



Social structure among wolves

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## Howlin' Wolf



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**The term “structure” is quite commonly encountered on the pages of ecology textbooks. It is especially popular in descriptions of populations in relation to their spatial, age, sex and genetic organization, and of course social structures, which describe interactions and links between individuals, and group configuration**

Studying the social structures of wild animals is no easy task. To learn about relationships between individuals, researchers frequently spend months or even years out doing fieldwork under harsh conditions. It is no wonder, then, that some bypass this by describing the social structures of certain species based on observations of animals kept in captivity. Not surprisingly, however, this method can produce misleading results, as is excellently illustrated by research into one of Europe's largest predators: wolves.

### Aggressive alpha males

Wolves have always been unlucky. Their diet of deer and wild boar, and unfortunate habit of snacking on livestock, haven't earned them much liking from humans. Their terrible reputation hasn't been helped by fairytales, with wolves generally depicted as having a taste for little girls clad in red hooded cloaks, grandmothers, and trios of piglets. However, recent studies show that we should move on

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from our negative attitude to wolves and instead focus our attention on understanding the social structures of their populations.

Early Polish publications, generally written by hunters, used the word *wataha* as a collective noun for a group of wolves. The term has a pejorative meaning, generally describing a "large group of people, usually dangerous or intent on causing trouble", or, worse still, "an armed band of looters." Such a pejorative term, the authors insisted, reflected well the behavior of wolves. They were said to be at their most aggressive during the mating season. In the first Polish monograph on wolves, published in 1926, Bolesław Świątorzecki writes excitedly about courtship as a series of skirmishes among males competing for females. Of course the winner was the strongest animal, "taking her into his possession." We can find similarly salacious descriptions in Zbigniew Kowalski's book from 1953 *Wilk i jego zwalczanie* ["Wolves and their eradication"]: "When she is in heat, the female attracts numerous males, usually between two and ten or even more. The competition is often bloody, until the strongest male is victorious." While it's relatively easy to understand the fantastical accounts of wolves found in hunting literature, even results of early studies of the species leave something to be desired.

Unfortunately, the majority of observations of the animals' behavior have been conducted on groups kept in captivity, formed by bringing together individuals from different packs and environments. Unfamiliar with each other, the wolves were placed in a single enclosure and allowed to breed and form their own relationships. The studies were first conducted by Rudolf Schenkel, who observed wolves kept in Basel Zoo between 1934 and 1942. His conclusions were unequivocal: wolves live in groups in which dominant individuals – an alpha male and female – keep others in check using force. After the alpha pair, the hierarchy moves on to beta animals, with the weakest omega wolves lingering at the bottom. Schenkel suggested that wolf packs are formed each winter from individuals who previously lived separately. Published in 1948 in German in the journal *Behaviour*, Schenkel's paper became a milestone in our understanding of social organization in canines. Unfortunately, this milestone has since become more of a ball and chain, and successive generations of researchers have been unable to break away from the paradigm

it shaped. Furthermore, it had an impact on our approach to dog training. After familiarizing themselves with Schenkel's work, dog trainers enthusiastically based their instruction around a show of force demanding obedience.

Research into the behavior of wolves kept in captivity, conducted some years later by the Swedish scholar Erick Zimen, a pupil of the Nobel laureate Konrad Lorenz, supported most of Schenkel's findings. His article found its way to the US, where it remained popular for many years, as shown through work carried out by George Rabb in the zoological garden in Chicago. The impression of wolves as animals working out a group hierarchy through force has even been included in textbooks. One of the earliest monographs of the species, published in 1970 by David Mech – an American researcher of Polish extraction regarded as an authority on wolves – also supported this view. As luck would have it, he later went on to dispel the myth of the aggressive alpha pair.

### Family ties

Around the same time as Schenkel's observations of wolves in the zoo in Basel, another researcher was traversing the snowy slopes of Denali National Park in Alaska, tracking wolves on request of the US National Park Services. Adolph Murie's official task was to learn about wolf predation on Dall sheep. It is likely that he was assigned the project as penance for his controversial stance regarding predator management at Yellowstone National Park, where he previously studied the behavior of coyotes. In his report, he spoke out against the traditional attitude to predators, which involved striving to eradicate them completely. Murie spent hundreds of hours tracking and observing wolves in the wild. His now classic research, presented in the book *The Wolves of Mount McKinley* of 1944, paved the way for a new direction of research into the animals' ecology. It also laid the foundation for significant changes in the attitude towards large predators in national parks in the US, and contributed to ending the program to exterminate them. As well as its invaluable ecological observations, Murie's book painted a fresh picture of social structures of wolf packs. The author suggested that rather than being groups with a highly hierarchical structure of unrelated individuals that form a new pack every year,



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they live in family groups comprising a male and female and their offspring.

Attempting to describe wild wolf populations using data gathered while studying their behavior in captivity has proven problematic. As Mech noted bitterly in the *Canadian Journal of Zoology* in 1999, "Such an approach is analogous to trying to draw inferences about human family dynamics by studying humans in refugee camps." However, it was still necessary to demonstrate that wolves do live in family groups that aren't centered around constant antagonism and domination. To resolve the issue, long-term observations of social interactions of individuals in their natural habitat were needed. But how could this be achieved for predators which had been hunted since time immemorial, as a result making the animals highly suspicious of humans? The matter was made all the more complicated by the fact that wolves mainly inhabit forests, where conducting direct observations is difficult.

The conundrum was finally solved by Mech. Between 1986 and 1998, he observed wolves living on Ellesmere Island in north-western Canada. The island is covered with tundra rather than forest, and since the wolves rarely encounter people, they are less nervous and therefore easier to observe. Mech gradually accustomed the animals to his presence near their dens and their newborn cubs. The conclusions of his research were far removed from those presented by Schenkel. He confirmed that wolf packs are family-centered, with the breeding pair leading the rest of the pack; this seems natural, since the other animals are usually their offspring. Mech's numerous observations didn't note examples

of fights for domination among wolves from within a group.

Research carried out by Mech and his successors shows that in a wolf pack, the parents share the leader's role; the female is generally more involved in rearing and protecting the cubs, while the male focuses on hunting for food. Groups that include individuals unrelated to the rest of the pack, the presence of more than one breeding female, or situations in which one of the parents is replaced by another individual after they perish are unusual and rare. A breeding pair of wolves may remain together for many years. Cubs usually start to separate from the pack after about a year, so the offspring of a single breeding pair are a temporary element of a family pack. The situation is different for wolves kept in captivity, where individuals are born and grow old in a single, usually very small enclosure.

The history of the slow discovery of how wolf packs are actually structured illustrates how even deeply ingrained ideas often eventually prove to be far from the truth. And, to put it succinctly, in order to learn facts about social structures in animal populations, you can't simply go to the zoo - you need to don a pair of boots and a waterproof coat, grab your binoculars, and head out to the great outdoors. ■

#### Further reading:

- Mech L.D. (1999). Alpha status, dominance, and division of labor in wolf packs. *Canadian Journal of Zoology* 77, 1196-1203.
- Murie A. (1944). *The wolves of Mount McKinley*. Washington: US Government Printing Office.
- Schenkel R. (1948). Ausdrucks-Studien an Wölfen Gefangenschafts-Beobachtungen. *Behaviour* 1, 81-129.