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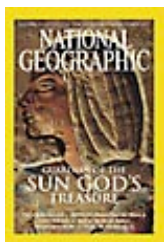
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Animal "Baby-Sitting" May Be Family Affair, Study Says

*John Pickrell in England
for National Geographic News
October 23, 2003*

New research may help to explain why meerkats, kookaburras, and many other group-living animals forgo their own chance to have offspring and help others rear pups and chicks instead.

Researchers have long argued about whether this kind of selfless behavior, known as altruism, directly benefits the helper. Some speculated that such behavior trained altruistic animals to later care for their own offspring. Others believed that benefits were more indirect, allowing animals to vicariously pass some of their genes into the next generation by helping a relative's offspring to survive, an idea known as kin selection theory.

Now a new study published in the October 24, 2003, issue of the research journal *Science* bolsters evidence for kin selection. It shows that within 15 bird and 3 mammal species tested, helpers are better at distinguishing close from distant relatives in those species where they get

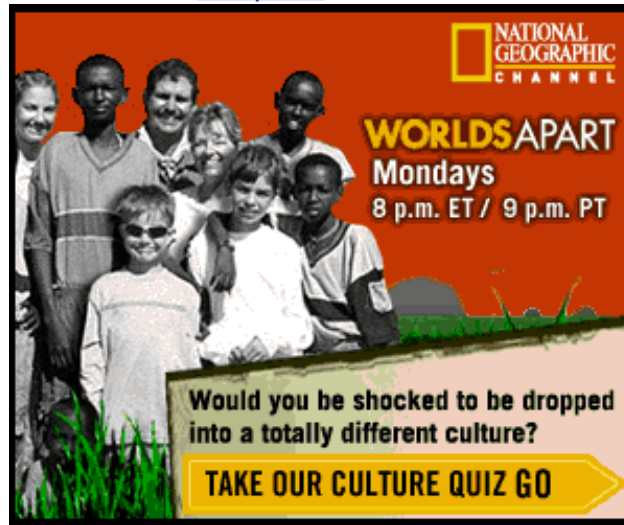


Some animals, including meerkats (above), are able to distinguish between close and more distant relatives and non-relatives. This may allow non-breeding animals to pass along the genes they share with their kin by helping in the rearing of young.

*Photograph copyright Chris Johns,
National Geographic Society*

most benefit from helping relatives pass on their genes.

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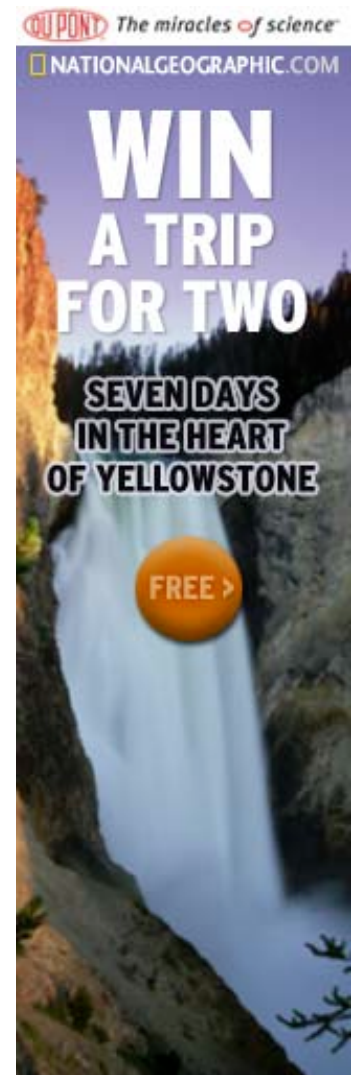


"We show that preferential helping of relatives is more common in species where the benefits of helping are greater," said evolutionary biologist and study co-author Stuart West of the University of Edinburgh in Scotland. "This provides possibly the clearest support for kin selection theory ... that has ever been obtained."

Against Darwin?

According to Charles Darwin's theory of natural selection, an animal's success in the gene pool is measured by the number of offspring it successfully raises to pass on its DNA. However, many animals forgo the opportunity to have young of their own in order to help other parents with feeding, babysitting, guarding, and other activities.

One example is the Florida scrub jay. Breeding pairs of that bird are often assisted by up to six non-breeding helpers, usually offspring from previous years. Assisted pairs have been shown to fledge more than one and a half times as many young as unassisted birds. Another example is Africa's group-living meerkat, where pups also remain in their colony of birth to help raise younger



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pups as opposed to immediately dispersing to reproduce elsewhere.

As many as 220 birds and 120 mammals, including African wild dogs, chimpanzees, naked mole rats, lions, bee eaters, kookaburras, pied kingfishers, and Seychelles warblers, are all found to help rear other's young to a lesser or greater extent. In many cases the helpers postpone their own opportunity to mate.

Kin Selection

In the 1960s, researchers proposed that this kind of altruistic behavior might be explained by the fact that individuals indirectly pass on their genes, by helping relatives (who also share many of an individual's genes) to rear their own young. By helping to rear enough of one's relatives, an animal can help pass on as many—or more—genes as from rearing their own young, the theory goes.

Though this theory is widely accepted for social insects such as bees and wasps, West said, it has suffered more opposition as an explanation for altruistic helping in vertebrates. Worker insects in hives are often sterile clones of the reproductively-active queen. This means that they directly pass on their genes through her offspring. Mammals and bird helpers, on the other hand, are fertile. Consequently, they have more to lose by choosing not to reproduce.

Instead, vertebrates might benefit from helping out in a group-living scenario in other ways, say opponents to kin selection theory. Individuals might learn skills important for later raising their own young, enjoy greater safety in numbers from predators, or increase their own status through helping, and boost later mating success, said West.

Many studies have failed to unequivocally show that helpers provide more help to closer relatives, as predicted by kin selection theory, thus compounding the



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problem.

Sister Sense

To provide stronger evidence for the kin selection idea, West and University of Edinburgh colleague Ashleigh Griffin decided to look instead at the kinds of species that are best able to distinguish between the nuclear family, distant relatives, and unrelated individuals.

The pair compared data from studies covering 18 different species, including dwarf mongooses, meerkats, Florida scrub jays, western bluebirds, and Australian magpies. They used statistical methods to reveal that species which show the most discrimination between relatives—and provide more help to closer relatives—are precisely those species where helpers got more bang for their buck.

"The extent to which individuals preferentially help [close relatives] is positively correlated with the benefit that helping provides," by increasing survival of the young, said West. Those species like the pied kingfisher and the Seychelles warbler, which are able to fledge many more young when assisted, are also the same species that are mostly likely to recognize close relatives.

"This study shows that you make discriminations much better when you have more to gain," commented evolutionary biologist Mark Pagel at the University of Reading in England, who commended the analysis.

When you totally forgo your own opportunity to reproduce, it's essential that you can discriminate family from strangers, said Pagel. "Otherwise you end up helping an unrelated animal, and you've blown it."

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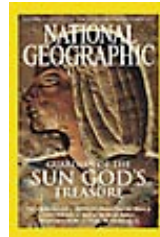
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