

**Abstract.** *Leptodactylus ocellatus* L. is sympatric with *L. chaquensis* Cei on the banks of the Parana river, yet does not show evident gametogenic discontinuity or cyclical variation of secondary sex characters compared with the striking and well-defined seasonal rhythm found in *L. chaquensis*. The endocrine mechanisms regulating the seasonal reproductive cycle in the male of both species in their sympatric area have been studied through assessment of plasma androgens, related to the morphological examination of testis. A sudden intense spermatogenic activity was recorded in the testes of *L. chaquensis* in spring months (September-October), but this ceased in late November, and was followed by a strikingly long summer rest. Conversely, few morphological changes in *L. ocellatus* were found, since the mating period is more irregular and extensive. The androgen plasma changes paralleled the morphological observations. The plasma androgens behaved differently in the two species, since in *L. chaquensis* the androgen peak values occurred at the end of the intense spermatogenic activity, accompanied by dramatic increase of testicular weight and spermiation, while in *L. ocellatus*, the highest androgen plasma levels, occurring in August, seemed to indicate a precocious reproductive activity in this species. These data are discussed, in view of the pivotal role played by androgens in regulating the discontinuous reproductive cycle of *L. chaquensis*.