



FIG. 12. Signal adaptation to recognition in the noise (>70 dB) in two categories of penguins: without nest (e.g., king penguin) and with nest (e.g., Adélie penguin) species.

with signals where only one voice was kept (Aubin *et al.*, 2000, for the emperor penguin, Lengagne *et al.*, 2001, for the king penguin). Unfortunately, the upper frequency bands of natural calls were not spaced sufficiently to allow for removal, by simple filtration, of one of the two voices. Therefore, a preliminary playback test was performed with the two *Aptenodytes* species using only the lower frequency component of the calls as stimulus (Fig. 11).