Salmonid individuals show a relatively high variability in the time required to abandon the gravel nest where they hatch, the so-called "emergence time". Different behavioral and physiological traits have been shown to be associated to that emergence time in wild salmonids. In general, early- and late-emerging fish have traits resembling those of proactive and reactive stress coping styles, respectively. Proactive fish are considered to be more resilient to stress and probably to disease, so it was hypothesized that fish with different emergence time have different ability to resist repeated episodes of stress without suffering deleterious effects on their welfare or health status. In this study, rainbow trout eyed eggs were hatched and larvae were fractionated according to their emergence time (Early fraction: first 20% of fish to emerge; Intermediate fraction: mid 20%; Late fraction: last 20%). When the fish were four months old, part of the fish were exposed to a daily repeated stress protocol for 15 days. The next day, both naïve and repeatedly-stressed fish were exposed to an acute stress challenge. Different plasma (cortisol, glucose, lactate) as well as CNS (serotonergic activity) stress markers were assessed to evaluate the stress resilience of the different fractions. Furthermore, an intraperitoneal infection challenge with Flavobacterium psychrophilum was carried out to assess the disease resilience of the different emergence fractions. Altogether, the results showed that fish from different fractions displayed different activation of the hypothalamus-pituitary-interrenal axis, pointing to a higher stress resilience in the fish with shorter emergence times. However, those differences were not reflected in the ability of the different fractions to grow and perform well in terms of growth, or in the ability to overcome the infection with the bacteria, which was similar for all the emergence fractions. This suggests that discriminating fish according to emergence time would probably have little effect in improving the performance and the welfare of farmed fish.