Transactions of the Illinois State Academy of Science
(1990), Volume 83, 1 and 2, pp. 104-106

White-Tailed Doe Tolerates Nursing By Non-Offspring

Charles M. Nixon
Illinois Natural History Survey
607 E. Peabody Drive
Champaign, IL 61820

Paul A. Brewer
Illinois Dept. of Conservation
Rt. 2, Box 108
Charleston, IL 61920

Lonnie P. Hansen
Missouri Dept. of Conservation
1110 South College Ave.
Columbia, MO 65201

ABSTRACT

A white-tailed doe (*Odocoileus virginianus*) allowed non-offspring fawns to nurse in the absence of her own offspring. It is speculated this behavior may represent a manifestation of individual inclusive fitness expressed primarily within clans of related females.

INTRODUCTION

White-tailed does are reported to be intolerant of suckling by non-offspring (Hirth 1985). "Thief suckling" (Espmark 1971) has been observed only in the presence of the doe's own fawns (Ozoga et al. 1982); when recognized by the doe, non-offspring were driven away (Hirth 1985). We report an incidence of nursing by non-offspring fawns in the absence of the doe's living offspring.

METHODS

We captured and marked Doe 212 (estimated age using tooth replacement and wear, 21 months) in Piatt County, Illinois, in March 1983. This doe was not seen with any fawns born in 1982 after marking and, considering her age, may not have bred as a fawn in fall 1981. If bred in fall 1981, she apparently had no surviving young by March 1983. This doe gave birth to 2 fawns that were captured and marked 2 June 1983. Doe 212 and the marked fawns were observed together (without other deer present) on two occasions after marking and before the observation reported here, and on 12 occasions (at times with other deer present) between August and December subsequent to this particular observation. When observed, Doe 212 was either alone or with the marked fawns on every occasion except that reported here. We did not observe Doe 212 to nurse either of the marked fawns on these occasions, but mutual grooming was frequently observed between her and the marked fawns.

RESULTS AND DISCUSSION

At 1920 CST 3 August 1983, Doe 212, an unmarked doe, and 2 unmarked fawns were observed feeding in a crop field. The unmarked doe appeared to be alone and paid no attention to the fawns. There was an unimpeded view for 75-100 m surrounding these deer and the marked fawns of Doe 212 were not close by. After a few minutes, both unmarked fawns approached Doe 212 from the side in the usual manner indicating a desire to nurse (rapid approach with head down and tail up and wagging). Both were allowed to suckle for about 30 seconds. They did not attempt to nurse again during the observation period of about 20 minutes. The duration of the nursing interval and the reaction of the doe to the strange fawns appeared similar to a typical nursing bout for a mother and her offspring.

Whitetails have been known to assume the care of orphans (Severinghaus 1949, Palmer 1951, McGinnes and Downing 1970) and thus might be expected to tolerate occasional nursing attempts by strange fawns. All reported attempts, however, have been concurrent with mother:offspring nursing. Such "thief suckling" behavior is common in some ungulates, including reindeer (*Rangifer tarandus*) (Espmark 1971), chital (*Axis axis*) (Schaller 1967), and several African antelopes (Dittrich 1968). The behavior is described as rare in elk (*Cervis canadensis*) (McCullough 1969), caribou (Lent 1974), and mule deer (*Odocoileus hemionus*) (Robinette et al. 1977, Griffith 1988). During a 5-year study of marked deer in eastcentral Illinois (several hundred observations of marked does and their fawns), we never again observed fawns to succeed in nursing from does other than their mothers. However, the opportunity for a newborn non-offspring to associate closely with does other than its mother is relatively uncommon in whitetails because their "hider" behavior precludes many such opportunities. In contrast, species whose young are "followers" associate with other females from birth (Lent 1974). Why Doe 212 nursed these fawns is unknown. She may have been familiar with them in view of the restricted ranges of does with fawns in summer and the considerable overlap in ranges that occurs among adjacent does in space if not in time (Ozoga et al. 1982). They may even

have been relatives as mother and daughter frequently establish ranges adjacent to one another (Ozoga et al. 1982, Nixon et al. 1989). Hamilton (1964) introduced the concept of inclusive fitness (an individual's own fitness plus its influence on the fitness of relatives) to describe such behavior as feeding and/or defending young born within the clan. The nursing of fawns related to Doe 212 would be consistent with this concept. This doe may also have been a primiparous breeder in 1983, and her maternal instincts may have been less well developed (in terms of acceptance of strange fawns) compared to those of older breeders (Ozoga and Verme 1986).

ACKNOWLEDGEMENTS

This report is a contribution (in part) of Federal Aid in Wildlife Restoration Project W-87-R, the Illinois Department of Conservation, the U.S. Fish and Wildlife Service, and the Illinois Natural History Survey, cooperating. R.J. Stoll, Jr., Ohio Division of Wildlife; W.R. Edwards, S.P. Havera, and G.C. Sanderson of the Illinois Natural History Survey reviewed the manuscript.

LITERATURE CITED

Dittrich, L. 1968. Keeping and breeding gazelles at Hanover Zoo. Inter. Zoo Yearbook 8:139-143.

Espmark, Y. 1971. Mother-young relationships and the ontogeny of behavior in reindeer (*Rangifer tarandus*). Z. Tierpsychol. 29:42-81.

Griffith, B. 1988. Group predator defense by mule deer in Oregon. J. Mammal. 69:627-629.

Hamilton, W.D. 1964. The genetical evolution of social behavior. II. J. Theoret. Biol. 7:17-52.

Hirth, D.H. 1985. Mother-young behavior in white-tailed deer, (*Odocoileus virginianus*). Southwest Nat. 30:297-302.

Lent, P.C. 1974. Mother-infant relationships in ungulates, p. 14-55. In V. Geist and F. Walther (eds.). The behavior of ungulates and its relation to management. 2 Vol. Inter. Union for Conserv. Nat. and Nat. Resour.

McCullough, D.R. 1969. The tule elk: its history, behavior, and ecology. U. of Calif. Publ. in Zoology 88:209 p.

McGinnes, B.S. and R.L. Downing. 1970. Fawn mortality in a confined Virginia deer herd. Proc. Southeast Assoc. Game and Fish Comm. 23:188-191.

Nixon, C.M., L.P. Hansen, P.A. Brewer and J. Chelsvig. 1989. Life history and ecology of deer in an intensively farmed landscape. Ill. Dep. Conserv., Fed. Aid Wildl. Restor. Perf. Rep. Proj. W-87-R-10.

Ozoga, J.J., L.J. Verme and C.S. Bienz. 1982. Parturition behavior and territoriality in white-tailed deer: impact on neonatal mortality. J. Wildl. Manage. 46:1-11.

Ozoga, J.J. and L.J. Verme. 1986. Relation of maternal age to fawn-rearing success in white-tailed deer. J. Wildl. Manage. 50:480-486.

Palmer, R.S. 1951. The white-tailed deer of Tomhegan Camps, Maine, with added notes on fecundity. J. Mammal. 32:267-280.

Robinette, W.L., N.V. Hancock and D.A. Jones. 1977. The Oak Creek mule deer herd in Utah. Publ. 77-15, Utah State Div. Wildl. Resour., Logan. 148 p.

Schaller, G. 1967. The deer and the tiger. U. of Chicago Press. 370 p.

Severinghaus, C.A. 1949. The willingness of nursing deer to adopt strange fawns. J. Mammal. 30:75-76.