

The faeder identity – A third male type in ruffs

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The discovery that a small number of sneaker males is hiding in ruff sandpiper populations already was done six years ago. Outside the breeding season, ruff males can be distinguished from females by their greater size. But the Dutch potato grower Joop Jukema, a volunteer bird investigator who counts migrating ruffs every year, noticed that there were a few doubters between the normal birds. They used to be taken for females, but Jukema felt uneasy about it. So he turned to prof. dr. Theunis Piersma (Rijksuniversiteit Groningen and Nederlands Instituut voor Onderzoek der Zee, Texel, The Netherlands) to get rid of this feeling, and they dissected a few middle sized birds.

These ruffs appeared to be genuine males, with testes 2.5 times the size of those of normal males. But they hide their male nature, Piersma observed when he kept some ruffs in a pen on the island of Texel. While the normal males obtained their showy plumage with colored neck ruff and head tufts in the breeding season, these small males retained their inconspicuous female-like appearance. Piersma named the aberrant male form 'faeder' and he sent two individuals to the Canadian ruff expert dr. David Lank (Simon Fraser University, Burnaby), who has studied their behavior and genetics from that time on.

Ruff males don't care for young, and a heavy competition over females is the consequence. The weird ornaments of males in the breeding season are their weapon in this competition. Biologists of Groningen University had discovered years ago that two male types exist that exploit alternative strategies and Lank showed that these types are genetically fixed. Most males, about 85 percent, are territorial males. They try to conquer a court on the leks (mating arenas) where they tussle with neighbors, raise their ruff and tufts to attract females and court them. If their seducing tricks are successful, they sire many offspring. However, three out of four territorial males are not able to occupy a court and their reproductive success is nearly nil as females hardly ever mate outside the lek. Being a territorial is a risky strategy which can yield a lot, but which is mostly unsuccessful.

Satellites, 15 percent of males, have a strategy that confers some warranted success. They don't aim to possess a court, but join up with a territorial male that occupies one. Together they give a show of courting and mounting each other that females cannot resist. That is why a territorial male likes to have a satellite companion. When a female arrives, the territorial becomes aggressive towards the satellite, but not to the extent that the satellite will leave. A satellite tries to hinder the territorial male when a females crouches to be mounted. And if the boss shortly is distracted by a neighbor, the satellite sometimes manages to seize his chance. On average, satellites father as many offspring as territorial males do, maintaining their share in the population at 15 percent.

Can the female mimicking faeders have any mating success in the midst of the exuberant ornamented males? Yes they can, Lank observed. "A faeder stays around with other males, mounting them and being mounted", he emails. "He adds to the uproar that excites females so much. Infrequently a female crouches for a faeder to solicit a copulation from him. If she crouches to be mated by a normal male, the faeder tries to slip between that male and the female and to mate her sneakily. And often, if the female thereafter crouches for another male, the faeder quickly crouches for that male too. Embarrassed by this double invitation, the male may mount the faeder rather than the female. The faeder in that way decreases the

chance that his sperm will have to compete with that of another man.” The large testes of faeders produce an extra amount of sperm, and a large amount of sperm per mating also is helpful in the sperm competition.

Don't the normal males realize that faeders are sneaker males? Lank: “I think that usually they don't recognize a faeder as a male, but that they can learn to do so when a faeder is around.”



Photo: Susan McRae.

Three ruff male types. On the left side a faeder, in the middle a satellite and on the right site a territorial. Ruff and head tufts may have black, brown, orange and white colors. In satellites either ruff or tufts normally are pure white and they lack black feathers.

The two faeders sired young, and when these grew up, about half of them appeared to be a faeder too. So the female mimic is the third genetically determined male type! Lank supposes that the faeder identity is determined by a dominant allele on an autosomal locus (that is: not on the sex chromosomes). The allele is very rare: 98 percent of the birds, so almost every female, is ff and the faeders are Ff (FF being extremely rare). Accordingly, half of the faeders' sons is faeder.

In the mean time, Yvonne Verkuil of Piersma's group, who is to defend her PhD thesis in Groningen on July 9 (2010), mapped out the migration routes of ruffs. Males winter in Europe en West Africa, females in Eastern and South Africa. Males arrive earlier on the breeding grounds in Northern Europe and Siberia and probably take other migratory routes than females. During migration faeders obey to their true nature, Verkuil figured out: they associate with the males.