**Table 1** Telomere dynamics and age in Seychelles warbler cohorts. Linear mixed models were created with RTL as the response variable, and different measures of age, along with cohort ID, were included as explanatory variables (see methods for details). Models are ranked by AICc, with best models at the top of the table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Model | df | AICc | Delta AICc | Weight |
| A | - | - | - | - |
| Cohort + Age (log) | 26 | -1027.601 | 0 | 1 |
| Age (quadratic) + Age (linear) + Cohort | 27 | -1010.158 | 17.444 | 0 |
| Age (log) | 5 | -1010.007 | 17.595 | 0 |
| Age (linear) + Cohort | 26 | -1006.859 | 20.742 | 0 |
| Cohort + Age (factor) | 40 | -996.08 | 31.522 | 0 |
| Age (quadratic) + Age (linear) | 6 | -991.16 | 36.441 | 0 |
| Age (linear) | 5 | -984.727 | 42.874 | 0 |
| Age (factor) | 19 | -978.658 | 48.943 | 0 |
| Cohort | 25 | -967.537 | 60.064 | 0 |
| Null model | 4 | -962.627 | 64.974 | 0 |
| B | - | - | - | - |
| Delta age (log) + MeanAge | 6 | -351.051 | 0 | 0.393 |
| Delta age (linear) + MeanAge | 6 | -350.872 | 0.18 | 0.359 |
| Delta age (linear) + Delta age (quadratic) + MeanAge | 7 | -348.856 | 2.195 | 0.131 |
| Cohort + Delta age (linear) + MeanAge | 27 | -346.428 | 4.623 | 0.039 |
| MeanAge | 5 | -346.425 | 4.626 | 0.039 |
| Cohort + Delta age (log) + MeanAge | 27 | -345.596 | 5.455 | 0.026 |
| Cohort + Delta age (linear) + Delta age (quadratic) + MeanAge | 28 | -344.294 | 6.758 | 0.013 |
| Cohort + MeanAge | 26 | -338.716 | 12.335 | 0.001 |

**Figure Legends**

**Figure 1** Telomere dynamics in relation to age in Seychelles warbler cohorts. **A** RTL and age across all individuals. Points and connecting thin grey lines represent individual samples and birds, respectively. The thick line and shaded area represent the fitted values and 95% confidence limits of a linear regression of RTL and log-transformed age. **B** Boxplot of variation in RTL among cohorts. **C** RTL and age among cohorts. Lines represent fitted values from a linear regression of RTL and log-transformed age, and colours correspond to **B**. **D** RTL in relation to and Log age (i.e. within individual variation in log age).

**Figure 2** Longitudinal telomere dynamics in the Seychelles warbler. **A** Variation in RTL within individuals sampled at different time points. The dotted line represents parity, and thus points above and below the line represent increases and decreases in RTL, respectively. **B** Scaled density plots of repeated RTL measurements among individual samples, and among different samples taken from the same individual. Areas of the density plot to the left of the dotted line represent decreases in RTL, while areas to the right represent increases. **C** RTL in relation to age in pairs of samples taken within two years. Black line and shaded area represent fitted values and 95% confidence limits from a linear regression of RTL and log-transformed age. **D** Probability of telomere lengthening occurring in relation to age. Points at zero and one represent pairs of samples where RTL has decreased and increased, respectively, with point size scaled by the number of overlapping values. The black line represents the proportion of samples in which increases in RTL where observed at each age category.

**Figure 3** Telomere length in relation to the social and ecological environment in the Seychelles warbler. **A** Estimates and 95% confidence intervals for all explanatory variables fitted in a linear mixed model (see methods for details). **B** RTL in relation to tarsus length and sex. **C** RTL in relation to variation in annual food availability. Lines and shaded areas represent the fitted values and 95% confidence limits from linear regressions.