

**VIÑUELA, J.; CARRASCAL, L.M. 1999. Hatching patterns in nonprecocial birds: a preliminary comparative analysis. *Actas 22nd International Ornithological Congress, Durban, South Africa.***

Hatching asynchrony and incubation onset were analysed in 117 nonprecocial species by phylogenetic autocorrelation (first order autoregressive method). Phylogenetic autoregressive analyses revealed significant autocorrelations in seven of eight variables (Fig. 1), suggesting that common ancestry had a significant effect in observed phenotypic variation. Body mass showed the highest phylogenetic effect and hatching asynchrony showed the second highest, followed by nest type, clutch size, and the percentage of eggs and nestlings lost to predators. Preincubation period showed significant magnitudes of phylogenetic effects < 10%. Latitude was the only variable with a nonsignificant phylogenetic effect.

Both hatching asynchrony and preincubation period were positively correlated with clutch size. Birds started incubation earlier at lower latitudes, but no latitudinal variation in hatching asynchrony was found. Neither predation rate nor nest type (open, dome or closed nests) affected hatching asynchrony or the onset of incubation. Birds may start incubation earlier in hot climates of lower latitudes to preserve egg viability. Latitudinal variation in clutch size may be explained by the earlier incubation onset at low latitudes, that would impose a constraint on hatching asynchrony. The occurrence of brood reduction, type of diet, mode of incubation (only female- vs. both sexes), mating system and social system were unrelated to the onset of incubation. However, hatching asynchrony was larger in species feeding on plant food and in carnivores than in omnivorous or insectivorous birds. Social species tended to have more asynchronous hatching than solitary breeders. These results support the "offspring quality assurance" and "brood parasitism" hypotheses. Birds seem to maintain a balance between hatching asynchrony and incubation delay as clutch size increases, probably due to the effect of several simultaneous, opposing selective pressures.