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galley proof (n): a preliminary printing of a document that is used to identify errors in the typesetting of the document

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Profile

KATE PORTER

A Ph.D. geoscientist with an interest in writing, editing, education, and museums shares her thoughts on

WEDNESDAY, FEBRUARY 18, 2009

[More insect phenotypic funkiness](#)

Like the male members of many species, male beetles fight over female beetles. And, like male deer and antelope, many male beetles sport formidable (for a beetle, anyway) horns, spines, and mandibles, which they use to intimidate (if not outright harm) other males. In the February 6 issue of *Science*, Rowland and Emlen report that some male beetles take a different tack: instead of fighting over the ladies, they pull an Achilles and "dress" like them.

Rowland and Emlen conducted statistical analyses of body size and horn, mandible, or spine length for several different species of beetles. Most previous analyses had assumed only two main male phenotypes for each species (e.g., big horns and small horns, with hornless males being classified in the "small horns" phenotype). Rowland and Emlen, however, found that several species of beetles actually show *facultative male trimorphism*--that is, the males actually demonstrate three distinct phenotypes (alpha, beta, and gamma). Alpha males have large bodies and large horns (or mandibles, or spines). Beta males have smaller bodies and smaller horns (mandibles/spines). Gamma males have the smallest bodies and no horns (you get the idea).

The differences in phenotype are *facultative* because they don't seem to be related specifically to genotype. Instead, the main factor determining whether a male is alpha, beta, or gamma seems to be his body size at maturity--beetles that get lots of food and good living conditions end up as alpha males (big bodies = big horns), while beetles that get less food and are smaller at maturity end up as betas or gammas.

Alpha, beta, and gamma males also seem to employ somewhat different mating strategies. Alpha males have the typical pissing contests for access to mates--for example, some alpha males will guard the burrows where the ladies are living, and fight off all comers. Beta or gamma males, though, are sneakier: they might dig side tunnels into the burrows and cuckold the alphas without ever having to fight them. In some other species (e.g., cuttlefish), "gamma"-type males actually get in with the ladies by "cross-dressing"--for example, some male cuttlefish can change color to mimic female cuttlefish, thus allowing them to get in close enough to mate with the females while the other males are busy showing off.

According to Rowland and Emlen, previous studies (and phenotypic analysis methods) have assumed that the majority of beetles display male dimorphism, rather than trimorphism. They suggest that alternative analyses may be necessary to detect trimorphisms--apparently, some of