

Research model unlocks secrets of wolf pack behavior

April 2 2014, by Bob Yirka



A wolf in Yellowstone National Park. Photo courtesy of Yellowstone National Park

(Phys.org) —A team of researchers with members from AEP A Euskadi in Spain and Hampshire College in Massachusetts has developed a computer model that shows that wolf pack behavior depends on the social structure of the pack as well as its size. In their paper published in *Journal of the Royal Society: Interface*, the team describes how their model works and what it shows regarding wolf pack behavior, particularly while hunting.

For perhaps thousands of years, people have known of the terrifying skill of [wolf packs](#) when hunting for prey. Victims are encircled, giving them no place to run while [wolves](#) in the pack take turns rushing in for the kill. What's not as well-known is pack dynamics, particularly when hunting is

taking place. Studies of wolves in the past have led to theories of pack behavior based primarily on social structure—dominant wolves lead the less dominant. More difficult to study is what happens when wolves are on the hunt. To learn more, the researchers in this latest effort turned to computer modeling, based on prior field research by others.

The [computer model](#) diagrams the methods used and actions taken by packs with varying [social structures](#)—some with all adult members, others with mixed family members including offspring.

In analyzing the activity demonstrated by the model, the team found that as expected there was an optimum pack size—four or five adults—enough to easily surround and kill prey, but not so many that all receive a small share. These results coincide with prior research suggesting the same is true for other species that hunt in packs, such as wild dogs, jackals and coyotes. The team also found that other packs based on families of wolves tend to organize in social structures similar to the way humans function as groups when performing work. There is generally an inner circle of pack leaders, surrounded by an outer ring of less experienced wolves. Young wolves hang on the periphery watching and learning. Larger packs must obviously hunt more often as the share of each kill is smaller and thus less efficient.

The [model](#) shows, the team reports, that the larger the pack size, the more sophisticated the social structure, which may lead to more complex behavior—adding significance to the overall social order of the pack.

More information: Group size, individual role differentiation and effectiveness of cooperation in a homogeneous group of hunters, R. Escobedo, C. Muro, L. Spector, and R. P. Coppinger, *J R Soc Interface* 2014 11:20140204; [DOI: 10.1098/rsif.2014.0204](https://doi.org/10.1098/rsif.2014.0204)

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