

For fish, bigger doesn't always mean healthier

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(PhysOrg.com) -- Female smallmouth bass tend to prefer bigger male mates, but bigger doesn't necessarily mean healthier. That's the finding of a new study in the latest issue of *Physiological and Biochemical Zoology* that investigates why females choose the mates they do.

Sexual selection theory asserts that a female should choose to mate with a male that offers a benefit to her or her offspring. If the benefit is genetic, females should be drawn to indicators that a male might pass good genes to offspring. But in species where males help care for babies, a female might also look for a mate that has the good health and energy to be a good parent.

Researchers Kyle Hanson of the U.S. [Fish](#) and Wildlife Service and Steven Cooke from Carleton University wanted to investigate the parental care side of sexual selection using smallmouth bass. Smallmouth bass are a good species to study because male bass are the sole parental caregivers. Female smallmouth choose a male to mate with, lay eggs in his nest, and then swim away leaving the male to care for the eggs for up to one month. During that time, the fathers don't forage for food, so they need to depend on stored energy reserves to patrol the nest. Those that run out of stored energy abandon their nests, leaving the eggs to be eaten by predators.

It would make sense then that a female should look for clues that her mate has lots of stored energy. "Previous research has shown that females prefer bigger males," Hanson said. "It was thought that larger

males would have more energy at the start of parenting and that's why the females preferred them."

Hanson and Cooke's research in Charleston Lake in Ontario, Canada confirmed that females prefer larger, stouter males. They found the larger males tended to have more eggs in their nests, an indication that larger males attract more females to lay eggs. But the researchers were surprised to find that bigger didn't mean better, in terms of nutritional health and energy. Blood tests looking for mineral content and indicators of energy like lipids, cholesterol and protein showed that larger fish were in no better condition than smaller fish.

"Females choose males according to body shape, but body shape didn't relate to nutritional condition based on blood biochemistry," Hanson said. "Bigger doesn't mean healthier." So if a big body doesn't indicate good health, why do females still prefer them? That's unclear, Hanson says. Perhaps a larger body indicates an older male who has experience raising young and might be better at it. Or perhaps selection for big bodies has little to do with parenting. Big bodies could be an indicator of good genes, and that's all females are looking for.

What is clear, Hanson says, is that nutrition and energy don't drive female preferences for big bodies, as had long been assumed. This finding underscores just how complex the study of mate selection can be.

Provided by University of Chicago ([news](#) : [web](#))

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