

# Hidden genitalia in female water striders makes males 'sing'

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In a study published in *PLoS ONE* June 10, Chang Seok Han and Piotr Jablonski at Seoul National University, Korea, report that by evolving a morphological shield to protect their genitalia from males' forceful copulatory attempts, females of an Asian species of water strider seem to "win" the evolutionary arms race between the sexes. Instead, females only expose their genitalia for copulation after males produce a courtship "song" by tapping the water surface.

150 years after the publication of Charles Darwin's *On the Origin of Species*, Han and Jablonski used common insects, water striders, to study the intricacies of evolutionary conflict between males and [females](#). The mechanisms for the way Darwinian natural selection, acting separately on males and females, result in different traits in males than in females (for example, different body sizes to guarantee the highest number of offspring during an individual's lifetime) are already quite well understood.

Sometimes, however, a behavioral trait, such as mating frequency, depends on both the male and the female characteristics. Natural selection favors higher mating frequency in males than in females in many animals, including humans. This leads to an evolutionary "arms race" where males evolve adaptations that force females to mate, while females evolve defenses against males' attempts.

As in the arms races between countries and political powers, it is rare for one sex to "win" in this evolutionary race.

However, in the study by Han and Jablonski, carried out at the Laboratory of Behavioral Ecology and Evolution at Seoul National University, females of an Asian species of water striders, *Gerris gracilicornis*, do seem to win this race as they have evolved a morphological shield behind which their genitalia are hidden from males, protecting them against the males' forceful attempts to mate.

In an apparent response to the female adaptation, after the violent mounting onto the female's back (typical in water striders), males of this species produce courtship signals by tapping the water surface with their middle legs. It is only after receiving the male's "song" that females expose their genitalia for copulation

Citation: Han CS, Jablonski PG (2009) Female Genitalia Concealment Promotes Intimate Male Courtship in a Water Strider. PLoS ONE 4(6): e5793. doi:10.1371/journal.pone.0005793  
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