# Cuckolded males sing louder

August 23 2012

A male rock sparrow: His song reveals a lot about his qualities as a potential mate, so females will be listening carefully to his performance. A team of researchers from the Max Planck Institute for Ornithology in Seewiesen and the University of Copenhagen have discovered that the tempo, the pitch, and the amplitude of song reflect male reproductive success. Credit: Henrik Brumm/MPI for Ornithology

The song of male songbirds is multifaceted and has two main functions: to repel rivals and to attract mates. Females often pay attention to certain features within a song, such as the presence of special syllables, to assess the quality of the singing male.

A team of researchers from the Max Planck Institute for Ornithology in Seewiesen and the University of Copenhagen has now found that the tempo, the pitch, and the amplitude of song reflect male reproductive success in rock sparrows. Surprisingly, the more successful and older

males sang their songs with a higher pitch and a slower tempo than yearling males. However, older males lost paternity more often in their own nest but could more than compensate this by a larger number of extra-pair young, resulting in the highest reproductive success. Cuckolded males regardless of whether they were young or old, sang louder – perhaps as a response to the absence of their unfaithful mate.

Female birds often have a hard job to do in order to assess the quality of a prospective mate. Many males literally dress up their feathers to impress females. For songbirds, it is apparently easier as they are able to modify their songs in a sensational manner. However, the question remains as to which song trait a female should pay particular attention - should she perhaps monitor the number of all song syllables a male is able produce? For species with large song repertoires this would take quite long. Therefore females are better off to listen to special features within male song, such as the so-called "sexy syllables" in the songs of canaries. This means, the more a certain song trait a male is able to sing, the higher its quality, and the female can look forward to healthy and strong offspring. This also might hold true for the trait song amplitude, as in some species loud song is more attractive than silent song.

Hopefully, these two have no problems with infidelity: A rock sparrow couple

enjoying their nestbox home. Researchers have now found out that males whose female companion plays away from home sing louder: Probably in a desperate attempt to tighten the pair bond to the unfaithful partner with particularly impressive sound volume. Credit: Henrik Brumm/MPI for Ornithology

An international team of researchers headed by Henrik Brumm from the Max Planck Institute for Ornithology in Seewiesen apparently has now found the opposite scenario in a population of rock sparrows in the French Alps. The researchers recorded the songs of male rock sparrows in two subsequent breeding seasons with a special emphasis on the amplitude. The conditions in the field make measurements of amplitude relatively difficult, making it a rather neglected topic in behavioural research. The birds were nesting exclusively in wooden nestboxes that were attached to utility poles and which they also used as singing posts. In this way the researchers were able to attach the microphones to the pole in a defined distance to the singing bird, which is essential for a reliable determination of the sound pressure level. Additionally, the researchers conducted a paternity analysis by means of the microsatellite method.

Rock sparrows sing a very simple song that consists of only one element that is repeated several times to form a song bout. This is in clear contrast to other birds such as the nightingale, which has a huge repertoire of different song types. Surprisingly, the researchers found that those birds that were singing at a lower rate and a higher pitch sired a larger number of extra-pair young in other nests. Successful males, which were mostly older, could be distinguished from their younger, yearling rivals by their slower song tempo. Older males had a higher status and probably they did not need to advertise it by their song. In contrast, one-year old males were not able to compensate for the lower attractiveness by a higher song rate and a lower pitch. Moreover, those

males that sang louder were more likely to lose paternity in their own nest; but again there were age-dependent differences: Older males had a higher loss of paternity in their own nest and sang at higher amplitudes compared to their younger rivals. "The high amplitude song of males that lost paternity is not a quality characteristic but rather the desperate attempt to tighten the pair bond to the unfaithful partner", says Erwin Nemeth, first author of the study. The older males were able to compensate their paternity loss in their own nest by gaining more extra-pair young, whereas there is nothing else for the younger yearling males but to wait for better times in the next year.

**More information:** Erwin Nemeth, Bart Kempenaers, Giuliano Matessi, Henrik Brumm Rock sparrow song reflects male age and reproductive success *PLoS One*, published online on August 23, 2012

Provided by Max Planck Society