



ScienceWatch-The Lady or the Tiger

Thirty years ago scientists first learned that male fireflies risk their lives each time they seek a sexual encounter. The several firefly species native to our area belong to two groups or genera called *Photinus* and *Photuris*. In each case males flash during flight waiting for a female

of the right species to respond from the ground and there is severe competition among males to get to the female first.

How does a *Photinus* male know when a flash from the ground represents a receptive *Photinus* female of his species? Timing is everything! Females answer their respective males with single flashes timed to follow the male's signals in a species-specific delay. Upon seeing the right signal he dashes in, but sex is not always the reward. An unlucky *Photinus* male may fall into the waiting jaws of a "femme fatale" *Photuris* female who promptly eats him. She lures him in by timing her flashed response to match that of the female of his species.

Scientists also discovered that *Photinus* fireflies produce a defensive steroid poison which makes them unpalatable to predators like thrushes. The substance is similar to the venom "bufalin" made by Chinese toads, so they named it "luci(light)bufalin" Now they have learned that this drama of sexual Russian roulette has an added twist.

Writing in a recent issue of *Proceedings of the National Academy of Sciences*, Thomas Eisner and colleagues show that *Photuris* femme fatales gain more than a nutritional boost by their ambush. By analyzing blood of satiated *Photuris* females they showed that the females incorporate the lucibufalin of the hapless *Photinus* males they eat. When presented to a predator like a jumping spider, females that had eaten *Photinus* males were attacked but promptly dropped, whereas females not fed were consumed.

Eisner *et al.* also found that the level of lucibufalin in the blood of wild-caught *Photuris* females was often lower than expected from consuming at least one *Photinus* male. Where does the lucibufalin go? It appears that by luring and ingesting *Photinus* males, a *Photuris* female not only acquires a potent defense for herself, but passes it on to her eggs, protecting her progeny as well.

So the next time you see fireflies flashing on a summer evening, remember that for *Photinus* males this peaceful scene is more like the tale of "the lady or the tiger"!

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