

The bear necessities of aging

December 12 2007

According to George Bernard Shaw: “We don’t stop playing because we grow old; we grow old because we stop playing,” but how fast does that aging occur once started" In the case of populations of salmon in Alaska studied by Stephanie Carlson and colleagues at the University of Washington and McGill University and reported on in this week’s PLoS ONE, it all depends on how choosy are the bears which feed on them.

Pacific salmon are noted for not feeding during their breeding period, relying instead on stored energy reserves and for their rapid senescence – the physiological deterioration associated with aging – once breeding is over. It is, thus, more beneficial for bears to consume fish with fewer signs of senescence because these fish have more energy reserves. However, these “fresh” fish are also more vigorous and harder to catch and so are more effectively caught in smaller, shallower streams.

Carlson and colleagues studied populations of salmon and brown bears in six creeks in southwest Alaska to determine whether the rate of senescence in salmon was driven primarily by the rate of predation by bears or by the tendency of the bears to prey on salmon with less evidence of senescence. They measured the reproductive lifespan of each fish as the number of days between stream entry and death and recorded the mode of death for each fish. They found that the selectivity of the bears for salmon of various senescent conditions was the prime factor determining the rate of senescence in the salmon.

In populations where bears killed old, decrepit salmon, the salmon senesced more slowly relative to populations where bears killed young,

“fresh” salmon. This result contrasts with the established expectation that senescence evolves because of the number of individuals killed by predators, rather than their physical characteristics.

“The work offers new insight into the relationship between an individual’s senescent condition and it’s susceptibility to predation and the long-term consequences of this relationship” says Carlson, corresponding author on the publication.

Source: Public Library of Science

Citation: The bear necessities of aging (2007, December 12) retrieved 20 March 2024 from <https://phys.org/news/2007-12-necessities-aging.html>

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