

Recent declines in salmon body size impact ecosystems and fisheries.

Salmon are returning to rivers smaller and younger than in the past, forcing ecosystems and people into an uncharted future of smaller salmon.

Shrinking salmon. Salmon size has declined dramatically over the past 60 years. Size declines have occurred across species and are generally associated with decreasing age.

What are the causes?

Climate drivers. Complex responses to regional and local climate drivers raise concerns that climate change may be contributing to salmon size declines.

Ocean density. Increased density of pink, chum, and sockeye salmon, fueled partly by hatchery production, may be contributing to size declines by limiting food availability and decreasing marine survival.

Size-selective fishing. While size-selective fishing has been widely implicated in size and age declines in other marine fishes, effects in salmon may be population-specific.

Marine predators. The recovery of marine predators has been proposed as a driver of size declines, but current evidence for the effects of marine predators is mixed.

What are the consequences?

Food security. Salmon have been a critical food resource for Alaskan people for thousands of years. Food security for subsistence communities is threatened by decreasing salmon size, especially when coupled with declining abundance, as seen in many Chinook salmon stocks.

Nutrient delivery. Salmon biomass provides critical nutrients to support freshwater and riparian productivity and biodiversity. Smaller salmon each transport less biomass, starving ecosystems of critical nutrients that support bears, insects, birds, trees, and juvenile salmon themselves.

Population productivity. Larger female salmon produce more eggs, thereby bolstering population productivity. In a rapidly changing world, lost productivity caused by decreasing salmon size may reduce resilience to environmental variability.

Commercial value. Alaskan salmon commercial fisheries are among the most valuable in the United States. Smaller salmon have lower economic value. Thus, declining size may threaten the economic livelihoods of commercial fishers.