GORILLAS’ VOCALIZATIONS DURING REST PERIODS: SIGNALS OF IMPENDING DEPARTURE?

by

KELLY J. STEWART and ALEXANDER H. HARCOURT

(Dept. of Anthropology, University of California at Davis, Davis, CA, 95616, U.S.A.)

(With 1 Figure)

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Summary

Animal signals have been interpreted as indicating something about the signaller's internal state and hence its subsequent behaviour, while at the same time eliciting a response from the receiver. Such signals are often given when the costs and benefits of an action depend on what others do. This interpretation of meaning and function of signals has been applied primarily to ritualized competitive or courtship displays. Here we use the approach to analyse another context of signalling and a more subtle communicatory behaviour. Gorillas live in small cohesive groups whose synchronized activities alternate between travel/feeding periods and resting periods. We present data on gorillas' vocalizations — the grunts — prior to a coordinated departure from a rest period. We suggest that gorillas use these signals to indicate their readiness to depart and to assess that readiness in others. Vocal activity increased significantly towards the end of rest periods, due both to individuals calling at higher rates, and to a greater number of vocalizers. This increase in vocal activity was not associated with a greater clumping of animals, nor with an increase in non-rest activities, and therefore appeared to be related to subsequent departure. The frequent exchange of grunts supports the notion that gorillas might use the calls of others to assess their readiness to depart. We speculate that such signalling could function to synchronize the behaviour of group members and lead to coordinated group movement.

Introduction

This paper deals with the vocalizations that gorillas give during rest periods. We examine the idea that animals use these signals to indicate

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their readiness to depart from the site and to assess that readiness in others. Such signalling could function to coordinate group activity.

Studies of ritualized threat and courtship displays developed the concept that signals provide information about the sender's underlying tendencies and, therefore, its subsequent behaviour, while at the same time stimulating a response from the receiver (TINBERGEN, 1964; DAWKINS & KREBS, 1978; HINDE, 1981). There will be an advantage to signalling a tendency, rather than simply performing the action, when the cost and benefits of the act depend on the behaviour of others. While this functional approach has usually been applied to aggressive contests (MAYNARD SMITH, 1979) it is relevant to non-competitive situations as well. One such context is coordinated activity of a social group. An example is departure from resting to feeding grounds, when the costs to an individual of failing to synchronize behaviour with others includes separation from the group or expenditure of time and energy in false starts (BLACK, 1988; BOINSKI, 1993).

Many studies of signalling and coordinated group movement have looked at flocking birds and their pre-flight behaviour (RAVELING, 1969; BLACK & BARROW, 1985; BLACK, 1988). In a study of whooper and Bewick's swans, Cygnus cygnus and Cygnus columbianus bewickii, BLACK (1988) found that during the interval before departure, the number of birds displaying as well as individual rates of signalling increased. Black concluded that displays served to indicate a bird's readiness to depart and to incite a similar readiness in others. In this way, preflight displays functioned to coordinate take-off and promote cohesion within swan families.

In hamadryas baboons (Papio hamadryas), KUMMER (1968) described how a variety of signals, including the notifying display, between leading males of one-male units enabled them to synchronize their departure from the sleeping cliffs. Kummer concluded that "the direction of march results from a compromise between the intentions of the two leaders...", indicated by their signals, and that such negotiation was the key to the coordination of troop travel. In other primates, intention movements or vocal signals by dominant/leading individuals serve to initiate group movement or determine its trajectory (ROWELL, 1972; BOINSKI, 1991, 1993).

This present study examines signalling behaviour of another species — the gorilla (Gorilla gorilla) — in the period before a synchronized change in activity.