



FIG. 5. Maximal distance discrimination of the parental display call by the chick in king penguins. During experiments (12 chicks tested), the chick-to-loudspeaker distance, 20 m at the beginning, was progressively reduced by approaching the loudspeaker in steps of 1 m (data from Aubin and Jouventin, 1998, and Lengagne, 1999).

When a bird comes from the sea and makes its way into the colony to find its partner, it calls regularly at different distances from the receiving bird. The farther from the receiving bird the acoustic search was initiated, the more time was necessary to complete the search and the greater the number of calls that were emitted by the incoming bird. On the other hand, we have shown in the king penguin that 70% of the birds started the acoustic search for their mate when the distance was less than or equal to the discrimination range (Lengagne *et al.*, 1999b). So, the calling strategy adopted for finding the partner appears particularly efficient in penguins.

B. SPECIES RECOGNITION

Although we have not systematically studied species recognition in penguins, but have considered them rather a unique model for individual recognition, Jouventin (1982) did compare territorial behavior between species. We found that the display call has several biological meanings, being used by a single bird or by a pair throughout the breeding cycle to indicate both the species, the sex, and the individual. The nesting penguins are the more territorial species, particularly the burrowing genera (*Spheniscus* and *Eudyptula*). The latter is nocturnal and is strongly aggressive against intruders even if it cannot see them (Waas, 1988, 1991). Consequently this species, the little blue penguin, constitutes the best model for specific recognition in penguins. We compared it with a burrowing petrel (Jouventin and