Conservation genetics of the endemic endangered Hawaiian plant species Chrysodracon hawaiiensis in Hawaii Volcanoes National Park.

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ABSTRACT

The goal of this research is to establish a robust population for endangered species Chrysodracon hawaiiensis that will be able to recruit seedlings while not losing any important local variation. This work contributes to conservation management in HAVO, especially for decisions making. The endemic Hawaiian genus Chrysodracon currently has six species in Hawaii Islands. Chrysodracon hawaiiensis is endemic to Island of Hawai'i and was listed as an endangered species by USFWS in 1996 and placed on the IUCN Red List in 1997. This woody plant was at one time common in exposed dry forests, but it became very rare due to animals’ grazing pressure and human development. This species were examined using the molecular technique of random amplified polymorphic DNA (RAPD) to determine the genetic structure of the populations and the amount of variation. Four populations in Hawaii Volcanoes National Park and four populations from west side of Island of Hawaiʻi were sampled. Those populations in HAVO and in west Island of Hawaiʻi possess similar genetic structure. No consequences of genetic bottleneck were found in this species. Larger populations contain similar levels of genetic diversity with smaller populations generally as determined by number of polymorphic loci, estimated heterozygosity, and Shannon’s index of genetic diversity. Although population diversity of C. hawaiiensis is thought to have remained near pre-disturbance levels, population size continues to decline as recruitment is either absent or does not keep pace with senescence of mature plants. Kahuku population is distinct from the other three populations in HAVO. Future recovery efforts for this species must have complete fencing system to avoiding animals’ grazing their young seedling and leaves. Augmenting populations by outplanting is still the most appropriate method. Collecting seeds and establishing its seed bank is essential as it is necessary to maintain its populations after the adult...

Keywords: conservation genetics, population genetics, Hawaii, Chrysodracon, Dracaena

REFERENCES


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