More flight than fancy?

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Scientists from the universities of Exeter and Cambridge have turned a textbook example of sexual selection on its head and shown that females may be more astute at choosing a mate than previously thought.

New research, funded by the Leverhulme Trust and published online on 5 April in *Current Biology*, shows that differences in the lengths of the long tail feathers possessed by male barn swallows are more about aerodynamics than being attractive. Female barn swallows favour mates with longer tails and the prominent male tail 'streamers' that extend beyond the tail were cited by Darwin as evidence of sexual selection. Now for the first time, scientists have tested this assumption and found that these 'ornaments' are in fact linked to natural selection. Females are selecting mates with longer, more aerodynamic tails, rather than on the basis of attractive, but meaningless ornaments.

By studying individuals with varying tail lengths, the research team established the ideal tail length for catching insects and performing manoeuvres and then determined how much the tail had been extended beyond this. They found that the optimal streamer length for flight varies between individuals but surprisingly there is no variety in the extension beyond this. The research showed the size of tail ornaments developed is determined by natural selection and not sexual selection as previously thought.

Professor Matthew Evans of the University of Exeter explains: 'The part of the streamer thought to be ornamental, rather than functional, does not vary between individuals. This means that swallow tail streamers are

not true ornaments. The streamer's purpose may just be to signal the sex of the individual, rather than to communicate attractiveness to choosy females. We believe that overall tail length is performing the function of attracting females, but females are choosing between males on the sensible criteria of how good they are at flying and catching prey. The ornamental part of the tail is simply saying 'I am male'.'

Attributions developed through sexual selection can be impractical for other functions but traits developed through natural selection are beneficial to survival. Whereas scientists previously believed female barn swallows to be attracted to a male's streamer, which had no function, this research suggests that their selection is perhaps based on the more useful information communicated by tail length, which signals their success in flight and hunting.

'The results of this study force us to question long-term assumptions about the nature of ornamentation and sexual selection,' concludes Professor Evans.

Source: University of Exeter