The match/mismatch hypothesis may be a useful tool for predicting recruitment of marine fishes, particularly in the face of climate-driven changes in ocean productivity. For example, the temporal matching of young steelhead outmigrating from freshwater to the ocean relative to their prey could influence their marine survival. To determine whether mismatches between juvenile steelhead and their prey could contribute to low ocean survival, we analyzed the migration timing and ocean survival of 22,116 tagged juvenile steelhead trout over 12 years from the Wind River, Washington State, USA. We used a multilevel modelling approach to determine which individual (e.g. size) or yearly (e.g. biological spring transition date (day that cold-water zooplankton first appeared near the Columbia River estuary)) factors contributed to survival. Larger fish had higher ocean survival, providing further evidence that freshwater growing conditions have carryover effects on marine survival. Survival was higher when fish migrated after the biological spring transition date, which varied widely across years. Thus, in years when the biological spring transition date was earlier, more steelhead trout survived. Collectively these findings indicate that freshwater growing conditions and timing of food availability in the nearshore coastal environment work in concert to determine individual survival.