

The Potential for Vaccines in Controlling Bacterial Kidney Disease

Linda D. Rhodes Dr. Mark S. Strom

Northwest Fisheries Science Center

2725 Montlake Boulevard East

Seattle, WA 98112

linda.rhodes@noaa.gov 206-860-3279

mark.strom@noaa.gov 206-860-3377

Cindra K. Rathbone and Dr. Lee W. Harrell

NW Fisheries Science Center

Manchester Marine Experimental Station

7305 Beach Drive East

Port Orchard, WA 98366

cindy.rathbone@noaa.gov 206-842-5434 ext. 8317

lee.harrell@noaa.gov 206-842-5434 ext. 8307

Stephen C. Corbett

Olympic National Park

Natural Resources Management

600 East Park Avenue

Port Angeles, WA 98362

steve_corbett@nps.gov 360-565-3015

Bacterial kidney disease (BKD) is a chronic, persistent problem among cultured salmonids. The disease can be transmitted vertically as well as horizontally, and fry can be cryptically infected with the bacterium that causes BKD, *Renibacterium salmoninarum*. Current practices to control BKD include broodstock segregation and antibiotic treatment, but vaccination is a developing area for control. We have tested several combinations of vaccines and adjuvants, including a commercially marketed vaccine, a formalin-killed strain of *R. salmoninarum*, and DNA adjuvants. In juvenile chinook salmon, the adjuvants and vaccines showed limited ability to protect against an acute challenge with virulent *R. salmoninarum*. However, a mixture of the commercial vaccine and the formalin-killed strain of *R. salmoninarum* significantly improved survival among fish already infected with *R. salmoninarum* and significantly decreased levels of bacterial antigens in the kidney. This is the first demonstration of a therapeutic vaccine against BKD. An integrated disease management plan for BKD using broodstock segregation, judicious use of antibiotics, and vaccination will be discussed.