

ScienceNow: Who's Your Daddy

by Fiona Proffitt

Science Now: June 21, 2004

Who's Your Daddy



Not just cruising. Paternity tests on baby bonnethead sharks prove their parents' monogamy.
Credit: D. Chapman

DNA analysis of paternity is revealing that many apparently faithful animals are more promiscuous than once thought. But for the bonnethead shark, scientists have found the reverse. The revelation could have important implications for the management of shark fisheries, they report in the July issue of *Molecular Ecology*.

Despite being one of the best studied sharks, researchers knew little about the mating system of the bonnethead shark (*Sphyrna tiburo*), a small hammerhead shark common in subtropical and tropical waters of the western Atlantic. Conservation geneticist Mahmood Shivji and colleagues at Nova Southeastern University's Guy Harvey Research Institute in Florida investigated bonnethead paternity. They expected to find that each litter had multiple fathers, because bonnetheads are highly social and females can store sperm; traits that favor promiscuity in other vertebrates. After identifying paternal DNA in 22 bonnethead litters caught off the Florida Gulf coast, they were surprised to find that 80% of litters had just one father. It seems that most shark mothers mate with one male or, if they mate with additional partners, that one male's sperm out-competes the rest. This discovery of genetic monogamy is particularly surprising, the researchers say, given that sharks don't form stable pair bonds or provide care for their offspring. Whatever the reason for this genetic monogamy,

it's probably not in the water. The litters of two other species, the lemon and nurse sharks, which breed in the same area, all have multiple sires. It's important to know the mating system of exploited shark species, Shivji stresses, because it influences the genetic diversity in a population: Monogamous species could be harder hit by overfishing. Evolutionary biologist Andrew Martins of the University of Colorado, Boulder, says it's an "awesome study" of an animal we know little about, but thinks the significance in conservation terms isn't so clear. What really matters, he says, is the total size of the breeding population and the actual number of males and females successfully reproducing, rather than the mating system per se. Even in a species with multiple mating, it's possible that only a few individuals produce most of the offspring.

Related Sites:

[Guy Harvey Research Institute](#)
[Basic Information on the Bonnethead Shark](#)
[Topics in Shark Biology](#)
[Florida Museum of Natural History Ichthyology Department's shark FAQ](#)
