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Interview with a social insect scientist: Raghavendra Gadagkar

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IS: Who are you and what do you do?

RG: My name is Raghavendra Gadagkar and I am currently a Professor in the Centre for Ecological Sciences at the Indian Institute of Science, Bangalore, India.

I do several things:

I research questions concerning the evolution of cooperation and conflict in animal societies, using the Indian paper wasp *Ropalidia marginata* for my empirical research.

I teach evolutionary biology, behavioural ecology, sociobiology and organismal biology to doctoral, masters and undergraduate students.

As President of the Indian National Science Academy (until recently) and with other similar affiliations, I contribute toward the promotion of science and good science policy in India and elsewhere.

IS: How did you end up researching social insects?

RG: I was fond of catching and watching insects, frogs and other moving creatures as a child. In college I encountered several colonies of *Ropalida marginata* on the windows of the zoology department. I could not help watching them out of curiosity and have not since looked back. *R. marginata* also converted me from a catcher (they sting) to a watcher (their behaviour is fascinating). At first I watched them merely as a layman. Then I began to study them scientifically, but only as a week-end hobby. After my PhD in molecular biology, I converted my hobby into my full-time profession.

IS: What is your favourite social insect and why?

RG: The tropical primitively eusocial wasp, *Ropalidia marginata*. I have been studying it for over 40 years and it continues to present me with new intellectual challenges and continues to give me great delight. I have not felt the need to look beyond, with the exception of occasionally studying the congeneric *Ropalidia cyathiformis*, but only to understand *R. marginata* better.

Ropalidia marginata.

IS: What is the best moment/discovery in your research so far? What made it so memorable?

The discovery of behavioural caste differentiation into Sitters, Fighters and Foragers through the use of multivariate statistical analysis of quantitative behavioural data, in the early 1980's remains, to this day the most exciting and memorable moment. Several factors have contributed to the special status of this early work. It was my first scientific discovery outside of molecular biology, it was made entirely by following my instincts rather than by following the literature and it has remained the starting point for almost everything I have done since.

IS: If teaching is part of your work, what courses do you teach? Has your work on social insects helped to shape your teaching?

RG: I teach courses in evolutionary biology, behavioural ecology, sociobiology and organismal biology to doctoral, masters and undergraduate students. During the last five years my undergraduate students regularly perform field and laboratory experiments with ants, bees and wasps.

IS: What is the last book you read? Would you recommend it? Why or why not?

RG: The most recent book I have read is "Half-Earth: Our Planet's Fight for Life" by EO Wilson. I

would strongly recommend it to any and all persons. It is a remarkably well-written and passionate plea to treat the planet responsibly. Besides, it is brimming with the most recent scientific discoveries, described in Wilson's inimitable style and laced with Wilson's priceless wisdom.

IS: Did any one book have a major influence in shaping your career? What was the book and how did it affect you?

RG: Two books that I read as a first-year undergraduate changed my life: King Solomon's Ring by Konrad Lorenz and The Double Helix by James Watson. Both books described great science but their real magic came from the fact that they described the process of doing science.

IS: Outside of science, what are your favourite activities, hobbies or sports?

RG: When I was doing molecular biology, watching wasps was my hobby. When watching wasps became my profession, I needed a new serious hobby, besides reading book and watching movies. My new hobby is to break the boundaries of scholarship and bring together the natural sciences, social sciences, humanities and arts, both in research and in teaching.

IS: How do you keep going when things get tough?

RG: Just keep going – there is no other way! My science itself is a hobby so that things never really get that tough.

IS: If you were to go live on an uninhabited island and could only bring three things, what would you bring? Why?

RG: The answer to this depends on where the island is located and how long I would have to be there. Besides, today, this question has become a bit trivial – most people on the planet would say: "my smartphone is enough". That would be my first choice with or without internet, as long as I can power it with batteries. I am not that much of a field biologist and my passion is more in watching than in catching. I suspect that I could spend endless time watching all kinds of animals, especially insects for which I need almost nothing.

IS: Who do you think has had the greatest influence on your science career?

RG: My science teacher in sixth grade inspired me to become a scientist, my biology teacher in 8th grade inspired me to become a biologist, WD Hamilton and EO Wilson have been my role models.

IS: What advice would you give to a young person hoping to be a social insect researcher in the future?

RG: The same advice that I would give to any young researcher hoping to do any kind of science – avoid fashions and try to do something original and creative and minimize your dependence on what is hard to get (funding, equipment or whatever is hard to get). In the context of social insect research today this translates into studying behaviour in the field.