

Pumas living near human development expend more energy

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Pumas living near human development are more active at night, thus expending more energy each day, which could affect their fitness, according to a study published October 11, 2017 in the open-access journal *PLOS ONE* by Yiwei Wang from the University of California, Santa Cruz, and colleagues.

Human development can impact the behavior of the wildlife living in the area, and is a primary driver of species extinctions. Although large carnivores are often the first species to be lost from ecosystems that are transformed, little is known about how anthropogenic disturbances affect the behavior and [energy](#) expended by carnivores.

Wang and colleagues investigated how [human development](#) alters daily behavior and activity of pumas (puma concolor) in the Santa Cruz Mountains of central California. To find out how development density affected the average distance traveled and energy expended by pumas, the researchers collected spatial GPS location data from 22 wild pumas, as well as recorded accelerometer measurements from 6 of the pumas.

The researchers found that pumas near developed areas were generally more active and moved further at night, thus increasing their daily caloric expenditure by 10.1% for females and 11.6% for males. This increased nighttime activity, and [energetic cost](#), means that females and males living near [development](#) need to annually consume an additional 3.4 to 4.0 deer prey respectively.

This study provides additional evidence that pumas have higher energetic costs and resource requirements in human-dominated landscapes due to the pumas' behavioral response to human disturbance. Further research could examine the additional energetic cost for pumas with kittens and investigate the effects on prey species and human-wildlife conflict. The authors suggest that their study helps show the importance of examining how human-induced behavioral change affects

conservation management strategy.

"In this study, we found that pumas move more and use more energy when they are closer to human infrastructure," states lead author Yiwei Wang. "This suggests that pumas living near humans may need to hunt more to survive and feed their young."

More information: Wang Y, Smith JA, Wilmers CC (2017) Residential development alters behavior, movement, and energetics in an apex predator, the puma. *PLoS ONE* 12(10): e0184687.
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