

**ENV Report 12 - *Effects of Waves on the Early Growth of Vallisneria americana*** by Robert Doyle

**ABSTRACT**

The impacts of 15-cm waves on the survival and short-term growth and development of *Vallisneria americana* plants growing from tubers was investigated in artificial raceways. Twelve recently sprouted tubers were planted at each of three depths (15, 20, and 25 cm) within both wave and control raceways. Wave events designed to simulate wave disturbances caused by traffic along a shoreline were created five or six times each day during the 10.5-week experimental growth period. A wave event consisted of five 15-cm waves generated within the raceway within a 3-min period. The waves generated a maximum velocity of about 140 cm sec<sup>-1</sup> as they swept over the plants. All plants survived at all depths in both treatments. However, individual plants exposed to the wave regime accumulated significantly less mass than controls. On average, the total mass accumulated was only 50 percent of that of undisturbed plants. In addition, the plants experiencing the waves had significantly shorter leaves and produced significantly fewer daughter plants. While plants under both wave and no-wave treatments had a net positive growth over the experimental period, those exposed to frequent wave energy developed more slowly and may be less resilient to recovery from other forms of disturbance.