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Acoustic flexibility in singing birds under noisy urban conditions

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Birds rely on song for defending a territory and attracting a mate. More and more breeding areas are affected by human activities and anthropogenic noise has become almost omnipresent. Consequently, song function in and around cities, and alongside highways, train tracks and airports, is increasingly hampered by noise interference. Several counter strategies in producing sounds, related to changes in loudness, pitch, and timing, can help out under these noisy urban conditions. Observational data have yielded several interesting patterns which show remarkable singing flexibility in different species that are typically common in cities. Here I present data for a new species, the chiffchaff (*Phylloscopus collybita*) showing spectral and temporal adaptation which reduces masking alongside a highway in the Netherlands. Furthermore, experimental field data reveal for the first time that this species is able to adjust immediately to exposure to highway noise via artificial playback in quiet territories. Acoustic flexibility may be key to efficient use of the 'left-over acoustic space' and may determine whether individual birds can maintain their territory and breed successfully. Variation in flexibility among species may explain which birds will remain widespread in our noisy world and which will be pushed back into 'silent' habitat pockets.