**Model Calibration**

 We assessed the accuracy of the copper models with embedded Thermochrons by equilibrating models at three biologically-relevant temperatures alongside a thermometer using a setup similar to Angilletta and Krochmal (2003). To this end we placed 28 models (as many as would fit) in a large incubator at the Concord Field Station, Harvard University in Bedford, MA and allowed them to acclimate over the course of an hour to three temperatures – 12, 23, and 32°C – after which temperature was recorded. On average, models deviated 0.13°C from the set incubator temperature, and the magnitude of deviation was consistently low across temperatures (Table 1).

Table 1. Accuracy of copper models (n = 28) was estimated by calculating the difference between the set temperature and model temperature.

|  |  |  |
| --- | --- | --- |
| Incubator Temperature (°C) | Model Temperature (Mean °C ± 1sd) | Mean deviance from incubator temperature |
| 12 | 11.45 ± 0.21 | -0.55 |
| 23 | 23.61 ± 0.39 | 0.61 |
| 32 | 32.32 ± 0.31 | 0.32 |

We measured the difference in equilibrium temperatures between copper models (Te) and a live lizard (TB) by exposing both to different temperatures, radiation, and convective conditions (reviewed in Dzialowski 2005). One live adult male *Anolis armouri* lizard and one copper lizard model were tethered to a cardboard panel using dental floss and a thermocouple (Type T, Omega) was inserted into the cloaca of each and secured using medical tape. The panel was exposed to different thermal conditions in fifteen minute intervals including: in the sun and shade on a sunny day (air temperature [TA] = 31.1°C), outdoors on a breezy overcast day (TA = 22°C), indoors in an air-conditioned room (TA = 18.9°C), and indoors in a cold chamber (TA = 4°C). To avoid thermal stress body temperatures (TB) were not allowed to drop below 10°C or go above 35°C. Te and TB were automatically recorded every minute. The correlation between TB and Te was strong (0.889) and the coefficient of this relationship was close to 1 (coeff. = 1.03). This slope was offset by 0.86°C such that TB = 1.03(Te) + 0.86. Thus, to estimated TB from Te we corrected all copper model temperatures by adding 0.86°C.

Works Cited

Angilletta, M.J., and A.R. Krochmal. 2003. The Thermochron: A truly miniature and inexpensive temperature logger. *Herpetological Review*, 34(1): 31—32.

Dzialowski, E.M. 2005. Use of operative temperature and standard operative temperature models in thermal biology. *Journal of Thermal Biology*, 30: 317—334.