

Bug cops.(Policing Insect Societies)(Book Review)

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"Policing Insect Societies" by Francis L. W. Ratnieks and Tom Wenseleers, in *Science* (Jan. 7, 2005), American Assn. for the Advancement of Science, 1200 New York Ave., N.W., Washington, D.C. 20005.

Though it may not provide the basis for yet another Law and Order spinoff, police work goes on in insect societies, too. The criminals in these societies are females out to spread their genes around, even though that may not be in the colony's best interest and may upset the division of labor between queen and workers. "In the life of any female bee, wasp, or ant, there are two points at which she may try to reproduce," write Ratnieks, a professor of apiculture at the University of Sheffield, and Wenseleers, a fellow at the Institute of Advanced Study in Berlin.

One is when, as an adult worker--incapable of mating, in most species, yet still possessing ovaries--she can activate those ovaries to lay eggs: if reared, the unfertilized eggs will develop into males. That would mean too many males. A typical honeybee colony, for instance, has tens of thousands of workers (female offspring of the queen), but only a few hundred drones (male offspring of the queen). Enter "worker policing," in which workers (and sometimes even the queen) detect and kill eggs laid by other workers. In the case of the honeybee and the common wasp, this policing eliminates 98 percent of worker-laid eggs. It also appears to have a deterrent effect, discouraging workers from laying eggs.

The other "danger" point in a female insect's life occurs earlier, when she is a larva and can "choose" to develop into a worker or a queen. In most species, queens are specialized structurally for egg laying and frequently are unable to work. "A larva is often better off developing into a queen, yet policing ensures that most are prevented from doing so. Because queens are generally larger than workers and need more food, adult workers can control whether a larva will develop into a queen by controlling her food supply." In a honeybee colony, for example, where the queen cannot work and too many queens would reduce efficiency, workers "carefully select" the prospective royals (each likely to head her own colony) from the many wannabes and raise them in the "few special large cells in the brood comb."

But such benign preventive policing is not an option for a different species: stingless bees of the sort that rear their female larvae in sealed cells of the same size. To deal with the excess queens they produce, these bees resort to police brutality: Soon after the unfortunate creatures emerge from their cells in the brood comb, they're beheaded or torn apart.

Insect reformers, if such there be, have their work cut out for them.

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