

第25回 MEE SEMINAR

MATHEMATICAL ECOLOGY & EVOLUTION

2010年6月22日(火) 14:40~16:10

明治大学生田キャンパス第二校舎A館：A207

小田急小田原線 「生田駅」から徒歩10分
又は「向ヶ丘遊園」駅北口から「明治大学正門前」行きバスで15分終点下車
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Cooperation and cheating in an asexual ant society

**Shigeto Dobata
(University of the Ryukyus)**

Abstract:

Biological cooperation is vulnerable to cheaters that exploit the benefits of cooperation without contributing to these benefits, thus the control of cheating is important to maintain cooperative systems. The Japanese ant *Pristomyrmex punctatus* is characterized by asexual reproduction and an extraordinary social structure: all females fulfill both reproduction and cooperative tasks in their colonies. We revealed that most colonies were genetically heterogeneous. Inclusive fitness theory predicts that the resulting lowered nestmate relatedness allows the cheaters to evolve, and indeed we found that this ant society harbors cheaters, which lay more eggs and take little part in cooperative tasks. This results in a negative fitness effect on their nestmate cooperators, which we confirmed by rearing experiments. Although theory predicts that the cheaters are evolutionarily short-lived, population genetic analyses found that the cheater lineage persisted for 200-9200 generations, which is longer than any comparable example of disruptive cheaters in nature. We also found that the cheaters migrate and are thus horizontally transmitted between colonies. Using computer simulation, we show that the estimated rates of cheating and horizontal transmission are sufficient for the cheater lineage to avoid the immediate extinction.

参加自由です。皆様のお越しをお待ちしております。

MEEセミナー世話人：若野友一郎 <joe@math.meiji.ac.jp>
中橋渉 <n_wataru@isc.meiji.ac.jp>

