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BIO 363

MOUNTAIN PYGMY POSSUM

The mountain pygmy possum, *Burramys parvus*, is a small, rodent-like marsupial endemic to southeastern Australia. They are about 110 mm in length, with fine, dense fur, and can live up to 12 years. Their diet consists of small invertebrates, primarily Bogong moths, along with seeds and fruits; they are tertiary consumers.

HABITAT

B. parvus lives in high altitude alpine environments; they occur in boulder fields populated with shrubs. In the alps of Victoria and New South Wales, Australia, they are present in 3 isolated and genetically distinct populations at elevations of 1,300 to 2,230 meters. The total area of occupancy for the species is less than 7 square kilometers.

Mountain pygmy possums require the snow fall found at their high elevation habitats for insulation during hibernation. They also find shelter and protection in the crevices of fragmented boulders. The shrubs found in their environment are important resources for food and shelter.

CURRENT POPULATION

The population consists of about 1,700 adult females and 550 adult males, with a total of no more than 2,600 individuals. They listed are critically endangered by the IUCN and their population is decreasing.

The red area marks the geographic range of the mountain pygmy possum.

LIFE HISTORY

Mating occurs between September and October and females have a litter in late October, after which the young live in her pouch until weaned. All individuals hibernate in the winter for 5 to 7 months; they have a non-breeding season from January to April when they gain critically important fat reserves for the upcoming winter. Young begin mating at about 1 year of age, but only around 50% of reproducing young will survive hibernation because they are unable to maintain their fat reserves.

THREATS TO B. PARVUS

Habitat fragmentation and degradation - Their already small range continues to be degraded due to residential and commercial development, including road and dam construction and the development of infrastructure for the skiing industry. Fires in the early 2000s burned up to 50% of the habitat of 2 populations of pygmy possums and killed much of the shrubs found there, a large part of their diet.

Climate change - Early snow melt induces the pygmy possums to wake early from hibernation; recently, some populations have begun to have second litters because they are awake longer. Unfortunately, second litters and their mothers are unlikely to survive the winter because they don't have enough time to accumulate fat reserves for hibernation. Reduced snow cover from warming also increases exposure to winter winds during hibernation and freezes some animals.

Predation - Feral cats and Red Foxes, which were introduced in the late 1800s for hunting, are pygmy possum's main predators.

Bioaccumulation - Bogong moths, their primary food source, are migratory and have been found to carry arsenic back to the mountains, with unknown affects to the possums so far.

IMPORTANCE & PROTECTION

Although *B. parvus* has no specific use by humans, they are considered economically important to research by conservationists. Their small habitat and range make it a useful subject for wildlife management.

The entire range is in protected areas, although parts are in ski-resort lease areas. There is a national recovery plan for the species aimed at maintaining the population and restoring habitat.

SOURCES

https://www.iucnredlist.org/species/3339/9775825#taxonomy
https://animaldiversity.org/accounts/Burramys_parvus/#physical_description
http://www.edgeofexistence.org/species/mountain-pygmy-possum/
https://www.environment.gov.au/system/files/resources/14b32262-159e-4462-97fe-f13152aaa461/files/national-recovery-plan-mountain-pygmy-possum.pdf

MANAGEMENT RECOMMENDATIONS

Habitat Protection - Grooming of land and the removal of trees and shrubs to make ski trails has greatly fragmented the habitat of *B. parvus*. Therefore, I recommend increased protection at ski lodges, including the creation of suitable natal and hibernation sites along with reinforcement of shrub species. In other areas, due to the decrease in snow cover, I also recommend the addition of protective sites for *B. parvus.*

Ex Situ Conservation - Due to the extremely low numbers of *B. parvus* in the wild and the continuing effects of the ski industry and climate change that affect survival and reproduction, I recommend ex situ conservation and reinforcement. If adult individuals with sufficient fat reserves are reintroduced to the population, they will have a better chance of surviving hibernation. The species is social but calm, so reintroduction should be simple after teaching them food and habitat behavior.

Research - I recommend research of the possible effects of bioaccumulation of arsenic in *B. parvus* from Bogong moths before serious outcomes present. I also recommend further research into the effects of ski trails on *B. parvus* mating habits.