RECENT RECORDS OF PUMAS (PUMA CONCOLOR) ON THE KOFA NATIONAL WILDLIFE REFUGE, ARIZONA

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ABSTRACT

Pumas (Puma concolor) have long been considered transient species in southwestern Arizona. A sighting of three pumas in 2003 on the Kofa National Wildlife Refuge was the first verifiable record since 1944 and prompted further investigation into the presence and distribution of pumas on the refuge. Refuge personnel compiled 76 photographs of pumas since January 2004 and documented presence of five individuals, including a breeding female, in 2006 and 2007.

INTRODUCTION

The puma (Puma concolor) is currently considered a transient species in extreme southwestern Arizona, based on the paucity of records from this area. The last official record of a puma on the 269,277-ha Kofa National Wildlife Refuge (Kofa NWR), located in Yuma and La Paz Counties, was a male killed by a government trapper in 1944 (Halloran 1946, Halloran and Blanchard 1954). At that time, the puma in southwestern Arizona was considered a separate subspecies, Felis concolor brownii (described by Merriam (1903) as F. aztecus brownii; later P. c. brownii). The puma killed in 1944 was the only positive record of F. c. brownii in the lower Colorado River area since 1909 (Grinnell et al. 1937, Halloran 1946). There were no pumas documented on the Refuge for almost 60 years following 1944. A few anecdotal reports of sightings or tracks suggest that transient pumas might have occasionally used the Refuge during this time period, but little verifiable data exist. During a research project conducted in the Kofa Mountains from 1993 through 1996, 50 bighorn sheep were radio collared and 17 mortalities were investigated. None of the 17 mortalities could be attributed to puma predation (Arizona Game and Fish Department [AGFD], unpubl. data). From 1995-1997, Germaine et al. (2000) conducted surveys for pumas in 18 mountain ranges and along the Colorado and Gila Rivers in southwestern Arizona, including the Kofa NWR. They confirmed the presence of only three individual pumas (in the Mohawk and Growler Mountains) believed to be males, and suggested that a distinct, self-sustaining puma population did not currently exist in southwestern Arizona. They found no evidence of pumas in the Kofa NWR. McKinney et al. (2006) used the Kofa NWR as a reference area where pumas were assumed to be absent for a study conducted from 1989-2003 that evaluated factors affecting a desert bighorn sheep (Ovis canadensis mexicana) population.

Evidence of pumas on the Kofa NWR emerged in 2001 with the discovery, during ongoing research efforts by the AGFD, of a cached mule deer (Odocoileus hemionus crooki) doe in July and fresh tracks from a single puma in October (S. Rosenstock, pers. comm.). In October 2003, an AGFD biologist observed a female puma and two kittens on the Kofa NWR during an aerial bighorn sheep survey (C. O’Brien, pers. comm.). Examination of video tapes from an AGFD research project on the Kofa NWR revealed a puma at High Tank 7 in the Kofa Mountains on 21 August 2001, and a puma at Adams Well in the Castle Dome Mountains on 5 December 2002 (AGFD, unpubl. data).

OBSERVATIONS

Kofa NWR staff placed eight active infrared triggered conventional remote cameras and two passive heat/motion sensing digital remote cameras at 10 water holes in the Kofa Mountains beginning in December 2003. In December 2006 and January 2007, three cameras were moved to the Castle Dome Mountains. One of the first photographs obtained, taken between January and March of 2004, revealed a juvenile puma with discernable spots. Spotted juveniles and/or a female with one or more kittens were again captured on film in 2005, 2006, and 2007. Unequivocal photographs of males (testes evident in the photographs) were also obtained in 2006 and 2007. The Refuge obtained 76 photographs of pumas at nine locations in the Kofa and Castle Dome Mountains between January 2004 and January 2008. Examination of photographs and track measurements by three experienced puma trackers suggests that at least five individual pumas were present in the Kofa Mountains on the Kofa NWR during 2006: a female with two kittens and two males. At least five individuals were also identified on the refuge in 2007: two males and a female with one kitten in the Kofa Mountains and one male in the Castle Dome Mountains. The 2007 observations were supported by ongoing research in which three male lions were captured and fitted with satellite GPS collars.

DISCUSSION

Although the photographs obtained provide verifiable records of pumas, there are insufficient data to determine what the density or size of the puma population on Kofa NWR may be at this time. The presence of at least one breeding female in subsequent years sug-
suggests that pumas might have established a local population that uses the Refuge, although the fate of the kittens observed is unknown. Puma scat samples are being collected on the refuge for genetic analysis as part of an ongoing puma research effort; however, McIvor et al. (1995) and Culver et al. (2000) detected little support for the retention of the *P. c. brownii* subspecies designation. It is expected that DNA analysis from scat and other DNA samples obtained will reveal that these pumas are immigrants from other puma populations and not a distinct subspecies.

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**LITERATURE CITED**


