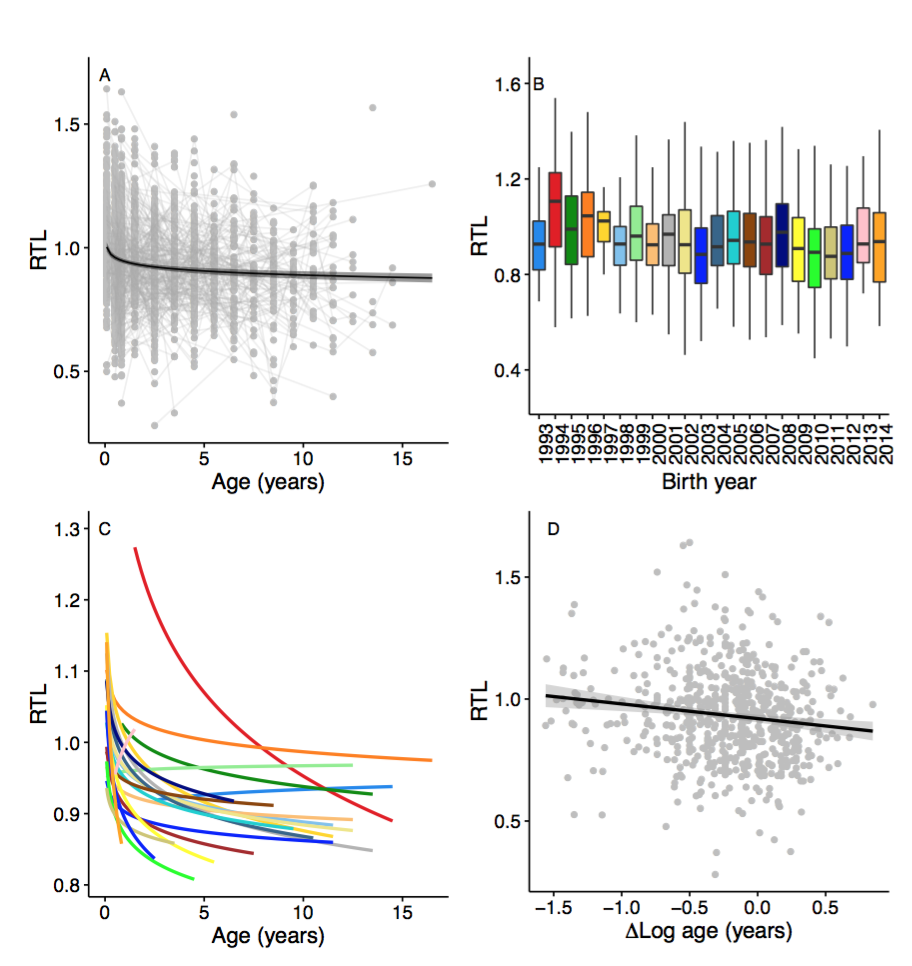
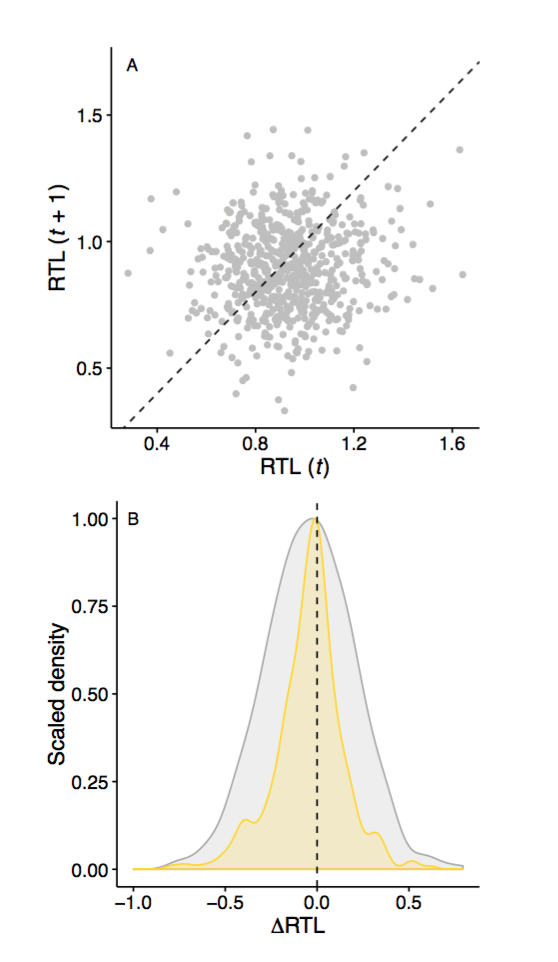
**Table 1** Telomere dynamics and age in Seychelles warbler cohorts. Linear mixed models were created with RTL as the response variable, and different measures of age, cohort ID, and cohort x age interactions as explanatory variables (see methods for details). Models are ranked by AICc, with best models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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Model | df | AICc | Delta AICc | Weight |
| A | - | - | - | - |
| Cohort + Age (log) + Age (log)\*cohort | 48 | -1074.102 | 0 | 0.997 |
| Cohort + Age (log) | 27 | -1062.782 | 11.32 | 0.003 |
| Age (quadratic) + Cohort + Age (quadratic)\*cohort | 48 | -1039.028 | 35.073 | 0 |
| Age (linear) + Cohort + Age (continuous)\*cohort | 48 | -1036.929 | 37.173 | 0 |
| Age (linear) + Cohort + Age (factor) + Age (continuous)\*cohort | 63 | -1035.722 | 38.379 | 0 |
| Age (linear) + Cohort | 27 | -1035.072 | 39.03 | 0 |
| Age (log) | 6 | -1034.942 | 39.16 | 0 |
| Age (linear) + Cohort + Age (factor) | 42 | -1032.966 | 41.135 | 0 |
| Cohort + Age (factor) | 41 | -1027.498 | 46.604 | 0 |
| Age (linear) + Age (factor) | 21 | -1009.351 | 64.751 | 0 |
| Age (quadratic) + Cohort | 27 | -1007.366 | 66.736 | 0 |
| Age (linear) | 6 | -1006.873 | 67.229 | 0 |
| Age (factor) | 20 | -1004.885 | 69.217 | 0 |
| Cohort | 26 | -1000.037 | 74.065 | 0 |
| Age (quadratic) | 6 | -996.559 | 77.543 | 0 |
| Null model | 5 | -989.909 | 84.193 | 0 |
| Age (linear) + Cohort + Age (factor) + Age (factor)\*cohort | 189 | -936.877 | 137.225 | 0 |
| Age (linear) + Cohort + Age (factor) + Age (continuous)*cohort + Age (factor)*cohort | 208 | -931.359 | 142.743 | 0 |
| Cohort + Age (factor) + Age (factor)\*cohort | 188 | -926.127 | 147.975 | 0 |
| B | - | - | - | - |
| Delta age (log) | 6 | -371.11 | 0 | 0.41 |
| Delta age (log) + MeanAge | 7 | -370.124 | 0.986 | 0.25 |
| Delta age (linear) + MeanAge | 7 | -368.331 | 2.779 | 0.102 |
| Cohort + Delta age (log) + MeanAge | 28 | -367.567 | 3.543 | 0.07 |
| Delta age (linear) | 6 | -366.596 | 4.513 | 0.043 |
| Cohort + Delta age (linear) + MeanAge | 28 | -366.467 | 4.643 | 0.04 |
| Delta age (quadratic) | 6 | -365.591 | 5.519 | 0.026 |
| MeanAge | 6 | -365.397 | 5.712 | 0.024 |
| Delta age (quadratic) + MeanAge | 7 | -364.439 | 6.67 | 0.015 |
| Null model | 5 | -364.379 | 6.731 | 0.014 |
| Cohort + MeanAge | 27 | -360.94 | 10.17 | 0.003 |
| Cohort + Delta age (quadratic) + MeanAge | 28 | -360.043 | 11.066 | 0.002 |
| Cohort + Delta age (log) | 27 | -359.688 | 11.422 | 0.001 |
| Cohort + Delta age (linear) + MeanAge + Delta age (continuous)\*cohort | 48 | -354.619 | 16.491 | 0 |
| Cohort + Delta age (quadratic) | 27 | -354.605 | 16.505 | 0 |
| Cohort + Delta age (log) + MeanAge | 48 | -354.366 | 16.744 | 0 |
| Cohort + Delta age (linear) | 27 | -352.972 | 18.138 | 0 |
| Cohort | 26 | -350.968 | 20.142 | 0 |
| Cohort + Delta age (log) | 47 | -347.557 | 23.553 | 0 |
| Cohort + Delta age (linear) + Delta age (continuous)\*cohort | 47 | -343.587 | 27.523 | 0 |
| Cohort + Delta age (quadratic) + MeanAge + Delta age (quadratic)\*cohort | 48 | -336.136 | 34.974 | 0 |
| Cohort + Delta age (quadratic) + Delta age (quadratic)\*cohort | 47 | -330.365 | 40.745 | 0 |

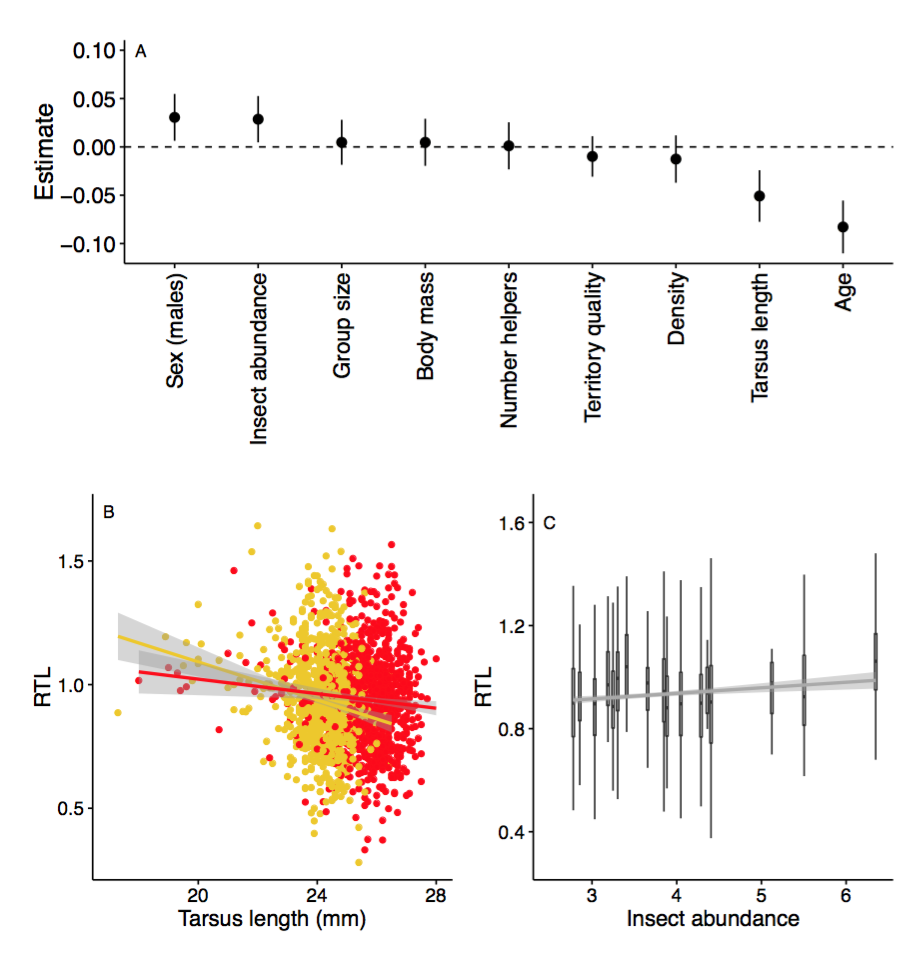
**Figures**



**Figure 1** Telomere dynamics in relation to age in Seychelles warbler cohorts. **A** RTL and age across all individuals. Points and 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. For visualisation purposes a selection of cohorts with large sample sizes across a wide age range was chosen, but all cohorts were included in models. **C** RTL and age among cohorts. Lines represent fitted values from a linear regression and log-transformed age, and colours correspond to **B**. **D** RTL in relation to and Log age (i.e. within indiviual 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.



**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.