walked by observers are being used to evaluate pronghorn numbers on the study areas. Pronghorn numbers have consistently been higher on the good condition area than the fair condition area. Pronghorn foods, mainly forbs, are more prevalent on the fair condition area. However the good condition area has fewer tall shrubs and visibility is better. We believe pronghorn prefer the good condition area because higher visibility reduces problems from predation. More detailed studies are in progress to better assess pronghorn habitat requirements on Chihuahuan desert range. Seasonal food habits of pronghorn and cattle on the study areas were completed in 1991.

BROOM SNAKEWEED CONTROL AND SEEDLING ESTABLISHMENT AFTER RANGELAND BURNING

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(Key Words: Range, Weed Control, Burning)

Use of fire for management of broom snakeweed on New Mexican blue grama dominated prairie has gained increased attention. A prescription for burning these low volatile grasslands in spring or summer (1990 to 1993) was developed by burning small plots (20 by 26.5 m) under varying fuel load and air temperature regimes. The environmental prescription which requires at least 500 kg/ha of a fine and uniform fuel-load is: air temperature 20 to 28 °C, relative humidity 10 to 20%, wind from southwest at 3 to 8 m s^{-1}, soil temperature above 15°C, and fine-fuel moisture below 9%. We monitored fire intensity with a computerized multiport thermocouple system which allowed direct measurement of fire temperature (FT), rate of fire spread (ROS), and duration of heat (DOH). In spring (Mar-Apr), fires burned cooler (average FT 250°C), faster (ROS 33 m/min) and were less intense (DOH > 60°C = 37 sec) than during summer (June-July) fires (FT 291°C, ROS 20 m/min, DOH > 60°C = 49 sec). Broom snakeweed was less susceptible to fire in spring (84% average mortality) when primordial buds were clustered on lower stems than in summer (95% mortality) when leaves and branches were fully elongated. About one-third of mature plants not completely consumed by fire (burned to ground surface) resprouted from basal buds within 6 weeks.

Broom snakeweed germination was dependent on high soil water content with greatest emergence in April and May (71% of total). In 1992, when rainfall was above normal in spring, nearly twice as many seedlings emerged from spring 1991 burned plots (.65 m^{-2}) and seven times as many in summer 1991 plots (2.7 m^{-2}) compared to nonburned rangeland (.37 m^{-2}). Seedling emergence was related to increasing bare ground ($r = .62$) and decreasing grass yield (-.70) which were directly related to fire intensity. A favorable microenvironment for broom snakeweed germination can result following fire because litter is removed, grass competition is diminished, and seedling emergence occurs early in spring before growth of warm season grasses begins. By comparison, broom snakeweed control with picloram (99% mortality) resulted in few seedlings after treatment (.01 m^{-2}) because grass cover and yield increased and formed nearly a closed canopy.