

THE UTILITY OF COMBINING FIELD OBSERVATIONS WITH THEORETICAL MODELSO. Petit

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In the field of collective movements, many studies are theoretical and predict that self-organized mechanisms underlie group decision-making, especially when considering large groups and/or groups containing similar individuals. The predictions of these models are quite universally recognized, but very few biological validations exist. Indeed, more complex, intentional behavior can underlie the same phenomena, and for animals characterized by developed cognitive abilities, a variety of individualized processes have been described. In order to validate model assumptions, we need experimental data from real groups of animals. We recently demonstrated in macaques and capuchins that decision-making for moving collectively is reached by the combination of individualized (social, motivational, physiological,...) and self-organized mechanisms. Such results have been obtained from experimental data that were compared to simulated data, all implemented in theoretical models, thus combining field observations and modeling approach. Given the importance of self-organized rules in determining group behavior in primates besides more individualized processes, such scenario could well be the general rule in the Animal Kingdom. Nevertheless, the contribution of both individualized and self-organized processes to global decision-making process are likely to differ according to environmental context, group size, the degree of sociality of the species considered, and its cognitive capacities. Further field observations and experimental data complemented with theoretical models would allow us to test such a hypothesis.

Keywords: Collective movement, decision-making, individualized processes, self-organized rules