Nutritional Quality and Quantity of Available Forages Relative to Demand: A Case Study of the Goitered Gazelles of the Golestan National Park, Iran

By Elham Bagheri Rad, Mansour Mesdaghi, Norhayati Ahmad, and Maimon Abdullah

On the Ground

- Information on seasonal trends in quantity and quality of available forage for the goitered gazelle may be useful to wildlife managers in developing management practices to maintain healthy populations and reduce the consumption of toxic plants by protected wildlife.
- Goitered gazelles in Golestan National Park in Iran relied on a variety of grasses, shrubs, and forbs, to meet their nutritional needs across seasons.
- Increased knowledge of the goitered gazelles diet is expected to assist wildlife managers in determining carrying capacity and assessing viable habitats for future reintroduction programmes, including overall successful management within the protected areas of Iran.

Keywords: crude protein, metabolizable energy, mineral concentration, goitered gazelle, nutritional demand, Golestan National Park.

Rangelands 37(2):68–80
doi: 10.1016/j.rala.2015.01.004
© 2015 The Society for Range Management

Forage quality potentially influences the population dynamics of wild ungulates. A lack of specific nutrient requirements can restrict the distribution of ungulates and herd movements and habitat selection are influenced by seasonal variations in quantity and quality of ungulate diet. Recent studies of some wild ungulates suggest that lack of adequate forage quality and quantity in habitats could reduce survival and pregnancy rates, delay breeding and parturition, and reduce the growth of calves and yearlings. Animal growth and development during the grazing season depends on the nutritional contents of available forage. Therefore, good information on forage quality will help range managers to strike a balance between the animals’ requirements and available forage to achieve optimal survivorship.

In wild ungulates, changes in physiologic demands for body maintenance, bone growth, weight gain, pregnancy, and lactation call for variable nutritional requirements. The nutritional content of forage also changes according to seasonal environmental fluctuations. Therefore, the need to comply with nutritional demands can motivate the ungulates to distribute and move about throughout the year when seeking forage. If the animals fail to get their minimum nutritional requirements, they will suffer weight loss, reduced fertility, decreased milk production, and lowered reproductive rates, as well as a weakened immune system, which results in a greater susceptibility to infectious diseases and parasites. Vital information on the ability or inability of forage to meet the essential requirements of these animals is crucial in determining the reasons for population decline or poor growth rates in the wild.

Availability and quality of forage play an important role in the rate of food intake and the amount of nutrients and energy consumed by herbivorous mammals. However, the reactions toward food deficiency differ among different species of ungulates, depending on several factors such as type of feeding (browsing or grazing), food availability, food preference, behavior, and so on. For example, during the dry seasons, browsing animals consume sufficient amounts of energy and nutrients in their food, whereas grazing animals suffer from food shortages, especially a deficiency of protein and energy.