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Testosterone and Estrogen Levels Within and Between Clutches of House Wren (*Troglodytes aedon*) Eggs Yolks

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TESTOSTERONE AND ESTROGEN LEVELS WITHIN AND
BETWEEN CLUTCHES OF HOUSE WREN
(*TROGLODYTES AEDON*) EGG YOLKS

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The embryonic chick inherits maternal resources for development, including steroid hormones, which pass from female circulation to the offspring during egg formation (Schwabl 1993). Variations in the concentrations of these hormones, and more specifically testosterone and estrogen, may affect the likelihood that certain behavioral, physiological, and morphological traits will be expressed (e.g. Baptista et. al. 1987, Wingfield et. al. 1987, Wingfield et. al. 1990, Ketterson and Nolan 1992). Recent study has revealed the existence of a positive correlation between the social rank of juvenile canaries (*Serinus canaria*) and the concentration of yolk testosterone in the eggs from which they hatched (Schwabl 1993). This finding suggests that the competitive ability of offspring may be a reflection of the amount of maternal testosterone deposited in the yolk. Thus, a female may potentially determine the competitive ability of her offspring by varying the amount of testosterone imparted to them. In addition, studies analyzing estrogen levels in the adult bird have revealed that estrogen influences neural circuits during brain development that are involved in male song learning and production (Gahr et. al. 1993, Schlinger 1994, Adkins-Regan et. al. 1995). Because attraction of mates is often aided by the display of sex differences such as song, a mother's control of estrogen at the embryonic level may potentially influence the reproductive success of her offspring and her overall fitness. If a female maintains such control over the reproductive behavior and competitive ability of her offspring, then different levels of estrogen and testosterone should be detected among eggs of a clutch. Using radioimmunoassay analysis to quantify hormone levels, this study proposes to determine whether yolk testosterone and estrogen levels vary within and between clutches of house wren (*Troglodytes aedon*). The existence of this phenomenon has not been documented in populations of wild birds.