

The use of genetics to evaluate Salmon reintroduction strategies

Pascal Vonlanthen¹, David Bittner², Andreas Knutti³

Salmon have successfully been reintroduced to the Rhine system over the last decades. Today returners come back as far as they can migrate up the Rhine. The number of returners however is still very low. The different governments apply an intensive program to support the salmon in the Rhine system. Over the last years ca. 2 million salmon are introduced every year into the Rhine system. For this purpose, many different strategies are applied. Salmon stem from different stock sources (Sweden, France), stem directly from natural returners (F1) or from hatchery stocks (F2), are introduced at different ages (fry, parrs, smolts), are introduced in very different rivers (directly into the Rhine, into large tributaries, into small tributaries). However, very little is known on whether the stocking activities are successful, especially in cases where salmon have already established themselves in a river system and when successful natural reproduction occurs. Also not much is known about the success of different stocking strategies. We developed a strategy using population genetic techniques to survey stocking efficiency in the Rhine. In a preliminary study we applied the method to all salmon introduced in Switzerland. We show that using genetic parental assignments is a very efficient way to survey stocking efficiency and to disentangle the efficiency of the different stocking strategies at low costs. We suggest to apply the method across the whole Rhine system to assess the success of current stocking activities and to optimize the efficiency and hence increase the success of the salmon reintroduction program in the Rhine.