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Growth During Middle Age in a Schneider's Dwarf Caiman, *Paleosuchus trigonatus*

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Models of growth of reptiles can be difficult to interpret because of large intra-individual variation, and the resulting model of "mean" growth may not represent the most common form of growth of individuals in the population (Rickard et al. 1989). Empirical tests of models may be difficult for long-lived organisms, especially if individuals in some size classes are difficult to capture or recapture. This is the case for *Paleosuchus trigonatus*, for which Magnusson and Lima (1991) produced a growth model based almost entirely on very small individuals and individuals near asymptotic size. They assumed a monomolecular (von Bertalanffy by length) model of growth, but crocodylians frequently have other forms of growth (Magnusson and Sanaiotti 1995; Webb et al. 1983).

Juvenile *P. trigonatus* disperse widely until they are near adult size, at which time they establish permanent territories. Adults are long lived, and the probability of following the growth of intermediate-sized animals is small under normal circumstances. Here we report on an unusual series of events that allowed us to follow the growth of one male *P. trigonatus* and partially evaluate the model of Magnusson and Lima (1991).

When a large male *P. trigonatus* (#4) that occupied the center of our study area disappeared in 1986, the two resident males (#5 and #12) on each side of #4's territory expanded their territories to include the vacant area. The dynamics of the interaction between #4 and #5 have been described partially by Magnusson and Lima (1991). A juvenile male (#37) was captured in the area previously occupied by #4 in March of 1989. In April 1989, #12 was drowned in a turtle trap, and #37 remained in the area. Here, we describe the growth of #37 between 7 March 1989 and 23 July 1996 when he also was drowned in a turtle trap.

We do not know the age of #37 when he first was captured with a snout-vent length (SVL) of 59 cm, but his subsequent growth rate was higher than that predicted by the model of Magnusson and Lima (1991). To estimate his initial age, we applied his observed rate of decline in growth rate with length (-1.022 cm/year/cm), and the maximum asymptotic size of any individual in our study area (90 cm), in the monomolecular model. These values are greater than those in the "mean" model (-1.278 cm/year/cm and 80 cm, respectively) and, if in error, should underestimate initial age. However, the difference between initial age estimated with these parameters and those of the "mean" model is trivial (Fig. 1). Data for one known-age female at 6.9 yr (Fig. 1) indicate that the estimate of initial age of 9.0 yr for the male is reasonable.

Growth of #37 indicates that the underlying pattern of growth for *P. trigonatus* does not deviate grossly from the monomolecular model as do those for *Crocodylus johnstoni* (Webb et al. 1983)

and one population of *Caiman crocodilus* (Magnusson and Sanaiotti 1995). The longitudinal data indicate that #37 reached 75 cm SVL at about 15 yr of age, considerably less than the 20 yr predicted by the model of Magnusson and Lima (1991), but still much greater than that expected from growth models of *Caiman crocodilus* (Magnusson and Sanaiotti 1995). As with large species of crocodylians, sexual maturity in *P. trigonatus* is attained at ages between one and two decades.

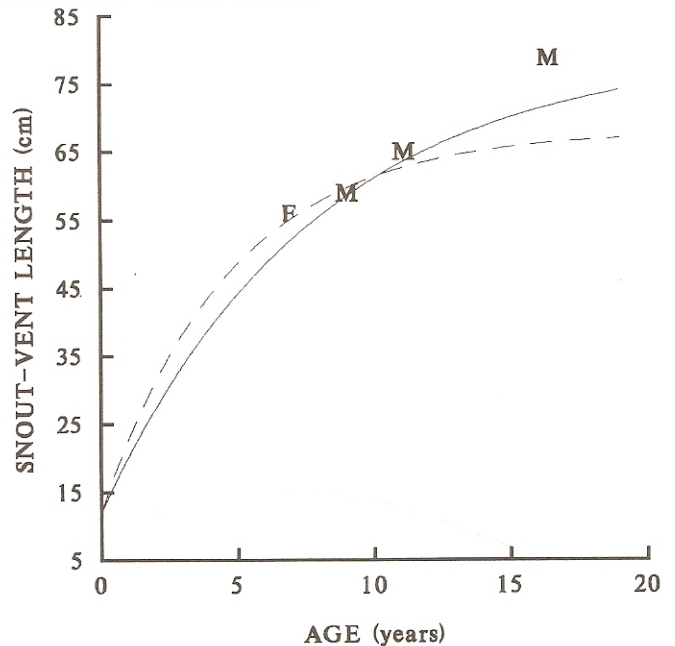


FIG. 1. Relationships between snout-vent length and age for males (solid line) and females (broken line) predicted for a population of *P. trigonatus* by Magnusson and Lima (1991). "F" represents a known age female and "M" represents data for male #37, assuming an age at first capture of 9 years (see text).

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