What fathers in the animal kingdom can tell us about humans

July 3 2024, by Judith Lock

Credit: CC0 Public Domain

When people talk about animal parents, often they are thinking about mothers. But the role of fathers in the animal kingdom is fascinating—and can tell us a lot about ourselves.

It is quite rare for male mammals to invest anything more than their genetics—only 5%–10% of mammal species fathers do. Some of the defining features of mammals are that mothers carry their babies during pregnancy and the young rely on milk from their mothers. So even fathers who stay don't tend to spend much time feeding or caring for offspring.

To answer why those 10% of mammal fathers do provide care, we need to look at other animal groups. This is because care by fathers is not only rare in mammals, but also understudied.

Any parent will tell you that children are expensive. If energy is invested in giving something to one child, it cannot be used for something else.

In many marine species, mothers and fathers release gametes into the sea, and that's it. Sometimes this is synchronized to maximize the chances of egg fertilization, such as the full moon spawning of coral reefs. However, many of those offspring will not survive.

The alternative strategy is to produce fewer offspring, investing a lot in each. This creates parent–offspring conflict. For the parent it's best to invest as little as possible, but for each child (or offspring), it's best for your parent to invest as much as possible in you. This is the basis of another type of conflict that you may well also have experienced: sibling rivalry.

There's a third type of conflict—sexual conflict. And that's where fathers come in. It's beneficial if the other parent does more than you.

Our typical mammal father is not investing very much beyond reproduction. He may appear to be living his best life. However, let's consider a male red deer.

The dominant male is called the monarch of the glen. He will mate with all of the females in his harem, but has to fight to maintain his position. Every year he grows huge antlers for the rutting season, which requires a lot of energy. He may get injured during fights and spends most of his time defending his harem, reducing the time that he has for eating. The dominant male is only one fight away from losing his position. This is the situation in most mammal species.

We know from researching other animal groups that there are three conditions under which care from both parents is needed. The first is when conditions are unpredictable, and giving offspring a bit of help straight after birth will greatly increase their changes of surviving. We can see this type of care in fathers of some fish species, such as sticklebacks who provide all parental care after the eggs are laid.

They make, guard and fan the nest and then defend the fry from predators once they hatch. The initial benefit of guarding eggs ensures the father was actually the one to fertilize them. In some species this care developed, to quite an extreme case in seahorses, with fathers fertilizing the mother's eggs inside a specialized pouch, and then undergoing something similar to pregnancy, followed by birth. Midwife toad fathers will wrap eggs around his legs after fertilizing them and carry them to a pond.

The second situation in which parents care for their offspring after birth is when the animal lives in conditions where there is a lot of competition for resources, such as food. Helping offspring may give them a competitive edge.

We see this in many of our garden bird species, in which both mothers and fathers care together. These birds, including robins, great tits and blackbirds, are territorial. Robins fathers stay in their territories all year, and there is a dominance hierarchy, with the most dominant males claiming the best territories. This is the competition that parents are preparing their sons and daughters for. Robins form pairs in January, and begin producing chicks in the spring, with both mother and father incubating the eggs and feeding the chicks.

The third situation in which animals care for their offspring after birth is when reproduction relies on an something that is unpredictable. For example, burying beetles—a family of beetles which use a small vertebrate carcass as food for the larvae when they hatch. Both parents tend the offspring, regurgitating food into the mouths of their larvae, which beg to be fed by tickling their parents' mouths. The father does more of the indirect care, preventing the carcass from decaying, and defending it from hungry intruders. Both dung beetle parents, which use dung as breeding chambers, care for their young too.

Consider the division of direct and indirect care between human mothers and fathers. Compared to our great ape relatives, a human baby is born at an earlier developmental stage, so it fits through the birth canal. Human babies require a lot more care in the first three months of life, often called the fourth trimester. A father providing food, water and shelter for the mother was essential for the survival of our ancestors' babies.

If there's one thing we can learn from the animal kingdom, it's that there are many ways to be a father, and that this variation is not only between animal species, but among them as well. There is no simple formula for a "good" father.

Commons license. Read the original article.

Provided by The Conversation

Citation: What fathers in the animal kingdom can tell us about humans (2024, July 3) retrieved 4 July 2024 from https://phys.org/news/2024-07-fathers-animal-kingdom-humans.html