

Flag has ladies all of a flutter

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(PhysOrg.com) -- Scientists have revealed how the male common snipe 'flies the flag' to get the girl.

A new study - using high speed video and [feathers](#) bought on ebay - shows that when the male snipe sticks out his outer [tail](#) feathers, they flutter like flags in the wind, producing a highly seductive drumming sound. The winged Lothario also dives to increase the speed and therefore raise the pitch of the call in a bid to impress the female of the species.

The [acoustic communication](#) of birds has been widely researched as it is clear that it plays vital roles in key behaviours. Most of this work has been on vocal sound production. However there have been several attempts to demonstrate the aerodynamic mechanisms responsible for

the distinctive drumming produced by the snipe.

Many authors have noted the difference between the outer and inner tail feathers; interest goes back even back to World War II, when pilots first noticed that the wings of their Spitfires started juddering when they went into dives. Flying Officer Carr-Lewty suggested that the snipe's outer tail feathers were stronger with a stout shaft and strong hooks joining the barbules (secondary branches) to prevent the feather from breaking at high wind speeds. Later authors placed the feathers in a [wind tunnel](#) and showed they made similar sounds to the displaying birds.

However this latest study, by Drs Roland Ennos and Jonathan Codd and their team at The University of Manchester's Faculty of Life Sciences, is the first to observe deformations of the feathers as they produce the actual sound, and the first to describe feathers that are specially designed to flutter like flags in the wind.

The team, whose findings are published in the [Journal of Experimental Biology](#), used high speed video and a new understanding of the physics of aeroelastic flutter (the self-feeding and potentially destructive vibration caused by positive feedback between the natural vibration and aerodynamic forces). They compared how fast the vane actually fluttered with predictions of how fast ideal hinged plates would do so, and found excellent agreement between prediction and experiment.

Dr Ennos said: "The snipe has a special outer tail feather that he can stick out. The feathers have a weakened hinge region in their rear vane so they flutter like flags to produce the noise, which the males use to attract females. They dive to increase their speed and make a more attractive higher-pitched sound.

"We got the idea of studying this mating call from work on more exotic hummingbirds, but we have shown that our own home-bred snipe are

just as ingenious. Our first tests were carried out on specimens from Manchester Museum, but we obtained most of our feather through ebay!"

His colleague Dr Jonathan Codd added: "These are significant findings because unlike other birds that produce sounds (such as Annas hummingbird) the entire length of the rear part of the feather vane is mobile, acting as a single unit."

Provided by University of Manchester

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