

Researchers outline a new way to define and classify how groups of animals hunt together

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Lions on the hunt. Credit: Fotolia

Animals as different as lions, piranha, killer whales and ants have

something in common: they have all evolved the ability to hunt in groups. Group hunting is one of the most fascinating behaviours in the animal kingdom, with an enormous diversity of different behaviours that animals use to capture prey. Researchers at the Max Planck Institute for Ornithology in Radolfzell have realized that strategies vary between species in a number of ways; from social stability of the group, the roles members play, or how they share food amongst the group. By disentangling these elements, the researchers have outlined a multidimensional framework. Using this method, they have identified commonalities between animals with similar hunting strategies, and uncovered some surprising parallels. Not only are orca, chimpanzees and lions similar to humans when hunting, but African wild dogs, some birds of prey, and certain species of ants also show the same combination of hunting strategies.

When thinking about social predation in the [animal kingdom](#), a hungry pride of lions or pack of wolves are the first things that come to mind. However, individuals in a range of insects, fish, reptiles and birds also team up to capture [prey](#). But how does the collaboration of members from a pride of lions differ from that of a colony of ants? And how can the behaviour of such different species be compared at all? "Until now, there has been no generally applicable model to define social predatory behaviour from a scientific perspective", explains Damien Farine, researcher at the Max Planck Institute for Ornithology in Radolfzell. "If you take two examples of [animals](#) that we would consider to be identical types of cooperative hunters, they often show very different strategies in how they communicate, role specialise, share food, or socialise when hunting. We wanted to find a way to capture all that information." Says Stephen Lang.

To this end, the researchers examined nearly 90 described cases of group hunting from across the animal kingdom– including everything from jumbo squid to grizzly bears. They found that in order to hunt together

successfully, animals use an array of techniques which can be represented by five types of behaviour: how socially stable the group is; how individuals communicate with other members; fill specific roles during the hunt; and share prey equally amongst the group. The extent to which a species depends on group hunting to survive and reproduce was also found to play a role. Using these five dimensions, Lang & Farine outlined a system to evaluate and describe each of the fundamental features of an animals overall hunting strategy, simplified as a score for each dimension of behaviour (sociality, communication, role specialisation, food sharing, and dependence).

There are some cases of animals where individuals appear to hunt in groups, but more simply they could be aggregating at common food sources. "Take the annual salmon runs in Canada" says Stephen Lang. "There are hundreds of bears coming to the same sites to catch migrating salmon, but they aren't necessarily hunting together. Instead, they're attracted to a common source of food. Cases like that fall into a very different subgroup of strategies when you look at the scores as a whole. Alongside bears, you'd also find swallows, some penguins, and even crocodiles using the same hunting strategy."

The analysis also illustrates that a number of other species use much more complex strategies. For example, in group-living chimpanzees, individual animals can take on different roles during a hunt, with each role contributing to an overall group strategy. Highly-developed predators such as these chimpanzees, lions and killer whales demonstrate features that are similar to native human hunter-gatherer cultures. What is perhaps more surprising is that some unexpected species, such as birds of prey (specifically the aplomado falcon) and certain species of ants, also show similar hunting strategies. These animals must hunt in groups – the birds in family groups, the ants in colonies – in order to be successful. Individuals in these groups specialize in specific roles, communicate during the hunt, and ultimately share the prey that they

catch.

In addition, some species vary in their hunting strategies. Take orcas – a species with sub-populations all over the world, all of which might be expected to use the same types of [group hunting](#) tactics. But, after separately scoring the different sub-populations, the result was unexpected: different populations of killer whales use different combinations of strategies. These differences largely depend on the type of prey that they hunt. Fish-eating [killer whales](#) extensively use communication when hunting, whilst those that eat seals and other marine mammals hunt silently, instead relying on specialised roles to force their prey into ambushes.

These findings of animals hunting in groups also extends to cases of different species working together to hunt prey. One such well-described case of this is found in groupers and moray eels; grouper signal to morays to encourage them to begin hunting, and with different hunting styles, they flush prey into one another's path with a much higher success rate than if hunting alone. These examples are important as they demonstrate that groups do not need to be made up of family members to be able to work together.

Next, Lang and Farine want to investigate whether animal groups with similar hunting behaviours share evolutionary origins, to uncover how social predation originated in the animal kingdom. They hope other researchers will be able to apply their new framework in future behavioural studies, so that results from across the world can be more comparable.

More information: Stephen D. J. Lang et al. A multidimensional framework for studying social predation strategies, *Nature Ecology & Evolution* (2017). [DOI: 10.1038/s41559-017-0245-0](https://doi.org/10.1038/s41559-017-0245-0)

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