

Learning Objective

Describe human activities and practices that can influence the geographic isolation of populations of organisms (for example, the expansion of human communities).



of tigers have been documented. As of 2007, only six subspecies remain, and all are listed as endangered. Their natural habitat is dense vegetation in a forested area that includes a regular source of water. Changes in land use practices, increasing deforestation and hunting, use of tiger body parts for medicinal purposes, loss of forestry habitat, and loss of food sources have all had a role in causing the tiger's endangered status.

Conservation efforts have been aimed at decreasing the isolation between populations caused by human activities. Captive breeding programs have also assisted in restoring populations. The establishment of protected areas has decreased further habitat fragmentation, providing a somewhat stable habitat for recovery. The restoration of habitat corridors between previously isolated patches of habitat has also increased connectivity among tiger populations.

Background

Geographic isolation of populations result from several causes. The most common type of isolation results from physical barriers, such as rivers, canyons, and mountain ranges. Such boundaries develop naturally and most come about over a very long time. However, human activities, such as habitat alteration, can very quickly isolate populations from each other. The most common habitat alteration results from changes in land use practices due to the expansion of human communities. Agriculture, including ranching, is a leading form of land use that dramatically alters habitat. Clearcutting substantial portions of forested regions, mainly for agriculture, has occurred throughout Madagascar, India, Southeast Asia, and South America, leading to habitat fragmentation. In Southeast Asia and India, rice paddy farming has been a major contributor to habitat fragmentation as well. Additionally, the growth of

human populations is a major factor leading to an increase in agriculture and therefore the fragmentation of habitats. Habitat fragmentation not only reduces the number of individuals of a species by reducing available resources, but also can lead to limited or no interaction between populations that used to interbreed freely. This limited interaction due to geographic isolation results in reduced gene flow.

The tigers of Southeast Asia provide an example of how human activities can cause the geographic isolation of a species. Nine subspecies



Tiger parts used for medicine

Key Vocabulary

Habitat fragmentation: The division of an ecosystem into smaller, noncontiguous areas.