XXVII Convegno della Società Italiana di Etologia

18-21 Giugno 2017, Calci

Abstracts

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XXVII Congresso SIE - Calci, 18-21 Giugno 2017

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Un ringraziamento particolare va a tutto il personale del Museo di Storia Naturale per l'attiva collaborazione alla realizzazione dell'evento.

design with methods and sampling protocols, are of fundamental importance. The data collection phase is a critical step that any study must take into account in order to minimize the errors that may ensue. Technology, if used properly, could help to minimize bias and to provide us with the best tools to analyse and understand the World, giving it the space it deserves.
Keywords: cybertracker, software, conservation

15.30 TELOMERE DYNAMICS, MATE CHOICE AND REPRODUCTIVE SUCCESS IN A PASSERINE BIRD

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Telomeres are conserved DNA sequences at the termini of eukaryotic chromosomes which contribute to maintenance of genome integrity, and their shortening leads to cell senescence, with negative consequences for organismal functions. Because telomere erosion is influenced by extrinsic and endogenous factors, and can affect survival prospects, telomere dynamics may provide a mechanistic basis for evolutionary and physiological trade-offs, and might be the target of natural and sexual selection. However, few studies examined the causes of telomeres shortening, their consequences on individual fitness, and the existence of phenotypic traits possibly signalling telomere length (TL), especially in free-living organisms. We investigated telomere dynamics, as well as phenotypic and fitness correlates of TL at different life stages, in a socially monogamous passerine bird: the barn swallow (*Hirundo rustica*). We showed that individual TL decreases during the period of nestlings growth and it is affected by rearing conditions, as gauged by brood size and sex ratio. In addition, TL of both adult males and females positively predicts seasonal reproductive success, thus suggesting that individuals harbouring longer telomeres are prime performers (e.g. larger fecundity and/or better parental care). We also found evidence of assortative mating for TL, which seems to be adaptive because of the direct fitness benefits acquired by pairing with an high-quality mate that possess long telomeres, and, since TL is partly heritable, the indirect ones of producing offspring which inherited long telomeres. The evidence of assortative mating for TL also suggests that epigamic signals exist that reliably reflect TL and mediate mutual mating preferences. This is the case because an association between TL, body size and sexually dimorphic plumage coloration was documented for the first time in any species. Therefore, TL appears to be a source of variation in major fitness traits and may be an ultimate target of mate choice.
Keywords: telomere, sexual selection, assortative mating

15.50 NEST ATTENDANCE, EXTENDED PHENOTYPE AND SOCIAL SELECTION IN MULTISPECIES COLONIES

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Colonial species interact not only with conspecifics but often with other species nesting in the same site. The effect of conspecific traits have been measured recently with a multilevel selection analysis, but the effect of social traits of heterospecifics on individual fitness remain not quantified. We recorded nest attendance effort of two species, lesser kestrels (*Falco naumanni*) and jackdaws

(*Corvus monedula*), nesting on the Gela Plain (Sicily, Italy). Both species are secondary-cavity nesters breeding in abandoned rural buildings where they form single-species or mixed-species colonies. By correlating reproductive success as a measure of fitness to conspecific and heterospecific nest attendance we revealed an asymmetric relationship where only lesser kestrels accrued fitness benefits by nesting with jackdaws in the same colony-housing site. Jackdaws, on the other hand, benefited from conspecific vigilance effort at their own nest, regardless of the attendance level of co-nesting lesser kestrels. In single-species colonies, stabilizing social selection coefficients revealed that the most favoured lesser kestrels were those living in groups with intermediate attendance, whereas, in mixed-species colonies, disruptive social selection coefficients altered the fitness surface so that the most successful kestrels were those associated with the highest attending jackdaw groups. Thus, in both cases, attendance efforts of focal individuals did not affect their own fitness, but their breeding performance depended on the social phenotypes of the individuals they associated with. Together with results from a larger scale investigation of the same study system, our findings illustrate the utility of applying a multilevel selection approach to social and behavioural traits in advancing hypotheses regarding ecological factors that may act as causal agents of selection.

Keywords: extended phenotype, social selection, nest attendance

16.10 INTEGRATION OF ACTIVITY SENSOR , GPS MONITORING AND PHOTOTRAPPING TO DESCRIBE BROWN BEAR (*URSUS ARCTOS*) BEHAVIOUR IN THE EASTERN ALPS

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The Eastern part of the Alps is a sink area for Brown bear (*Ursus arctos*), between the Dinaric and Trentino populations: the study of the behaviour and of habitat use of bears that living in this area represents an important conservation issue. We have studied the behaviour of bears, on the basis of 300 videos obtained with phototrapping (on 10 different bears), GPS fixes, every 2-4 hours, and activity data (true acceleration) on two axis, X and Y, every 5 minutes (on 5 bears radiocollared). The videos obtained at feeding points, hair traps and along paths, were analysed to detect the frequency of presence, in different months and hours, at the monitoring sites. The behaviour, observed in the videos, was combined with the activity data (true acceleration obtained from the collars), for defining the numeric interval of true acceleration, corresponding to: resting, feeding and locomotion. For each hours of the day and in the different month, we have estimated the percentage dedicated to the main behaviour and related to meters travelled per hours, estimated on the basis of GPS fixes. The bears show different seasonal pattern: from May to September bears spend more than 30% of daily time for locomotion; during October and November the bears use more time for feeding (more than 25%), as in March and April. The daily and hourly pattern changes with the season. The integration of GPS fixes, activity data (true acceleration) and phototrapping is a promising approach to study the behaviour and energy requirement of the brown bear in the Alps.

Keywords: Ursus arctos, behaviour, activity sensor