



## Viruses causing lysis of the toxic bloom-forming alga *Heterosigma akashiwo* (Raphidophyceae) are widespread in coastal sediments of British Columbia, Canada

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Limnol. Oceanogr., 47(2), 2002, 545-550 | DOI: 10.4319/lo.2002.47.2.0545

**ABSTRACT:** Viruses that infect and cause lysis of the toxic alga *Heterosigma akashiwo* are abundant and widespread in the Strait of Georgia, Canada, and adjacent inlets during the summer months when blooms of this alga occur. Because viruses are subjected to many mechanisms of removal and their host is intermittently dormant, the persistence of viruses may be dependent on environmental reservoirs. We extracted pore water from sediments collected in the Strait of Georgia and screened for the presence of infectious agents that cause lysis of *H. akashiwo*. Lytic agents were widespread throughout the study region, being detected in 17 of 20 sites surveyed. Lytic agents were present in sediments ranging from highly organic to clay-rich and were retrieved from cores taken at water depths of 25-285 m. The highest concentration of lytic agents was found at the sediment-water interface; however, lytic agents were found as deep as 40 cm below the sediment-water interface. Examination of agents isolated from various sites revealed virus-like particles ~50 nm in diameter. These are similar to other virus-like particles that have been isolated that infect this alga. This suggests that the most abundant lytic agents in the sediments are viruses and that these viruses may be long-lived once buried in the sediments. The widespread presence of viral-size lytic agents that infect *H. akashiwo* is consistent with viral infection being a mortality agent of this alga in the overlying waters and suggests that they may play an important role in regulating their population dynamics.

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