

Why Do Male Himalayan Ibex Have Large Horns?

Daniel T. Blumstein

As Karim and I stalked the herd of 19 Himalayan ibex, we grew silent. They were somewhere behind the glacial moraine. I readied the video camera in preparation for filming the ibex. My rustling startled them and I saw the horns of an adult male approach us inquisitively to about 30 metres. The horns turned into a head and body and then a rump. As the 19 ibex fled, I counted males and females, and estimated their ages based on the size of their horns.

Why do male Himalayan ibex have large horns? Why do peacocks have large tails? Why are males of some species extravagantly coloured or ornamented? The origin and maintenance of many of the sexually dimorphic traits may be via sexual selection. This essay will discuss sexual selection with specific reference to Pakistani wildlife.

Charles Darwin distinguished between natural selection (selection for traits which may increase mating survival) and sexual selection (selection of traits which may increase mating success). So while natural selection may drive animals to run faster to escape predators, sexual selection may select for males with larger tails if such males have a higher mating success. Long tails (or bright colours, of energetically expensive armaments) may ultimately become a physical burden and slow down

animals. In other words, males with really long tails may be easier to catch. Thus, we assume that what we see in nature reflects a balance between natural selection and sexual selection: despite any sexually selected benefits from an extremely long tail, males with such tails will not survive long enough to reproduce. Darwin differentiated two types of sexual selection.

The first type of sexual selection, intersexual selection, was seen when females chose males with certain traits. Thus, the males with the longest tails, pale colours, etc.. The key characteristic here is that females are choosing males. The importance of this form of sexual selection was down-played for almost a century -- many scientists did not believe that females could exercise active choice. Recently there have been many studies on different species which seem to suggest that females may indeed prefer males with certain traits. We may hypothesize that dimorphic traits which appear 'showy' may have arisen or be maintained by intersexual selection. Thus, the peacocks may have evolved their long tails via intersexual selection.

There is a second type of sexual selection. Intrasexual selection is seen in those species where males fight each other, and the winner has access to females. Intrasexual selection leads to the



Daniel Blumstein

Himalayan Ibex, Dhee Saar, Khunjerab National Park.

elaboration of traits which increase fighting ability. Traits such as body size, armament size (e.g., horns and antlers), stamina when fighting, etc., may all be correlated with increased fighting success. So, we hypothesize that dimorphic traits which may aid in combat are the result of intrasexual selection. Male Himalayan ibex fight during the rut, and the winners are able to mate with female group members. Thus, Himalayan ibex size and horn dimorphism may be the result of intrasexual selection.

Sexual dimorphism may not be only the result of sexual selection. It is possible that dimorphism has evolved to reduce competition between the two sexes of a species. Thus, males may have one sort of feeding appendage or body size and females may have another appendage size. Different foraging tools or sizes will permit the utilisation of different resources and the reduction of competition.

It is possible that both intrasexual and intersexual selection are acting on a given species. Thus, it is possible that female ibex

also choose males based upon some trait, (perhaps the same trait that is useful in male-to-male combat). Thus, experimental studies of mate choice and fighting success are required to study the relative role of competition and the two types of sexual selection in generating or maintaining sexual dimorphism.

So the next time you see an ibex or peacock, think sexual selection. If you want to read more about this topic I would suggest the following two books: Halliday, T. 1980. *Sexual Strategy*. Chicago: University of Chicago Press; or Alcock, J. 1989. *Animal Behavior*, 4th. ed. Sunderland, Mass.: Sinauer Associates, Inc.. ■

Editor's Note: *The author, a Ph.D candidate in the Animal Behavior Graduate Group at the University of California, Davis, USA, has been studying the behavioral ecology of golden marmots in Khunjerab National Park since 1989.*