Not Only Dogs, but Deer, Monkeys and Birds Bark to Deal with Conflict

July 14 2009

(PhysOrg.com) -- Biologically speaking, many animals besides dogs bark, according to Kathryn Lord at the University of Massachusetts Amherst, but the evolutionary biologist also says domestic dogs vocalize in this way much more than birds, deer, monkeys and other wild animals that use barks. The reason is related to dogs' 10,000-year history of hanging around human food refuse dumps, she suggests.

In her recent paper in a special issue of the journal, *Behavioural Processes,* Lord and co-authors from nearby Hampshire College also

provide the scientific literature with its first consistent, functional and acoustically precise definition of this common animal sound.

As Lord, a doctoral candidate in organismic and evolutionary biology at UMass Amherst, explains, “We suggest an alternative hypothesis to one that many biologists seem to accept lately, which seeks to explain dog barking in human-centric terms and define it as an internally motivated vocalization strategy.” In the researchers’ view, however, barking is not a special form of communication between dogs and humans. “What we’re saying is that the domestic dog does not have an intentional message in mind, such as, ‘I want to play’ or ‘the house is on fire,’” explains Lord.

Rather, she and colleagues say barking is the auditory signal associated with an evolved behavior known as mobbing, a cooperative anti-predator response usually initiated by one individual who notices an approaching intruder. A dog barks because she feels an internal conflict—an urge to run plus a strong urge to stand her ground and defend pups, for example. When the group joins in, the barks intimidate the intruder, who often flees.

“We think dogs bark due to this internal conflict and mobbing behavior, but domestic dogs bark more because they are put, and put themselves into, conflicting situations more often,” she says.

The reason traces back to the first dogs that started hanging around human food dumps about 8,000 to 10,000 years ago. They would have experienced a serious disadvantage if they had run a mile away every time a human or other animal approached. As Lord explains, “In evolutionary terms, dogs self-selected the behavior of sticking around, overcoming their fear and being rewarded by getting to eat that meal before some other dog got it. Thus these animals allow people to get unusually close. The scared ones die while those less scared stay, eat, survive and reproduce. So they inherit the tendency.”

She adds, “By contrast, wild animals like wolves have a very long flight distance. They hear something and they run before you’d ever see them. Dogs hang around, but now they have committed to holding their ground and the closer an ‘intruder’ gets, the more likely mobbing is to occur rather than running away.”

An example of the domestic environment (rather than the dog’s own behavior) that increases barking is the animal stuck behind a fence with a person approaching, says Lord. “The dog may either feel anxiety or excitement at seeing a stranger but in either case the dog is prevented from approaching or fleeing. This creates conflict, and thus barking.”

Several technical pages of the researchers’ recent paper identify eight different parameters in three categories which must be met in order to classify a given vocalization as a bark. These include tonality, noise, pitch, volume or amplitude, abrupt onset and pulse duration, for example.

In their view, barking is not self-referential communication to convey a message, but a short, loud sound characterized by combining both noise and tonal sounds, which is unusual in animal calls. This definition widens the bark’s usefulness as a functional behavior seen in many animals, though domesticated dogs display it more often. “Using this definition, even birds bark, and certainly many mammals besides canines, including baboons and monkeys, rodents and deer also bark,” Lord explains. “In a whole bunch of mammals and birds, what they do in such conflicted situations is bark.”

This evolutionary view of barking does not sit well with some pet owners who insist that Buffy communicates with them by barking, the researchers acknowledge. “We understand the objection when people say their dogs bark for supper or to get out and play,” Lord says. “Dogs do quickly learn the simple cause-and-effect relationship between their

bark at 10 p.m. and the fact that you'll get right up and take them outdoors. It's true, but in our view it's going too far to suggest the animal is intentionally referring to a specific activity. Rather, it has just learned cues, as it does when it learns to sit or beg for a treat."

Provided by University of Massachusetts Amherst (news : web)