

Wolf hunting strategy follows simple rules

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Mollies Pack Wolves Baiting a Bison. Image: Wikipedia.

(PhysOrg.com) -- A new study of wolves (*Canis lupus*) has found that communication between pack members and a social hierarchy are not essential features of a successful hunt, and all the wolves have to do is follow two simple rules.

The researchers, led by Cristina Muro of the Assistance Dogs Association AEPA-Euskadi, in Bilbao, Spain and colleagues in Spain and the US, used computational simulations to study the strategies of wolf packs in hunting and capturing [prey](#).

The results of the study were that two simple rules were sufficient to reproduce the actual wolf-pack behaviour of tracking, pursuing and encircling prey seen in the wild. The rules were, firstly, move towards

the prey until at a close but safe distance (the distance depending on factors such as the length of horns), and then secondly, when at the minimum safe distance, to move away from the other wolves which are also in position.

The only information each of the five wolves in the computer-simulated pack needed was the position of the other wolves in the pack, and it did not necessarily need to communicate with the other members. The computer models also found that no hierarchy was required within the pack for the hunting to be successful.

The results suggest that theories requiring the wolves to display a strict hierarchy along with superior intelligence and ability to plan the chase may be off the mark, since simply following the two rules resulted in the virtual wolves in the computer simulation behaving remarkably like wild wolf packs. The virtual wolves closed in and encircled the prey in the same way as real wolves, and if the prey tried to escape one wolf would sometimes seem to ambush the prey after it drew back to maintain distance from the other members of the pack, which placed it in the path of the prey animal.

The results of the study do not prove, however, that wolves are not intelligent and do not show foresight or planning.

Research at Yellowstone Park [reported on last month at Physorg](#) also demonstrated that wolves are risk-averse and keep at a safe distance if they can, leaving other members of the pack to do the dangerous work of getting in closer to prey, which can kick or gore them to death. This research also showed that smaller [wolf packs](#) can hunt more effectively than larger packs.

The results of the two studies raise questions about why [wolves](#) tend to live in packs, since the previously held assumptions of a large pack being

more effective at hunting, and social behaviour and communication being essential, appear to be wrong.

More information: Wolf-pack (*Canis lupus*) hunting strategies emerge from simple rules in computational simulations, *Behavioural Processes*, Volume 88, Issue 3, November 2011, Pages 192-197.

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Abstract

We have produced computational simulations of multi-agent systems in which wolf agents chase prey agents. We show that two simple decentralized rules controlling the movement of each wolf are enough to reproduce the main features of the wolf-pack hunting behavior: tracking the prey, carrying out the pursuit, and encircling the prey until it stops moving. The rules are (1) move towards the prey until a minimum safe distance to the prey is reached, and (2) when close enough to the prey, move away from the other wolves that are close to the safe distance to the prey. The hunting agents are autonomous, interchangeable and indistinguishable; the only information each agent needs is the position of the other agents. Our results suggest that wolf-pack hunting is an emergent collective behavior which does not necessarily rely on the presence of effective communication between the individuals participating in the hunt, and that no hierarchy is needed in the group to achieve the task properly.

via [Newscientist](#)

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