A REVIEW OF LITERATURE PERTAINING TO PRONGHORN IN CALIFORNIA FROM 1769 TO 2009

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ABSTRACT: Recent assessment of pronghorn (Antilocapra americana) translocations and urban development projects has revived interest in the legacy of pronghorn in California. These issues are of increased public concern, especially development projects that impact scarce native grassland – habitat for the few remaining herds in southern California. Therefore, the scientific and popular literature for pronghorn in California was investigated with an objective of making this data readily available for concerned sources. More than 125 reports from 1769 (Bolton 1927, Crisby 2003) to 2009 were located. Although pronghorn were historically abundant in California, few remain today, and these are predominantly located on northeastern rangelands. The impact of insidious civilization developments appears deleterious to herds experiencing perilously low numbers south of San Francisco. The plight of these wild herds is apparently tied to the perpetuation of native grassland abundant with forbs. There is concern that if pronghorn are to remain a heritage on southern rangelands of the “Golden State,” that native grasslands need to be perpetuated in healthy condition – then it may be feasible to perpetuate native pronghorn populations.

Key Words: Antilocapra americana, California, pronghorn abundance and distribution, historic and current literature, impacts of urban developments, vegetation condition and restoration.

INTRODUCTION

Pronghorn were widely distributed and often abundant in many areas of California when Anglo-Americans first arrived, especially in the Sacramento and San Joaquin valleys (Bryant 1848, Fremont 1849, Newberry 1855, Baird 1857). With the advancement of modern civilization, these herds were decimated in all but the northeastern region (McLean 1944). A comparison of historic pronghorn habitat (McLean 1944) with recent occupied rangelands (Zeiner et al. 1990) discloses that possibly more than 70 percent of originally occupied rangelands lack pronghorn in modern times. This phenomena is not restricted to California, for Arizona (the state with the current highest increase in human population) has lost more than 75 percent of original habitat because of deteriorated conditions or occupancy by humans (Brown and Ockenfels 2007).

O’Gara and Yoakum (2004) provide a photograph of one of the last pronghorns shot in the 1920s near Mendota in the San Joaquin valley. The California Department of Fish and Game translocated herds in the 1980s and 1990s to several sites in Kern and San Luis Obispo counties to restore populations in southern California grasslands (Pysora 1987, Koch and Yoakum 2002, U.S. Bureau Land Management 2008). These herds continue to exist but in small numbers and may be seriously impacted as native grasslands are deteriorated or eliminated because of human impacts. The existence of pronghorn in California is enhanced by sustaining grasslands with abundant forbs and shrubs (Yoakum 2000, 2006, Koch and Yoakum 2002). Jones (1991) studied foraging conditions for pronghorn near Cholame California and concluded that forbs and shrubs were in poor condition relative to pronghorn habitat requirements. Longshore and Lowrey (2007) investigated habitat conditions on the Carrizo Plain National Monument and reported that intensive farming and livestock foraging during the last 100 years resulted in deteriorated or lost native vegetation – thus contributing to poor forage conditions for pronghorn today. Northern California rangelands are producing relatively static pronghorn herds, whereas certain adjacent landscapes in Oregon and Nevada are currently experiencing large increases in herd numbers (Yoakum et al. 2008). These increased populations are attributed to enhanced nutritious, preferred, succulent forage resulting in increased fawn recruitment ratios.

The record is replete with case histories that sites with stagnant vegetation succession contribute to stagnant pronghorn populations (Ellis 1970, O’Gara and Yoakum 2004, and Yoakum 2004, 2006). The key to enhancing modern pronghorn herds is sustaining natural vegetation succession stages with wild or prescribed burns (U.S. Fish and Wildlife Service 1994, Yoakum 2004, 2006). As Starker Leopold advocated decades ago – rangelands with healthy forage conditions generally sustain higher numbers of wild ungulates, rangelands in poor condition sustain fewer – “All other influences are secondary” (Leopold 1966:57).
PROCEDURES
An evaluation of bibliographies and literature reviews pertaining to pronghorn were an initial thrust of this project. Yoakum (1967, 1991, and 2000) provided a wealth of data. Brown et al. (2006) was of immense help, especially relative to reports of hunter observations during the late 1800s and early 1900s. All literature citations were listed in alphabetical order of authors, editors, or compilers.

To provide information regarding the focus of pronghorn data to California, a rating system was developed. This was accomplished by placing a symbol in front of each literature citation as follows:

(A) Denoted publications containing information entirely collected and relative to pronghorn in California.
(B) Refers to reports not specific to California, but for which some findings were collected or pertained to California.
(C) Contains information regarding the protection, management, or conservation of pronghorn and habitat for various regions in North America, and of potential value for current management in California.

FINDINGS
One strategy for enhancing pronghorn populations is to review the literature documenting tried and tested practices that have increased herds. Therefore, this review was conducted as an aid to making such references readily available to wildlife management. The following literature totaling more than 125 publications provides a comprehensive listing of technical and popular publications pertinent to the ecology and management of pronghorn in California.

(B) Bolton, H.E. 1927. Fray Juan Crespi, missionary explorer, on the Pacific Coast 1769-1774. University of California Press, Berkeley, California, USA.
(B) Burcham, L.T. 1957. California rangelands, a historico-ecological study of the range resources of California. Department Natural Resources, Sacramento, California, USA.
(A) ______. 1997. Final environmental document regarding pronghorn antelope hunting. Sacramento, California, USA.
(B) Caton, J.D. 1877. The antelope and deer of America. Forest and Stream Publication Company, New York, New York, U.S.
(A) Cheney, E.S. 1929. Prong-horned antelope in California. California Fish and Game 15:175.
(A) Clausen, A. 1999. Behavioral correlates of fawning, territorial and breeding activities in a pronghorn antelope (Antilocapra americana) population on the Carrizo Plains, California. Thesis, California Polytechnic State University, San Luis Obispo, California, USA.


(A) Dasmann, W.P. 1952. Antelope planting investigations. Special Report, California Department Fish and Game, Sacramento, California, USA.


(B) Einarsen, A.S. 1947. The interstate aspect of pronghorn census work in management. Proceedings Western Association State Fish and Game Commissioners 27:127-129.

(A) Ellis, J. 1970. A computer analysis of fawn survival in the pronghorn antelope. Dissertation, University California, Davis, California, USA.


(B) _____. 1943. Wildlife refuges. The MacMillan Company, New York, New York, USA.


(B) Graves. J.A. 1912. Out of doors, California and Oregon. Grafton Publishing Company, Los Angeles, California, USA.

(B) _____. 1927. My seventy years in California: 1857-1927. Times-Mirror Pres, Los Angeles, California, USA.


(B) ______. 1965. Sagebrush defoliator outbreak in northern California. Pacific Southwest Range Experiment Station Research Notes PSW-79. U.S. Forest Service, Berkeley, California, USA.


(A) Herman, C.M. 1945. Hippoboscid flies as parasites of game animals in California. California Fish and Game 31:16-25.


(A) Horne, W.R. 1925. The return of the antelope in Lassen County. California Fish and Game 11:89.


(B) Ingles, L.G. 1965. Mammals of the Pacific States. Stanford University Press, Stanford, California, USA.


(B) ______. 1957. The North American desert. Stanford University Press, Palo Alto, California, USA.

(B) ______. 1961. Desert wildlife. Stanford University Press, Palo Alto, California, USA.


(A) Jones, F.L. 1954. Report on resurvey of proposed antelope planting sites, California Department Fish and Game, Sacramento, California, USA.


(A) Kidwell, A. 1996. Bill McHaney: He found and lost a gold mine. Hi-Desert Magazine, Summer II:


(B) Newberry, J.S. 1855. Report upon the zoology of the route. No. 2, Chapter I. Pages 70-71 in H.L. Abbot. Reports of exploration and surveys to ascertain the most practical and economic route for a railroad from the Mississippi River to the Pacific Ocean. Executive Document 78, Volume VI. U.S. Senate, Washington D.C., USA.


(A) ______. 1982. Pronghorn antelope management plan. California Department Fish and Game, Redding, California, USA.


(B) Sadak, R.B. 1987. The ontogeny of behavior in pronghorn fawns. Thesis, Humboldt State University, Arcata, California, USA.


(A) Starr, F.R. 1934. Antelope does cover fawns to conceal them. California Fish and Game 20:291.

(A) Stephens, F. 1906. California mammals. The West Coast Publishing Company, San Diego, California, USA.
(A) _____ 1921. An annotated list of mammals of San Diego County, California. Transactions San Diego Society Natural History 3:41-56.


(A) Stutz, S.S. 1967. Pronghorn antelope habitat management plan. U.S. Forest Service, Alturas, California, USA.

(B) Van Dyke, T.S. 1905. Sport on the Lower Colorado. Western Field 6:3-7.


(B) Yoakum, J.D. 1967. Literature of the American pronghorn. U.S. Bureau Land Management, Reno, Nevada, USA.

(B) _____ 1991. Literature review of the pronghorn: A bibliography with key words and reference citations. Special Report. Western Wildlife, Verdi, Nevada, USA.


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