

Frequency of *Vibrio parahaemolyticus* cases from shellfish consumption and the inter-annual variation in summer temperatures in southern Chile from 2009 to 2010. Cachicas V^{1*}, Belmar D¹, Jones J.², Y, Bowers J.³, Krantz J.², Ferreira N.¹, Aranda C.⁴, M Costagliola⁶, M jara¹, Osorio G.⁵, De Paola A.²

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The Region De Los Lagos in southern Chile is an important seafood production area for salmon and shellfish. *Vibrio parahaemolyticus* outbreaks have been an annual occurrence in Los Lagos during the summer season (December to March) since 2004 and ingestion of raw or partially cooked shellfish have been most frequently implicated. While over 400 cases per year have been reported during the period of 2004 to 2009 in Los Lagos, only a single *V. parahaemolyticus* case was reported in 2010 and occurred during the last week of January.

We examined five market samples of bivalve molluscs (*Protothaca taca*, *Mytilus chilensis*, *Choromytilus chorus* and *Aulacomya ater*) in duplicate, for total and pathogenic *V. parahaemolyticus* biweekly during the summers of 2008/2009 and 2009/2010, using real-time PCR in an MPN format (10 to 0.001g). In 2009/2010, total *V. parahaemolyticus* was determined using the BAX[®] System Real-Time PCR. Vibrio Kit for detection of *V. cholerae*, *V. vulnificus*, and *V. parahaemolyticus* (DuPont, Wilmington, DE). Seawater and air temperatures were obtained from the Chilean Servicio Hidrográfico y Oceanográfico (www.shoa.cl) using GPS coordinates 41°29'0.5" S and 72°57'39" W.

During the summer of 2008/2009, 441 clinical cases were reported in the region, while only a single case was reported in 2009/2010 summer (Figure 1) www.minsal.cl. In samples collected during the 2008/2009 summer, total (*tlh*) and pathogenic (*tdh*) *V. parahaemolyticus* were detected in 94% (47/50) and 25% (14/50) of samples, respectively. In contrast, in samples collected during 2009/2010 summer, 53.8% (43/80) and 2.5% (2/80) of samples, contained total and *tdh+* *V parahaemolyticus*, respectively (Figures 2 and 3). Mean seawater and air temperatures from December through March

were 15.85 ± 1.45 °C and 15.91 ± 2.17 °C, respectively, in 2009 and 13.95 ± 1.43 °C and 14.88 ± 2.07 °C, respectively, in 2009/2010 (Figure 4).

These data suggest that the lower seawater and air temperatures in 2009/2010 were responsible for lower levels of *V. parahaemolyticus* and fewer clinical cases. This was the first time since 2003/2004 that mean water temperatures were less than 15°C during the summer season in Los Lagos and supports previous findings in Alaska that *V. parahaemolyticus* risk appears to be negligible at temperatures less than 15°C.

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Figure 1

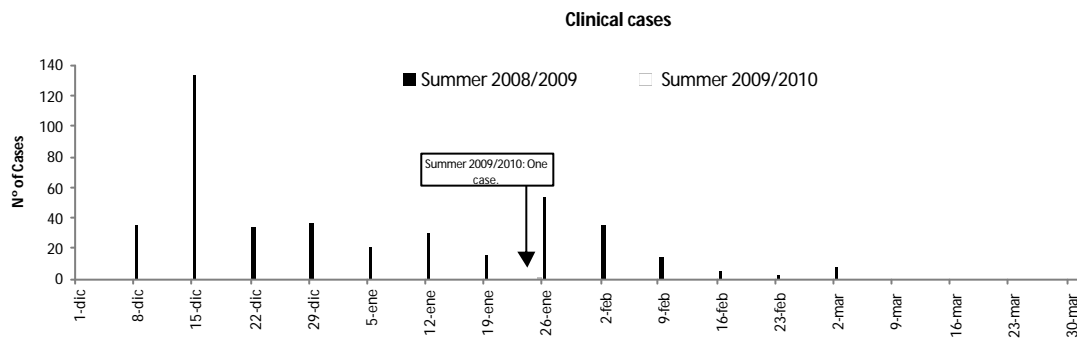


Figure 2

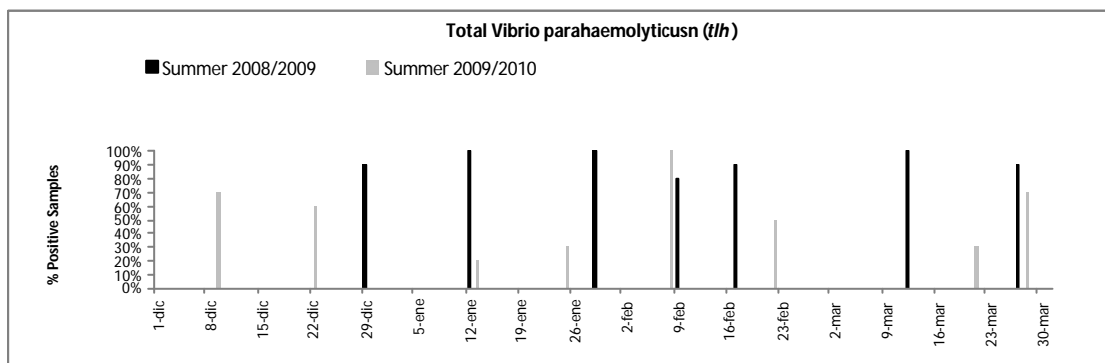


Figure 3

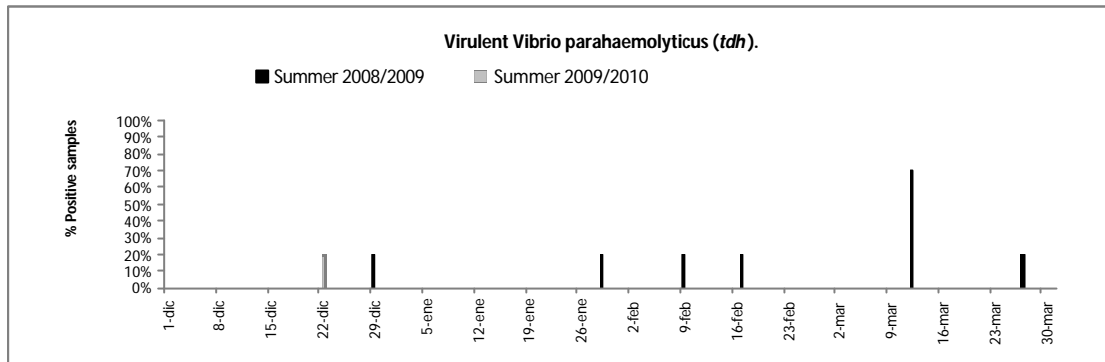
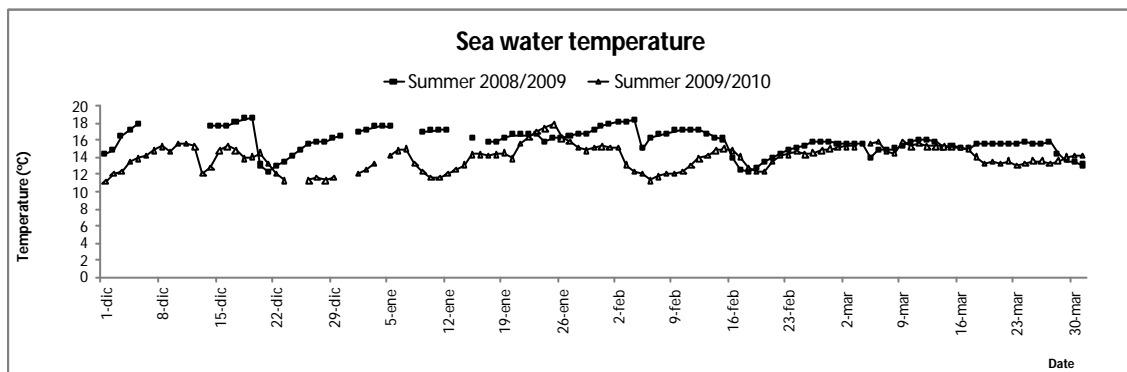


Figure 4



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