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# Behavioural changes in response to background noise signs the importance of intra-pair vocal communication at the nest in a songbird

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the birds in two contexts: when mates simply meet at the nest ('Visit' duets), and when partners relay each other in the nest during incubation ('Relay' duets), a crucial situation for mates' coordination over incubation duties. Results show that 'Relay' duets were performed slower, with more calls and with a lower tempo than 'Visits' duets. Thus, birds might take more time to interact, so as to be more precise in the coordination of their vocalizations during 'Relays'. Indeed, relays have a crucial role during breeding compared to 'Visits', which are just a passage of the returning partner that can be done quickly. Our study provides the first description of the acoustic interactions between mates at the nest in long-tailed finches. We show that this species presents at least two duet types which display structural differences maybe related to their own functions, and that pairs might adapt their communication to the acoustics of their nest.

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## **Behavioural changes in response to background noise signs the importance of intra-pair vocal communication at the nest in a songbird**

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Intra-pair communication might play a key role in the coordination of behaviours between mates that is central to the monogamous pair bond in birds. Surprisingly, little is known on its structure and function. If acoustic communication between mates around the nest participates in pair coordination during breeding, partners should show strategies to maintain information transmission even under difficult acoustic conditions. We examined how zebra finch (*Taeniopygia guttata*) mates cope with a strong acoustic constraint on their intra-pair communication around the nest. During incubation, zebra finch mates perform three types of structured call duets at the nest. When one mate returns to the nest and meets its incubating partner, a call duet is performed with two possible outcomes: the returning mate either relieves its partner and takes its turn incubating the eggs (relief duets), or leaves the nest at the end of the duet (visit duets). Other call duets are performed with one mate inside the nest and the other outside (sentinel duets). Using a playback of wind noise inside the nest box, we monitored whether partners modify their call duets in response to a short-term increased level of background noise. All duets were shorter during the noise treatment, but their global temporal structure remained stable. Male-female calling dynamic changed only during relief duets. Under noisy conditions, partners increased regularity and precision in their response to each other. Mates also intensified their global effort in communication under noisy conditions by increasing the number of visit duets and their spatial proximity during sentinel duets. Last, calls emitted inside the nest box during the noise treatment were louder, higher pitched and less broadband. Despite the noise constraint, mates maintained call duets, but this was achieved through several changes in partners' behaviour. Regularity and precision of partners' interaction were enhanced only during relief duets, which may sign the importance of these duets in coordinating partners during the crucial moments of incubation shifts.

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## **La communication visuelle chez le chien**

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Le chien partage la vie de l'humain depuis plusieurs dizaines de milliers d'années. Des modalités de communications non verbales, dites multimodales, sont à l'œuvre entre l'humain et le chien de compagnie. Elles sont essentiellement de nature référentielle et elles régulent les interactions sociales de ces deux espèces dans l'espace. Dans les situations où le chien de compagnie demande l'accès à quelque chose à l'humain, nous présenterons en quoi consiste la production de signaux visuels par le chien à cet effet (regards