Common Broomweed Growth Characteristics in Cleared and Woody Landscapes

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Research Note

Common Broomweed Growth Characteristics in Cleared and Woody Landscapes

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Abstract

Common broomweed (*Amphiachyris dracunculoides* [DC] Nutt. Ex Rydb.) is an annual forb that occurs throughout the southern Great Plains, USA. During years of abundant growth, broomweed is problematic because it can reduce grass production and interfere with livestock foraging. In contrast, the canopy structure of broomweed may provide habitat cover for wildlife, including the northern bobwhite quail (*Colinus virginianus* Linnaeus). During an extreme outbreak of broomweed in north Texas in 2007, we observed apparent differences in broomweed individual plant growth characteristics in mesquite (*Prosopis glandulosa* Torr.) woodland areas versus areas that had recently been cleared of mesquite. Our objective was to document differences at the individual plant and population levels. Individual plant mass, canopy diameter, and basal stem diameter were much greater in the cleared treatment than the mesquite woodland. In contrast, plant height was greater in the woodland than in the cleared treatment. Population variables of stand-level production, percentage canopy cover, plant density, and visual obstruction were not different between treatments. Total perennial grass production was greater in the cleared than the woodland treatment, because of the negative effect of mesquite on grass production. Variations in broomweed growth characteristics may have implications regarding livestock foraging and wildlife habitat.

Resumen

El ''Common broomweed'' (*Amphiachyris dracunculoides* [DC] Nutt. Ex Rydb.) es un arbusto anual que esta presente en todas las Grandes Planicies del Sur de los Estados Unidos. Durante los años de crecimiento abundante, el broomweed es problemático por que puede reducir la producción de hierbas e interferir con el forrajeo de ganado. Por el contrario, la estructura del dosel del ''broomweed'' puede proveer cobertura de hábitat para la vida silvestre, incluyendo la codorniz coutí del norte (*Colinus virginianus* Linnaus). Durante un brote extremo de ''brooweed'' en el norte de Texas en el 2007, nosotros observamos diferencias aparentes en las características de crecimiento en plantas individuales de ''broomweed'' en áreas del bosque de mesquite (*Prosopis glandulosa* Torr.) versus áreas que han sido despejadas de mesquite. Nuestro objetivo fue documentar las diferencias a nivel de plantas y poblaciones. La masa de la planta individual, el diámetro del dosel y el diámetro basal del tallo fueron mayores en el tratamiento despejado que el bosque de mesquite. Diferenciador otro lado, la altura de la planta fue mayor en los bosques que en las áreas abiertas. Las variables de la población a nivel de producción, el porcentaje de cobertura del dosel, la densidad y la obstrucción visual no fueron diferentes entre los tratamientos. La producción total de hierba perene fue mayor en el área despejada que en el tratamiento del bosque, debido al efecto negativo de la mesquite en la producción de hierba. Las variaciones en las características de crecimiento podrían tener implicaciones respecto al forrajeo del ganado y el hábitat de la vida silvestre.

Key Words: bobwhite quail, brush management, *Colinus virginianus*, mesquite, *Prosopis glandulosa*, woody plant encroachment

INTRODUCTION

Common broomweed (*Amphiachyris dracunculoides* [DC] Nutt. Ex Rydb.) is an annual forb that occurs throughout the southern Great Plains, USA (Stubbendieck et al. 1992). Broomweed growth is episodic and highly variable from year to year (Boyd et al. 1983). During years of abundant growth, broomweed is problematic because it can reduce grass production, interfere with livestock foraging, and may even injure livestock (Heitschmidt 1979; Sosebee and Gordon 1983; Britton and Wester 1995; Yoder et al. 1998). Herbicides have been used to mediate the negative impacts of annual broomweed infestations on livestock forage production (Scifres et al. 1971; Boyd et al. 1983).

Broomweed can also be an important attribute of wildlife habitat. Its structural characteristics can reduce the effects of temperature extremes and the risk of predation for northern bobwhite quail (*Colinus virginianus* Linnaeus) and other ground-dwelling birds (Johnson and Guthery 1988; Forrestor et al. 1998; Kopp et al. 1998; Cram et al. 2002; Lusk et al. 2006). The height, closed canopy, and open ground layer of broomweed stands makes it particularly attractive to northern bobwhites in that it reduces the exposure to raptors (Kopp et al. 1998) but provides open travel and feeding lanes (Guthery 1986). The seeds of common broomweed are an important food source of both bobwhites and scaled quail (*Callipepla squamata* Vigors) in the Rolling Plains of Texas (Jackson 1969; Leif and Smith 1993; Guthery 2000).

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