

SF State scientists expose new threat to spotted owl

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A new study provides a baseline distribution of blood parasites and strains in Spotted Owls, suggesting a more fragile immune health than previously understood for the already threatened Northern and California Spotted Owls.

The study, co-authored by San Francisco State University biologists, is the first to show a Spotted Owl infected with an avian malaria (*Plasmodium*) parasite. The paper, "Blood Parasites in Owls with Conservation Implications for the Spotted Owl (*Strix occidentalis*)," is published on May 28th in *PLoS ONE*.

"While *Plasmodium* parasites have been found in thriving owl species, the detection in a Spotted Owl could further challenge the threatened species' survival," said Heather Ishak, an SF State graduate biology student who performed the research with Assistant Professor of Biology Ravinder Sehgal and others.

Ishak conducted the study as part of a larger investigation into blood-borne parasites in birds of prey. She searched for three types of blood parasites in 111 Spotted Owls, 44 Barred Owls (*Strix varia*) and 387 birds representing nine other owl species. The blood analysis involving DNA testing revealed that 44 percent of Northern and California Spotted Owl subspecies harbored 17 strains of blood parasites.

They also harbored an unusually high number of strains that were not found in the other owl species.

"The controversy over the spotted owl's habitat in old-growth forests over the past two decades has made this species one of the most intensely researched birds in the world," Sehgal said. "Prior to this discovery however, the question of which blood parasites they harbor and whether Barred Owls could be a source of diseases that could further limit the Spotted Owl's chance of survival had been largely unaddressed."

According to the researchers, the infected Northern Spotted Owl (*Strix occidentalis caurina*) may have been exposed to the parasite by coming into contact with mosquitoes that fed on a Barred Owl (*Strix varia*). The increasingly invasive Barred Owls compete with Spotted Owls for food and nesting sites.

Ishak and Sehgal expect their findings will prompt more research into this species and enhance general knowledge of the role and effects of blood-borne pathogens in wild bird populations.

Citation: Ishak HD, Dumbacher JP, Anderson NL, Keane JJ, Valkiūnas G, et al. (2008) Blood Parasites in Owls with Conservation Implications for the Spotted Owl (*Strix occidentalis*). PLoS ONE 3(5): e2304. doi:10.1371/journal.pone.0002304

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