest and agricultural land prevalence, as well as distance from settlements and hydrological features were also selected in the best models. Jackal habitat suitability was highest in areas with short snow cover duration and heterogeneous land cover. Average jackal probability of presence ranged from 0.21 in areas of permanent wolf presence to 0.73 in areas of wolf absence. Although snow cover duration was the most influential variable to predict jackal distribution, the model predictive ability was significantly improved by including the wolf presence covariate; implying that grey wolf presence also significantly affects golden jackal habitat suitability. More generally, this analysis supports the hypothesis that jackal expansion in Europe was triggered by a large-scale mesopredator release following wolf persecution in 19<sup>th</sup> and 20<sup>th</sup> century.

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1990 M Street, NW | Suite 700 | Washington, DC 20036 | phone 202-833-8773 | fax 202-833-8775 | email [esahq@esa.org](mailto:esahq@esa.org)