

INSIDE JEB

Swim bladder projections help amorous female plainfin midshipman's hearing



Sounding like a cross between a diminutive fog horn and an enthusiastic electric shaver, courting male plainfin midshipman (*Porichthys notatus*) – otherwise known as humming toadfish – have been known to keep coastal houseboat communities awake with their nocturnal droning. Vibrating their swim bladders, the males try to attract eligible females with their tuneful tones, while the females – in turn – pick up the sound with their own swim bladders before transmitting the vibrations to the sacculle structures in their ears. When Robert Mohr, Joseph Sisneros and colleagues from the University of Washington, USA, noticed that the females develop horn-like

protrusions on their swim bladders that project close to their ears around the breeding season, the scientists wondered whether the protrusions might help the females to tune in better to their suitors' serenades.

Collecting the sonorous fish during the summer, Orphal Colleye, Brooke Vetter, Lane Seeley, Mohr and Sisneros measured the females' hearing. Not only did the females have more sensitive hearing than those that had had their swim bladders removed – and than males, which lack the protrusions – but also they were able to tune in better to the higher pitched tones that the ardent males

produce when courting. So, it seems that the females' seasonal swim bladder adaptations could help them to select serenading toadfish males with a certain 'je ne sais quoi', while the best advice for sleep-deprived houseboat residents is to get a pair of earplugs.

10.1242/jeb.209262

Colleye, O., Vetter, B. J., Mohr, R. A., Seeley, L. H. and Sisneros, J. A. (2019). Sexually dimorphic swim bladder extensions enhance the auditory sensitivity of female plainfin midshipman fish, *Porichthys notatus*. *J. Exp. Biol.* **222**, jeb204552. doi:10.1242/jeb.204552

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