**Table S1.** Time scaled parameter values and standard deviations for the maximum likelihood optimization of each model tested with joint site frequency spectrum-based demographic inference in *moments.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **IM (SD)** | **IIM (SD)** | **SC (SD)** | **SI (SD)** |
| Nmeg\_0 | 106049278.19  (10594095899.99) | 60579620.96 (27780976.82) | 1000897.40  (4239177.62) | 9238.85  (43846.68) |
| Ntor\_0 | 159173.09  (86403707.39) | 2545587.85 (10952902.31) | 22683700.58  (1101240437.82) | 36584.85  (205321.52) |
| Nmeg | 19815.13  (1630633.17) | 54725.12 (302722.54) | 11001.51  (2176.37) | 3241053.20  (18733219.57) |
| Ntor | 12292.60  (363945.45) | 149968.18 (733993.96) | 29232.10  (72528.20) | 5745.92  (35692.55) |
| T0 | 2136554.73  (969702508.95) | 93825473.64  (57666506.07) | 17630682.86  (903397204.23) | 1270.08  (6066.55) |
| T1 | 77060.64  (4003285.38) | 60728.46  (295712.88) | 66475.59  (377322.25) | 1209.56  (7760.79) |
| mmeg\_tor | 0.28 (106.22) | 0.14(0.01) | 1.81 (2.62) | NA |
| mtor\_meg | 2.03 (15.98) | 17.62 (25.08) | 3.14 (0.09) | NA |