STUDIES ON CHEMICAL COMMUNICATION IN SOME AFRICAN BOVIDS

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Bontebok. Responses of a captive male bontebok *Damaliscus dorcas dorcas* to secretions of interdigital and preorbital glands were tested by presenting them at a food trough.

Interdigital secretion was offered on gauze swabs in steel containers and, in subsequent tests, in an airstream. The airstream was also used to present each of the major components, (Z)-6-dodecen-4-olide and (Z)-5-undecen-2-one (Burger et al., 1976). Mean length of feeding bouts was not significantly affected by any of these olfactory stimuli. Behavioural responses were confined to irregular brief bouts of sniffing at scent sources, which also occurred during some control runs, and a few shows of aggression. These, involving horning, glandular weaving, sniffing at and defaecating on the dung pile, were all performed fairly regularly outside the test situation so that it is uncertain whether the experiments elicited them.

Preorbital exudate also had no significant influence on feeding time. However, in 10 presentations, 11 bouts of sniffing at the scent port were recorded. There was clearly much greater interest in this secretion.

The limited response to interdigital secretion and its components, and the fact that chemical composition shows very little individual variation, suggests that it may be a species-specific scent. Spread about an inhabited area it would merely indicate use by conspecifics and would not elicit particular reactions.

Preorbital marking is performed mainly by terrestrial males in the rutting season. In the field David (1973) saw no behaviour
patterns suggesting recognition of these scent marks, but our tests indicate that they elicit interest, at least in a male. No repellent effect was apparent although this might perhaps have been expected. Territorial advertising does however involve a great deal of visual display and invaders are also driven off. Olfactory cues might therefore be expected to be relatively unimportant. It is suggested that preorbital scent marks may play a role as familiar features of the territory holder’s environment — perhaps mainly in the early stages of occupancy ("self-reassurance") — and that in some situations marking may be merely an expression of aggression.

**Grysbok.** Responses to preorbital secretions were tested in captive grysbok *Raphicerus melanotis*, a small solitary antelope inhabiting dense shrub. The major chemical components of the exudate have been identified as formiates but have not yet been individually separated.

Twigs marked with preorbital secretion placed next to food troughs failed to affect food intake significantly even when tested in a strange environment or when the secretion came from a totally strange male. Marked twigs were also placed next to *Pinus* seedlings, which were eaten within twenty four hours. Seedlings treated with a cowdung and lime repellant mixture, were untouched.

Since olfaction appears to be the principal form of communication and male grysbok mark actively with their preorbital glands, the apparent absence of a repellent effect by preorbital secretion is puzzling. Perhaps marking serves rather to saturate the territory with the scent of the occupant ("self-reassurance"), and to inform neighbours of his occupancy. However, the tests have not excluded an area repellent effect.

**Springbok.** No evidence has been found of springbok (*Antidorcas marsupialis*) marking with the preorbital glands which occur in both sexes. In this the species resembles *Gazella granti* (Leuthold, 1977) and differs from all other gazelles studied to date, which mark with the glands. The well developed dorsal gland or rump patch has been shown to secrete isoprenoid and terpenoid hydrocarbons and ketones (Burger et al., 1978); terpenoids have proved rare in mammalian gland secretions to date. The putative alerting function of the scent, which is presumed to be released when the rump patch is extended in alarming situations has yet to be tested.

**REFERENCES**