

## Arizona Mountain Lion Status Report

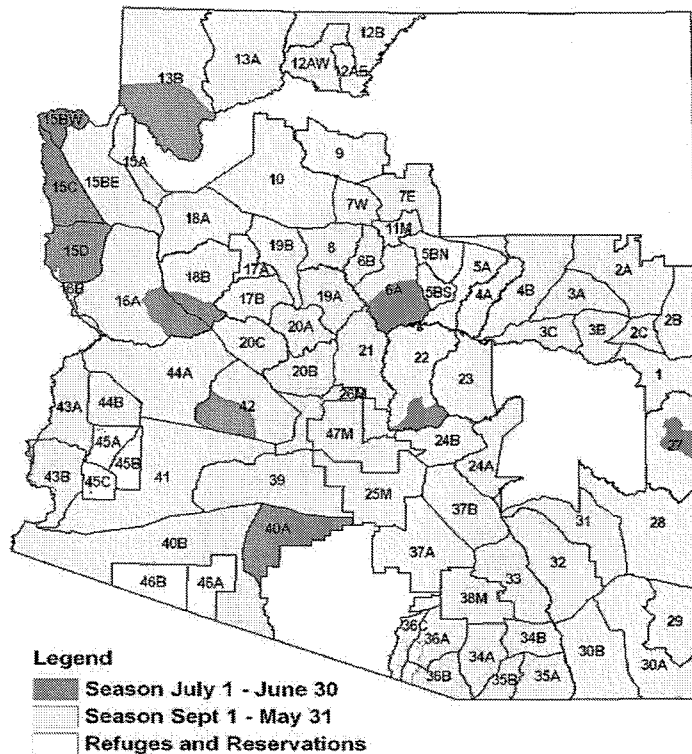
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### Background

Prior to 1970, the mountain lion (*Puma concolor*) in Arizona was classified as a predator and managed by the U. S. Bureau of Sport Fisheries and Wildlife, later the U.S. Fish and Wildlife Service.. Bounties were paid for killing the state's second largest carnivore by the Arizona Livestock Sanitary Board (Housholder 1967). Starting in 1970, the Arizona Game and Fish Commission, appointed by the governor, became legislatively responsible for establishing hunting seasons, bag limits, and methods of take for the mountain lion as a big game animal. Between 1970 and 1989, a person could purchase a non-permit mountain lion tag from the Arizona Game and Fish Department (AZGFD) for just \$1.50 and hunt year-long statewide.

### Management Goal/Objectives

Arizona's current management goal is to manage the mountain lion population, its numbers and distribution, as an important part of Arizona's fauna and to provide mountain lion hunting recreation opportunity while maintaining existing occupied habitat and the present range of mountain lions in Arizona. Hunt management objectives are to provide hunting opportunity for  $\geq 6,000$  hunters during a 9-month general season from 1 September – 31 May and a harvest of  $\geq 250$  animals. In addition, Arizona has established hunt units with multiple bag limits that remain open year-long, or until the harvest quota is reached, and then the unit remains open or closed under the general hunt season period.



**Figure 1.** Multiple bag units for mountain lion in Arizona

Multiple bag units are evaluated for removal or addition annually on the basis of a recently translocated population of bighorn sheep, a declining population of deer or bighorn sheep or a bighorn sheep population below management objectives (Fig. 1).

### **Current Distribution and Adaptive Management**

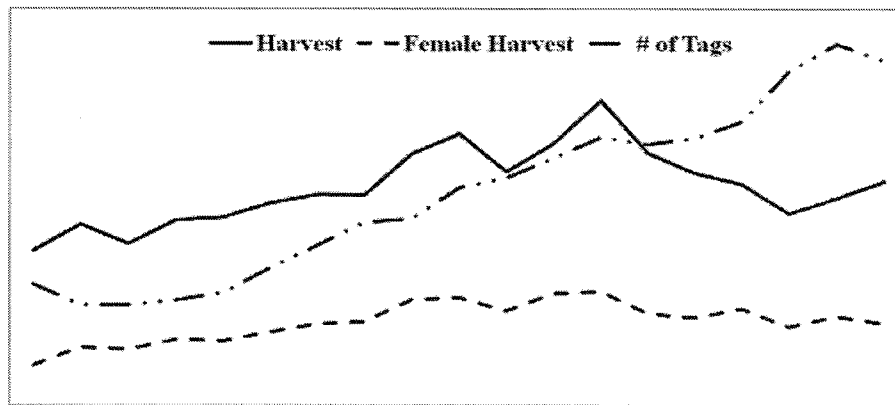
Mountain lion distribution in Arizona has recently been documented as increasing. Mountain lions now occupy even the harshest of environments along the western border of the state. Mountain lions now occur in the Kofa, Castle Dome, New Water, Palomas, and Eagle Tail Mountains, where no prior evidence of mountain lions was detected during surveys in 1987 (Shaw et al. 1988) or in 1996 (Germaine et al. 2000). The documentation of 5 different mountain lions (3 adults, 2 kittens) occupying the Kofa Mountains in 2006 sympatric with a declining extant population of desert bighorn sheep (*Ovis canadensis mexicana*), resulted in the implementation of an adaptive site-specific predator management plan directed at mountain lions known to be killing bighorn sheep at a rate of  $\geq 2$  animals during a 6-month period. During the past year, mountain lions ( $n=3$ ) were removed under this adaptive management strategy from the Kofa and Black Mountains.

## Hunt Regulations

Since the 8<sup>th</sup> Mountain Lion Workshop in 2005, Arizona has maintained a multiple bag limit quota for mountain lions in areas with translocated bighorn sheep populations or declining bighorn sheep and mule deer (*Odocoileus hemionus*) populations ( $n=9$ ) in an effort to increase hunter opportunity in specific areas. Additionally, new regulations have included: the implementation of a required carcass check-in by all successful mountain lion hunters for the collection of a tooth for aging and hair for DNA analysis; a reduction of the hunting season from 12 months to 9 months during the period September-May; all successful mountain lion hunters must now report their kill within 48 hours; female mountain lions with spotted kittens are protected; and livestock-depredating mountain lions may now be taken and possessed with a non-permit tag.

## Harvest

Arizona's past 5-year average sport harvest of mountain lions is 228, with a range of 204-251. Arizona's 36-year average sport harvest is 223, with a range of 120-326. During 2007, Arizona sold approximately 10,433 non-permit mountain lion tags, a **decrease** of 498 tags from 2006. In 2007, the first year of a mandatory carcass check-in, female mountain lions represented 42% ( $n=104$ ) of the total sport harvest ( $n=250$ ). The average number of females in the annual sport harvest over the past 20 year period was 104.



**Figure 2.** Arizona Mountain Lion Harvest Data for 1989-2007.

numbers due to recent drought conditions has reduced total livestock numbers in Arizona and may be partially responsible for reduced incidences of livestock depredation.

## Human/Mountain Lion Interactions

AZGFD has developed an action plan that guides employees in responding to human/mountain lion interactions. The plan was developed after extensive public input

and employee training and categorizes mountain lion behavior as either acceptable or unacceptable. Examples of acceptable behavior include:

**The animal retreats at the sight of a human.**

- The animal stays put while humans show no aggression.
- The animal shows signs of curiosity while humans show no aggression.
- The animal crouches, twitches its tail and stares directly into the person's eyes, immediately followed by retreating or showing no further aggression.

**While examples of unacceptable behavior include:**

- The animal displays unprovoked aggression.
- The animal exhibits forms of predatory behavior towards humans.
- Intentionally approaching close to a human after the animal knows the human has seen it, even if the human did not have to take evasive or aggressive action to drive the animal off.
- The animal continues to disturb, raid, or investigate humans or high-human-use areas.
- A lion that is seen in the vicinity of a school or other areas where children are congregated, especially during hours when children are present.
- A mountain lion that is not cornered but refuses to retreat when objects are thrown at it.
- A mountain lion spending > 1 day in a residential area (neighborhood yards) and is eating pet food or pets.
- The animal aggressively approaches a human, or fails to retreat when a human takes aggressive actions.
- Intentionally approaching a human at close range that requires the human to take some evasive or aggressive action to avoid attack.

The AZGFD maintains a statewide database for human-wildlife interactions. Responses of wildlife managers to mountain lion/human interactions are catalogued using a Mountain Lion Observation Form. Interactions are classified as; a sighting, encounter, incident or an attack. Since the inception of the database in late 2005, wildlife managers have responded to 405 reports involving mountain lions with 333 of these resulting in additional investigative actions such as a site visitation to verify the presence of a mountain lion and to better inform property owners of additional actions including possible removal of an animal exhibiting unacceptable behavior.

Although Arizona has yet to experience a mountain lion-caused human fatality, recently there was an attack on a 10-year-old boy by a rabid mountain lion resulting in minor injuries and numerous individuals exposed to rabies. During 2007, there was the unfortunate death of a biologist in Arizona due to a secondary plague exposure from a mountain lion that tested plague positive.

The AZGFD supports the Cooperative Wildlife Research Unit at the University of Arizona which is working on the establishment of a center whose primary objective will be to provide a full-service support unit to train and mentor students and biologists from around the world to conduct rigorous, focused, science-based studies of wild felids, including mountain lions.

## **Research**

Since the last mountain lion workshop, Dr. Ted McKinney, a researcher with AZGFD, and his associates, completed and published studies on mountain lion predation of translocated desert bighorn sheep in Arizona (McKinney et al. 2006a) and evaluation of factors potentially influencing a desert bighorn sheep population (McKinney et al. 2006b). The results can be found in a recent Wildlife Society monograph and bulletin.

Current studies are being conducted in support of an identified need to better understand how mountain lions are affected by the density of human development across the landscape. The concept that subpopulations of mountain lions are a part of a larger metapopulation (Sweaner et al. 2000) is supported in part by these on-going studies during which mountain lions utilized up to 5 different mountain ranges.

Arizona is expected to double in population by the year 2050 to approximately 12 million people. As human population growth continues, it will be accompanied by well-developed transportation systems that will affect mountain lion metapopulation dynamics, in ways not yet well understood. Arizona is also a border state that will have to monitor the impacts on large carnivores of the construction of a solid wall for miles along its border with Mexico. Arizona has a strong management interest in mountain lions and will be working towards the development of conservation strategies that will hopefully maintain the mountain lion as an integral part of its ecosystem for future generations to come.

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