

INFANTICIDE

A SEARCH FOR AN ADAPTIVE EXPLANATION



'Honey I shrunk the kid!'

The writer examines the phenomenon of infant killing in mammalian families. What could be some of the factors that prompt the adults to kill their defenceless young? Could it be an endeavor to reduce resource competition....?

Daniel T. Blumstein

Male marmot 100 moved into the Grass Group. Male 69 seemed to oppose 100's sudden entry, but the females of the group appeared to accept 100. Before male 100 moved in, there were 9

healthy marmot pups crawling around the Grass Group's main burrows. Within two weeks there was one injured marmot pup limping around — apparently avoiding marmot 100. The injured pup didn't survive hiberna-

tion.

Male marmot 287 suddenly appeared in the Big Hole/Stone Man marmot group. Six healthy marmot pups romped around this group's burrows. Within a few days there was one pup left. Male 287 eventually left the group and male 69 from the neighboring Grass Group moved in. The surviving pup seemed to actively avoid male 69. This pup too didn't survive hibernation.

We were able to recover some of the carcasses of the killed pups. They showed signs of "escape" wounds — small bite marks on their hind feet and legs. Death was probably caused by small—marmot—sized—bites to the head. In no cases were the carcasses consumed by the marmots. From these and other observations like these, I infer that new adult males in marmot groups are infanticidal.

Infanticide—infant killing. The very term conjures up evil and sick images. What kind of animal would kill infants of its own species? Moreover, what, if any, adaptive value could such a behavior have?

Infanticide is seen in many mammalian families. As with any other behavior, a resource-focused economic approach gives us some insight into why adults may kill their defenseless young.

In some species, the young are a resource. Female California ground squirrels kill the young of other female's litters and eat them. Females kill young when they are experiencing high lactation costs. Thus, infanticide in this case seems to be a foraging strategy—the females need high protein food so they kill someone else's pups.

On another level of analysis, such infanticide could also be reducing the resource competition, an infanticide may be a form of parental care.

In another situation, females of some species may try to cut their losses and regain invested energy. When stressed, females may either reabsorb a litter of fetal young, or if the young have already been born, may kill and consume the litter. Natural stresses may include a change in resident males in a group, as seen in wild horses. Why? The reasoning is that by recovering the energy put into producing the young, the female will be better able to reproduce when situations are less stressful.

One of the best documented cases of infanticide seems to be based on another resource—females. Male Serengeti lion floaters (animals not in a mixed-sex group) are sometimes lucky enough to fight their way into a pride with adult females. When a new male joins such a group, he will immediately kill all the pride's cubs. Why do males kill cubs?

There seem to be two explain actions. First, at times the male may have to defend the pride's resources. It makes little evolutionary sense to experience a cost when there is no benefit. Since the cubs are unrelated to the male, any cost the male experiences is not offset by an increase in the male's reproductive success. In other words, the male isn't helping his cubs survive. Which brings me to the next plausible reason why male lions are infanticidal.

Lionesses with cubs are unable to reproduce. As soon as their cubs are naturally weaned, lionesses become fertile again. Infanticide speeds up this process, enabling females to cycle sooner rather than later. Thus, an infanticidal new male lion will be able to father offspring sooner than a hypothetical non-infanticidal lion. So it makes evolutionary sense for male lions to kill unrelated offspring. Similar explanations may account for infanticide in the Hanuman Langur (a non-human primate found in India).

In North America, where divorce and adoption are common, we can see some evidence of human infanticide. Children are statistically more likely to be seriously injured or killed by step-parents or foster parents than they are by their biological parents. This is "heavy" evolutionary baggage we've brought along with us. Such basic instincts need to be, and often are, controlled by laws and morals prohibiting them. Nevertheless, it occurs at a low frequency.

So why were male marmots 100, 287 and possibly 69 infanticidal? I'm not sure. I suspect it has to do with minimizing any costs experienced by the "new" male. More data, in the process of being collected and analyzed, should help me test this and other hypotheses.

(The author, a 1993 Fulbright Fellow to Pakistan, has been studying marmots in Khunjerab National Park since 1989. His sponsors have included WWF-Pakistan and the National Geographic Society.)