Expanding *Leptospira* Surveillance to the Pacific Northwest to Improve our Understanding of *Leptospira* spp. Dynamics in the Eastern Pacific

Leptospirosis, the disease caused by pathogenic species in the genus *Leptospira*, is endemic in the California sea lion (CSL) population and causes yearly, seasonal outbreaks of varying magnitude. It is infrequently diagnosed in humans in the U.S., but cases have been reported in humans and domestic animals along the California coast. Infections or evidence of exposure have also been documented in several other marine mammal species that share habitat with CSL, including vulnerable marine mammal species (e.g. Steller sea lions, sea otters).

From 2013-2017, the northeastern Pacific Ocean experienced anomalous conditions during which cyclical outbreaks of *Leptospira* in the CSL population ceased. This "fadeout period" was associated with poor growth and survival in CSL pups coinciding with decreased consumption of high quality forage among adult females and pups, and a shift in historic age- and sex-specific seasonal movement patterns. In 2017, *Leptospira* re-emerged in the CSL population as conditions and movement returned to 'normal' and *Leptospira* spillover to CSL from some, as yet unidentified, external source. Because of the long-term dataset that resulted from a large, multidisciplinary, collaborative effort, this unique pathogen fadeout event was detected, and associations between oceanographic anomalies and pathogen fadeout were detected.

Continued temporal and geographic extension of this exceptional dataset into the Pacific northwest enhances our ability to detect fadeout events and its drivers. Comprehensive data from along the US west coast - made possible by decades long collaborations of EPMOHC members - enables us to investigate the complex epidemiology of this zoonotic pathogen in the marine mammal community of the coastal eastern Pacific Ocean, and impacts of global climate change.