

1 Salmonids

Cristian Araneda¹, Roberto Neira¹, Natalia Lam², and Patricia Iturra²

¹ Departamento de Producción Animal, Facultad de Ciencias Agronómicas, Universidad de Chile, P.O.B 1004, Santiago, Chile
e-mail: craraned@uchile.cl

² Programa de Genética Humana, Instituto de Ciencias Biomédicas, Facultad de Medicina, Universidad de Chile, P.O.B 70061-7, Santiago, Chile

1.1 Introduction

The modern salmon industry has had an explosive growth rate since the 1980s (Dunham et al. 2001), especially in Norway and the United Kingdom. Salmon and trout production requires cold waters with high oxygen content and low levels of pollutants, with a preference for protected coastal sectors far from big urban centers. So, even though cultured salmonid species originated in the Northern Hemisphere, close to 40% of the salmon produced in captivity today comes from the Southern Hemisphere, where they have been successfully introduced and cultivated.

1.2 History of Salmon Culture

1.2.1 Early History of Salmon Culture

The first attempts to artificially reproduce these species began in the middle of the fourteenth century in France. The French monk Dom Pinchon incubated trout eggs that he collected from the rivers where the fish bred. However, most authors attribute the development of artificial fertilization of trout and salmon eggs to Prussian Stephan Ludwing Jacobi (1711–1784) who published his experiences in 1763 in the “Hannoverschem magazin” (Huet 1972). These findings were used in 1842 by Remy and Gehin in Vosges, France. They fertilized rainbow trout eggs

and developed fry and fingerling production in ponds to restock streams in the Moselle River basin. In 1848, the French Academy sent a scientific commission to corroborate the findings, and eventually professor Coste, a specialist in embryology, obtained support of the French government for the construction of a hatchery in Huningue (Alsace) in 1851 (Blanco 1995). In the United States, the first hatchery was inaugurated in Maine in 1871. A second US hatchery was constructed in 1872 on the McCloud River, a tributary of the Sacramento River in California. The first artificial incubation of salmonids in Japan began with a lot of 17,000 eggs obtained from the Nakagawa River in 1876. Experiments in artificial incubation and release into different rivers of the main Japanese island, Honshu, continued until 1888 but without great success.

France, Germany, England, the United States, and Japan led the efforts to establish artificial reproduction of salmonids. In addition, these countries made great efforts to transplant salmonids to other places and latitudes. First was England, which distributed salmonids to its colonies in New Zealand and Australia. Although salmonids did not naturally exist in the Southern Hemisphere, the English government, with the support of the United States, sent eggs of Pacific salmon to be released into the southern English possessions. Their persistence finally resulted in the introduction of salmon in a wild state in New Zealand, now recognized as the first successful introduction of salmon in the Southern Hemisphere. Beginning in 1870, and continuing for more than 60 years, the United States led efforts to introduce eggs of Pacific salmon to different countries in Europe and the Southern Hemisphere, including Chile and New