Population dynamics of the Brazilian Torrent Frog *Hylodes heyeri* (Anura, Hylodidae)

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Understanding frog population dynamics is important today, when amphibian declines are occurring the world over. Thus, estimating demographics and the potential influence of environmental variation is important due to changing climates as well as other influences. *Hylodes heyeri* Haddad, Pombal & Bastos 1996 is a diurnal anuran and is endemic to streams in the Atlantic Forest in the states of São Paulo, Paraná and Santa Catarina, southern Brazil. Here we use capture-recapture methods to estimate survival rates, seasonal influences on those rates in two populations. Frogs were captured from November 2016 to March 2017 in both streams in Marumbi State Park, in the municipality of Piracuara, Paraná. Adults were found and captured by active visual searching and response to playbacks when all individuals were uniquely marked. We measured water and ambient temperatures, relatively humidity and rainfall on the days of captures. Mark-recapture data were analyzed using the Cormack–Jolly–Seber model of an open population to estimate survival (Φ) and capturability (p) with the package RMark and R. In one stream we caught 66 and recaptured 51 individuals; in the other we caught 25 and recaptured 19. A few models resulted in similarly low AIC values, the simplest of which with constant survival and capturability (independent of time, climatic conditions and population) during the sampling period (Φ and p constant). Survival was estimated at 0.96 day⁻¹ (se = 0.005) and capturability at 0.63 day⁻¹ (se = 0.073). A similar model suggested that capturability may be different in the two populations (0.60 versus 0.79). Thus, while survival rate is similar in the two populations, abundance and capturability seem to be variable, that may be due to different habitat availability of the two streams. We interpret these results in the context of the unique life-history of these diurnal frogs.

Key-words: Anurans, demography, mark-recapture, torrent frog