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Understanding the persistence of *Leptospira interrogans* in California's coastal wildlife: uncovering cryptic contributors in a complex multi-host disease system

Leptospirosis, a global disease caused by pathogenic bacteria of the genus *Leptospira*, affects a wide variety of mammalian host species including wildlife, livestock and humans. *L. interrogans* serovar Pomona affects the California sea lion population annually, causing low levels of infection year-round and recurrent, cyclical outbreaks of disease. Current research has found a closely related strain in endangered Channel Island foxes (*Urocyon littoralis*) and the endemic island spotted skunks (*Spilogale gracilis)* on Santa Rosa Island, California. This unexpected finding indicates some degree of past spillover between these marine and terrestrial species. The hypothesis that coastal wildlife is a cryptic contributor to the *Leptospira* system could explain the seasonality and spatial localization of outbreaks that occur in California sea lions every few years. I am currently collaborating with local wildlife and government agencies to obtain biological samples to test for evidence of past exposure and current infection in various coastal mammalian species. This work is the first step in identifying the possible contribution of mainland coastal mammals to the ecology of this complex multi-host pathogen and will guide future work focused on obtaining *Leptospira* isolates from these potential coastal hosts. If these isolates are related to sea lion strains, this will provide further evidence of a marine-terrestrial link. This work will strengthen a uniquely well-developed case study of pathogen circulation in a multi-host, multi-ecosystem reservoir, addressing persistent epidemiological questions about *L. interrogans* in California.

Photo courtesy of John Benson, La Kretz Center Postdoctoral Researcher