

Using Physiological Effects and K-Nearest Neighbor to Identify Hunting-Stressed Wolf Populations

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Abstract

The preservation of Wolf populations in North America has been controversial for hundreds of years. The preservation of ecosystems or the reintroduction of wolf populations in areas to redress the ecological balance has taken place in recent decades. In other areas, wolves are hunted in an effort to manage them. Previous studies have identified physiological characteristics as an indicator of higher stress levels in individual wolf subjects in heavily hunted populations. This stress impacts reproduction, social structure and pack dynamics. The current study supports a prior study that used statistics to show elevated stress levels in hunted wolf populations. Using machine learning (k-nearest neighbor), we were able to classify individual wolf subjects as belonging to hunting-based stressed populations based on physiological data with high accuracy.

Keywords: Machine Learning, data mining, k-NN, physiological indicators, classification

An updated manuscript may be found at <https://jisar.org>