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## To den, or not to den, that is the question: Predation risk and prey availability drive den site selection of pumas in the Santa Cruz mountains

Den sites are critical resources that influence the overall population dynamics of many mammalian carnivores. Den sites are likely selected in areas of high quality habitat and based on characteristics including prev availability and predator evasion. Little is known about Puma den site selection, even though den use and availability likely plays an important role in puma fitness and kitten survivorship. We use both spatial and camera trap data to assess puma den site selection in the Santa Cruz Mountains. During 2012-2018 we discovered 10 natal dens belonging to 8 different females. We placed camera traps within the study area of puma den sites and compared them to paired control cameras that belonged to a 1400-km2 grid spanning the central coast mountains of California. We then scored the images to compare the visitation rates of prey species (blacktailed deer: Odocoileus hemionus), mesopredators (coyotes: Canis latrans, bobcat: lynx rufus, gray fox: Urocyon cinereoargenteus), and other conspecifics (puma: Puma concolor) of the cameras placed in habitat surrounding den sites selected by female pumas with the random control cameras. We assess the tradeoffs between prey availability and proximity to mesopredators and conspecifics in the microhabitats surrounding den sites. We found that females had a significant preference for establishing dens within habitat that had higher prey visitation as well as lower visitation of mesopredators and conspecifics. This study confirmed that pumas select den sites using specific habitat characteristics, including prey access as well as proximity to mesopredators and conspecifics. Our findings have important implications for the conservation planning of pumas, especially when considering habitat suitability for reproductive behaviours.