

Brawn and speed make the grade during mate selection

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Do more efficient and faster male birds win females over? New research from the United Kingdom suggests that the rock ptarmigan, the Arctic cousin of the grouse, does. University of Manchester researchers have found that male rock ptarmigans run up to 50% faster than females, making them significantly more efficient and successful at breeding, not to mention better defenders of their territories. Presented in the journal *Proceedings of the Royal Society B*, the study indicates that physiology is a determining factor in sexual selection, rather than physical appearance, which is usually the case.

'Little is known about the role physiology - the internal biological functions of [living organisms](#) - plays in [sexual selection](#) in birds and

other animals,' says Dr Jonathan Codd from the Faculty of Life Sciences at the University of Manchester, who headed the study. 'Male and female ptarmigan exhibit very distinct behaviours during the breeding season. Throughout the summer months, when there is constant daylight on Svalbard, male ptarmigan have to defend their territory from rival males 24 hours a day and are continually active. This places huge demands on their locomotor system,' he adds.

'As a result, male ptarmigans have far superior running abilities to females and, despite their larger size, are much more efficient, expending less energy and are able to achieve aerial running - where both feet are off the ground at the same time - which females cannot.'

According to the researchers, a number of [bird species](#) exhibit obvious physical differences between the sexes. In most cases, males are bigger than females; in some species, the females are larger. But little research investigating the physiological consequences has been carried out. The Manchester team has changed this.

The researchers say the gender difference in ptarmigans is more or less subtle: from a physical perspective, males are a just a bit bigger than females and their plumage differs. What they have found, however, are significant physiological differences. Their data suggest that gender inequality should play a larger role in zoological studies of the animal kingdom in the years to come.

They note that the physical appearance of male and female birds, as well as other species of the animal kingdom, plays an instrumental role in sexual selection. The plumage of males is usually more colourful than that of females, and experts recognise how crucial their brilliant colours are when it comes time for mate selection. The findings of this study indicate that physiological attributes are a vital component for the breeding success of male birds; females select males that are not only

faster but that can protect larger territories for longer.

'This study shows that, as well as [physical appearance](#), there may be physiological determinants at play in the sexual selection process, as females appear to be choosing males who successfully defend territories, which is dependent upon their running ability,' says Dr Robert Nudds, a co-author of the study. 'We now plan to look at these differences between the sexes in more detail to better understand what is taking place in the mating behaviour of birds.'

More information: Lees, J., et al. (2011) 'Understanding sex differences in the cost of terrestrial locomotion'. *Proceedings of the Royal Society B*.

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