Oiled Wildlife Care Network
Wildlife Health Center

PROJECT ABSTRACT

State the objectives, specific aims and the significance of the project, and describe the methodology used to achieve these goals. Avoid summaries of past accomplishments. The abstract is meant to serve as a succinct and accurate description of the work when separated from other portions of the proposal. Do not exceed the space allowed; 10 pt. font and single-spacing is allowed for this section only. Do not use abbreviations in the title.

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FUNDING AMOUNT REQUESTED:  $35,314

PROJECT TITLE:  Campylobacter spp. shedding patterns and biosecurity measures at the wildlife hospital; zoonotic disease at the wildlife – human interface

Abstract:

Wildlife are an important source of zoonotic disease, and the potential for disease spill over into humans escalates when contact rate and individual animal susceptibility increase in the presence of disease. For wildlife rehabilitators, direct contact with sick wild animals is a daily occurrence. During an oil spill response, conditions often exist where highly stressed and susceptible oiled birds, held in concentrated housing are handled frequently by hospital staff. If oiled wild animals are admitted with zoonotic pathogen infections, disease transmission and pathogen shedding may be amplified under the conditions typical of a large oil spill. For the wildlife species commonly affected by oil spills, little is actually known about the identity and the baseline prevalence of zoonotic pathogens. In 2007, we began characterizing zoonotic enteric pathogens by screening 300 animals at 3 wildlife rehabilitation centers, The Lindsay Wildlife Museum, The Marine Mammal Center, and San Francisco Bay Oiled Wildlife Care and Education Center (SFBOWCEC), for zoonotic enteric pathogens. While we have found several zoonotic pathogens of concern, we detected Campylobacter spp in 10.3% of the individuals sampled and over a third of these isolates have been characterized as Campylobacter jejuni. Campylobacter jejuni is a significant zoonotic pathogen causing gastro-intestinal disease in 2.4 million people a year. Published studies have demonstrated that Campylobacter is commonly found in wild birds but prevalence cans vary widely. The focus of this proposed study is to identify factors that increase Campylobacter spp. shedding in animals commonly affected by oil spills and evaluate biosecurity and preventative measures currently in place to minimize spread to humans and the environment. To address this, we propose sampling birds (Buffleheads, Ruddy ducks, Canada geese, Green herons, Black crowned night herons, Western grebes, Brown pelicans and Common murre) at SFBOWCEC on admission and every 3 days during the course of rehabilitation from Nov 2007 to Sept 2008. We will also evaluate environmental surface and water contamination at a wildlife hospital by performing bacterial culture, fecal coliform counts, and a fluorescent dye study during the heavy caseload (July) and light caseload (December) times of the year. While pathogens such as Campylobacter may only be detected in a minority of samples, fecal coliform bacteria are abundant and counts are commonly used as an indicator of environmental fecal contamination in water and on surfaces. Enumeration of fecal coliforms in the environment will identify surfaces and water sources that may increase exposure rates and transmission of zoonotic pathogens. We will also administer a voluntary and anonymous questionnaire to staff and volunteers working at the SFBOWCEC facility. We aim to enroll 100 individuals with a range of occupational exposures (from Nov 2007 to Sep 2008) and each participant will be asked to keep a weekly diary that tracks their occupational activities, flu-like symptoms and gastro-intestinal symptoms, such as vomiting or diarrhea. Participants will also be asked periodically during the questionnaire period about their use of personal protective equipment and preventative measures such as frequency of hand washing. Because many zoonotic pathogens are fecal-orally transmitted, this study will inform us on potential risk factors associated with other zoonotic pathogens transmitted via this route. This proposed research will help improve the standard of care and biosecurity practices that are an important part of an oil spill response for these aquatic bird species.