Social Behavior of Red Deer

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The most popular deer species out of the eight that exist is the red deer (Cervus Elaphus), particularly in New Zealand. However, the red deer has historically harmed vegetation in indigenous forests during the late 1920's (Wildlife Online, 2010). This resulted in the implementation of a government-mandated red deer eradication policy and the withdrawal of the deer protection policy. The number of deer in these areas was not successfully controlled until the early 1960's, which resulted in the introduction of the commercial hunting industry. This sharply decreased the number of deer and showed this to be a viable industry. Many previous studies on the social behavior of the red deer have mostly focused on ruts with their behavior, particularly when two sexes (hinds and stags) show obvious dissimilarities (Brock, Guinness, & Albon, 1982). Nevertheless, the social behavior displayed by hinds and stags during the remainder of the year largely remained unchanged.

Similar to many red deer populations, both hinds and stags remained largely segregated most of the time they spent together (Lincoln et al, 1970). In addition, about 80 to 90 percent of the time, most hind's did not associate with stags older than three years old. Another difference includes group size, where female groups were usually matriarchal and led by a dominant female. This dominant female takes the authority any time the group is moving or disturbed for any reason, and young hinds usually stay with their mothers. In contrast, the young stags usually run in groups with the bachelor males (The British Deer Society, 2012).

Red deer usually associate together in family groups and they are very sociable among themselves. Previous research between 1930 and 1970 into the group structures of red deer, as well as their social systems, has shown mixed results. Some of the research reveals that while they associate and travel in their perspective family groups, memberships within those groups are

often irregular. However, other family groups seem to be more stable (Brock & Guinness, 1975). More recent red deer studies, however, show a flexible red deer social system that is connected to the time of year. This is particularly seen in mainland populations, island populations, or with capital animals. Study results clearly show that the red deer's social system is not only tied to the time of year, but also depends on habitat, gender, and age of the animals. A 1999 article in *Oecologia*, by Clutton-Brock, Conradt and Thomson, reveals findings related to red deer habitat segregation. Biological research findings show that even when the number of hinds was reduced on greens, the stags did not begin using them but favored the heather (Geist, 1998).

The current study objective is to look deeper into red deer social behavior, particularly regarding factors that influence individual involvement in competition. The study also investigates the relationship between a number of red deer social encounters and order of rank initiated by individual deer. It is obvious that association social rank depends heavily upon an individual deer's ability to compete, instead of being dependent on genetic relatedness or age (Pepin et al., 2001). In addition, research has shown that red deer associate with other red deer with the same rank. This is something that would have resulted from determined, agonistic relations between ranks (Ceacero, 2012). The study also examines the validity of this information, as predictions indicate that an increase would be most common between individual red deer more closely ranked together. In addition, the study reveals that when considering association, it is seen that close ranking opponents did not interact with each other as frequently as expected.

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