

MATING SYSTEMS

TOGETHER WITH MAN & NATURE

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Not just anyone. Females are at times quite choosy about whom they like. Besides this choice another factor that plays an important role in the mating systems is the acquisition of food to be fertile and produce offspring. Thus, we see the fairly general observation of the distribution of females being determined by the distribution of food resources. Once the relatively "valuable" females are distributed, males may then compete for access to them.

If the resource distribution is such that females are scattered, it may be difficult for males to control a lot of females. On the other hand, if the resources females use are clumped, then it may be possible for a strong male to monopolize a relatively large group of females. If you've followed me so far, you should see the beginning of an ecological explanation of mating systems.

In sexually reproducing species females provide relatively energetically expensive eggs. Furthermore, females have a limited number of eggs to deal with so they are a non-renewable and scarce resource. Mammalian females then go a few steps further and provide a home (their uterus) and later food (milk) for their offsprings. Generally, males contribute only energetically inexpensive and renewable sperm. Since sperm are relatively easy to produce — a male can produce many millions throughout his fertile life — the discrepancy in the amount of potential investment suggests that females (or specifically their eggs) may be a limiting resource. Since limiting resources may lead to competition, we might expect that males might end up fighting for females.

For example, in the Fall, the previously mixed-sex groups of ibex break up. Males who have lived with other males all summer, feeding side-by-side in the high alpine meadows of Khunjerab National Park, suddenly become mortal enemies.

They now fight each other for access to females. The winning males herd their "harem" around the pastures and mate with any and all fertile females. Thus, one male may father an entire year's crop of juvenile ibex.

Ibex illustrate what's referred to as "polygamy — one male with many females". The marmots are "monogamous — one male with one female".

I am unaware of any Khunjerab species which are "polyandrous — one female with many males". Let us examine why these different types of mating systems exist and what are some potential ecological correlates of mating system? Let us assume that males will attempt to father as many offsprings as possible by fertilizing as many females as possible. However, in some instances, it is too energetically expensive to defend more than one female from other males. If females are not clumped but are distributed over a great area, a male who tried to defend a lot of females wouldn't be able to defend any one that well. Thus, males who rather than defending females, just roamed around and mated with available (and of course willing) females, might leave more offspring. However, the word "might" is a key word.

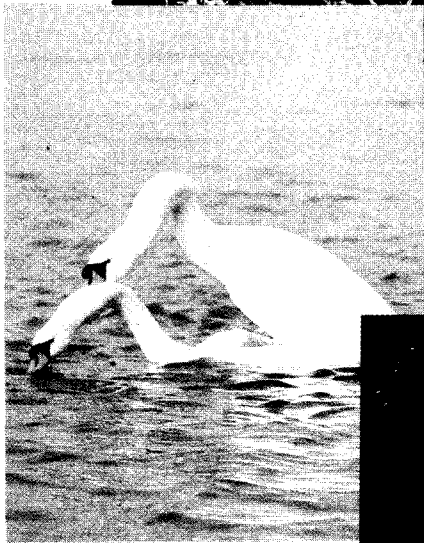
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Might implies variability — some males who wander might not leave any offspring. Thus, a male who permanently defended a territory with a female on it might do better in the long run.

Thus, distributed resources, tend to lead to distributed females, and monogamous mating systems. Clumps of required resources might lead to "economically defensible" groups of females. Such conditions favour the evolution of polygamous mating systems and the evolution of intra-sexually selected traits such as horns or antlers.

After the birth of their offspring, in some cases, males provide considerable parental care. Thus, it would be in the best interest of females to choose males who can provide a lot of care to their offspring. In these cases, good males may suddenly become a limiting resource and females may compete for males.



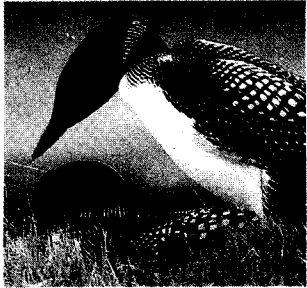
How animals communicate



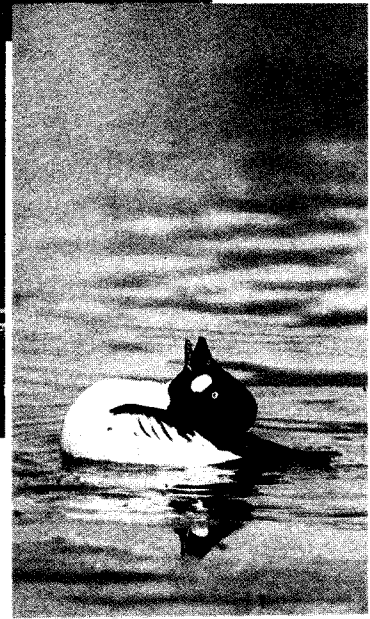
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How animals communicate

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In a few special cases some females may mate with many males while males take care of the progeny of only one female.

Many avian species appear to be monogamously mated. A male will "faithfully" defend a territory on which his mate lays eggs and both will rear their young. However, recent studies looking at the DNA (genetic material) of the young in the nests of many so-called monogamous species suggests that true monogamy isn't as common as was once thought. Nestmates are often and all fathered by the territory holding male.

Well, this brings up another point about mating systems — it pays to be opportunistic. Males who defend a female and go out and try to "sneak-copulate" with females will do better — evolutionarily speaking — than males who just stay at home. It's called "sneak copulation" because the roving male is trying to avoid getting beaten up by the resident male. It seems females of many species tend to readily copulate with these "sneaky" males. Why? Possibly because by doing so she increases the genetic variety in her offspring. She's not putting all her eggs in one basket (excuse the pun) by investing in the genetic viability of one (the territorial) male.

The mating systems we see in nature illustrate nicely the interplay between the distribution of resources and behaviour. Furthermore, they also illustrate the opportunistic and flexible behaviour in animals.

The author, a 1992-93 Fullbright Fellow to Pakistan, has been studying the behavioural ecology of golden marmots in Khunjerab National Park since 1989.

