

**Invasion of Exotic American Bullfrogs in the
Billy Frank Jr Nisqually National Wildlife Refuge**

Clinton Howell, Dr. Eliza Heery, Ryan J. Munes

The American bullfrog, *Lithobates catesbeianus*, poses a significant threat to wetland ecosystems and native species. Invasive bullfrogs have had significant impacts on native species like the Oregon Spotted Frog (OSF), *Rana pretiosa*. At the Billy Frank Jr Nisqually National Wildlife Refuge, biologists have been monitoring OSF populations since their rediscovery in the mid 1990's, but American bullfrog tadpoles were first detected in the system in 2019, indicating an invasive population had already begun to spread. The full extent of the bullfrog's impact on OSF remains unclear. Our study, which is part of bullfrog mitigation efforts initiated in 2021, involved bullfrog capture and euthanization following US FWS protocol, laboratory dissection to determine gender and body condition, and stomach content analysis. Multiple years of removed bullfrogs gives us the opportunity to examine stomach contents from more than 300 individuals. We found that American bullfrogs primarily prey on insects (65%), crawfish (16%), and notably, other amphibian species including OSF (4%). However, mature adult bullfrogs prey on larger prey like crawfish (52%) and other vertebrates (16%) much more frequently than juvenile and young adults. Since the start of bullfrog mitigation, the OSF population has shown signs of growth, 14% in 2023 and 16% in 2024, supporting the hypothesis that bullfrogs are negatively impacting the OSF populations. Our findings emphasize the necessity of continued bullfrog mitigation efforts by the US Fish & Wildlife Service to safeguard the survival of the threatened Oregon Spotted Frog population and other native species residing at the refuge.