

# **PATHOLOGIC AND CLINICAL IMPLICATIONS OF *Streptococcus phocae* ISOLATED FROM PINNIPEDS ALONG COASTAL WASHINGTON STATE, BRITISH COLUMBIA AND ARCTIC CANADA**

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## **ABSTRACT**

Over the course of the last 12 years, 205 harbor seals (*Phoca vitulina*), consisting predominantly of neonates, juveniles, and fewer adults, have been submitted to the Animal Health Center, Abbotsford, British Columbia, Canada for diagnostic evaluation. Most diagnoses consisted of infectious disease processes such as pneumonia, meningitis/encephalitis, septicemia, enteritis, cellulitis, and abscessation. Historically, the most commonly isolated bacterial pathogens have been *Pseudomonas aeruginosa*, *Escherichia coli*, *Enterococcus* spp, *Aeromonas* spp, *Clostridium* spp, and more rarely *Salmonella* spp and *Listeria* spp. Since originally detected in 2000, there has been a gradual increase in the number of juvenile and adult harbor seals with variable growth of *Streptococcus phocae*. In addition to harbor seals, this bacterium was more recently isolated from juvenile and subadult ringed seal pups (*Phoca hispida*) from arctic Canada and 2 stranded harbor porpoises (*Phocoena phocoena*) from Washington State. Isolates were originally identified by routine biochemical profiles, then in select cases, confirmed by gene sequencing of the 16s RNA. *Streptococcus phocae* was originally associated with pneumonia and sinusitis in harbour seals (*Phoca vitulina*) infected with morbillivirus in north western Europe, and later was attributed to septicemia, emaciation and abortion in cape fur seals in Namibia and South Africa. To our knowledge, these findings represent the first reports of these isolates of this bacterium in Washington State, coastal British Columbia and arctic Canadian pinnipeds and cetaceans. The role of the *Streptococcus phocae* in causing morbidity and mortality in pinnipeds remains unknown. Generalized debility associated with insufficient colostrum consumption, fulminant herpesvirus or lungworm infections, *in utero* or post partum malnutrition and other debilitating or immunosuppressive conditions likely precipitate clinical disease associated with this bacterium. From an ecologic perspective particularly in the northern Pacific region near capacity niche exploitation, reduced availability of prey species and possible increased levels of immunotoxic contaminants may predispose seals to clinical disease. Efforts are ongoing to assess the distribution of *Streptococcus phocae* in the north eastern Pacific Ocean and arctic Canada and to determine its role in contributing to clinical disease.