

Thus we hypothesized that virus was transmitted through the Arctic to the North Pacific after the 2002 epidemic by vector species. A significant reduction in sea ice after 2002 may have altered seal haulout and migration patterns resulting in contact between Atlantic, Arctic, and Pacific Ocean species that was not possible after the 1988 outbreak. Sera (n = 700) were tested by serum neutralization to examine the timeline of exposure; and tissues and nasal swabs (n = 662) were tested by qPCR for PDV nucleic acid in live and dead otters, Steller sea lions, Northern fur seals, Bearded seals, Ribbon Seals, Spotted seals and Ringed seals from 2004 to 2011 to evaluate the infection status. Serologic analyses indicated exposure likely first occurred in 2003 as >50% of Steller sea lions pups tested had antibodies against PDV. Positive titers were detected in all species and the proportion appeared to decrease through 2008 and increased again in 2009. PCR supported the serology results as positive tissues and nasal swabs were detected in multiple seal and sea lion species. Results indicated that PDV first emerged after 2002 and has been circulating in multiple species across Alaska.

Emergence of Phocine Distemper Virus in Arctic and Sub-arctic Pinnipeds in the Northeast Pacific off Alaska

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Phocine distemper virus (PDV) nucleic acid was detected in live-captured and dead Northern sea otters off the coast of Alaska in 2004, the first confirmation of this virus in a Pacific marine mammal. The emergence of this virus highlighted the need to examine its role in the mortality of sea otters and determine viral distribution in Arctic and Sub-arctic marine mammals in the Northeast Pacific. Sequence analysis confirmed the viral fragment was identical to that from the 2002 phocine distemper outbreak that caused large-scale mortality in harbor seals in Europe and serological surveys prior to 2000 revealed that marine mammals in Alaska had not been exposed to PDV.

ABSTRACTS

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