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SOCIAL NETWORK (SN) OF FREE-RANGING DOMESTIC CATS

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Social learning, information transfer, and alloparental care represent distinct strategies promoting successful coping in social animals. Cats living in colonies can show all those features, although very scant, often anecdotic evidence has been reported in such a field. Moreover, social behaviors in cats are too often mixed up due to neutering of adult individuals and other human interferences, which in turns lead to a distortion of naturally occurring behaviors.
In this study, the behavior of free-ranging intact cats was evaluated, analyzing the social structure of a colony and the relationship of familiar and unfamiliar subject by means of an SN-based approach.
A colony of 21 free-ranging cats was observed for five months (in spring and summer), three times a day for 30 min. each. The interactions among the subjects of the native group and foreigner individuals were classified in three different categories according to their social meaning: affiliative (Af), neutral (N), and agonistic behavior (Ag). The first and the latter were moreover defined as Af+ when implicating mutual grooming, sleeping together, rubbing, nursing, and playing; on the other hand, extremely agonistic behaviors, such as vocalizations, blowing, scratching, fighting, and scaring were classified as Ag+. The analysis of the network was then carried out by using the open source software Cytoscape 2.8.
During the experimental period, a wide range of social interactions was recorded among all the actors of the original group; sporadic interactions of external subjects were also observed, mainly ascribable to foreigner tomcats during the reproductive periods of the females. Mating behavior, delivery of offspring, and females' interaction towards kittens were observed, showing a strong relationship among some of the cats belonging to the original group. In such a context, the female matriarch showed a pro-social attitude towards every kitten, up to shared breastfeeding. Her central role was further confirmed by the SN analysis in terms of Closeness and Betweenness Centrality (CC 0.083; BC 0.090).
Specifically, the main feature of this colony could be defined as a scale-free, small world network (diameter 4; shortest paths 325; characteristic path length 1.48; average neighbors 7.332). Although at least four different individuals played a key leading role within the group, the highest centrality value was ascribable to a young cat (a one-year old male, CC 0.91; BC 0.19) that displayed a great aptitude at playing with other members of the colony as well as having a protective role against foreigners.
Such evidence was extremely interesting: individuals with high BC, in fact, tend to be information brokers in human societies(1), but that role has never been verified in cats. Further studies are currently underway aiming at clarifying that exciting and unexpected finding.
(1)Bodin et al 2006. www.ecologyandsociety.org/vol11/iss2/resp2/
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