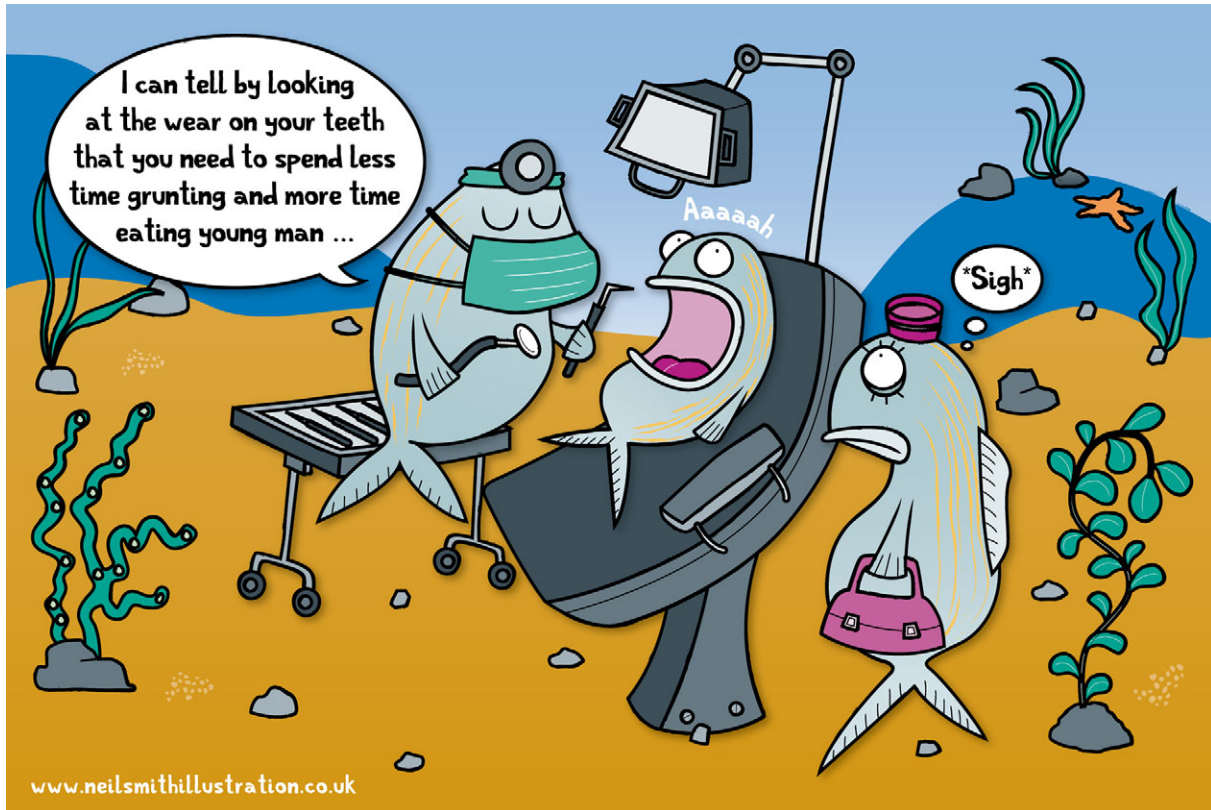


French grunts grind teeth



Many fish are not as toothless as they may first appear. Far back in their throats they carry a second set of jaws – the pharyngeal jaws – equipped with tooth plates studded with teeth that are tailored to each species' own specific diet. Many species are also believed to grind their teeth together to make distinctive calls, but as Frédéric Bertucci and colleagues from the Universities of Liège and Antwerp, Belgium, explain, the relationship between the teeth and any sounds produced by their owners is often only anecdotal: 'Studies focusing on the possible role of pharyngeal jaws in sound production remain rare', they say. Intrigued by the abrupt scratching sounds produced by the French grunt (*Haemulon*

flavolineatum) when alarmed, the team set about recording the fish's calls, testing their hearing and making high-speed X-ray movies of the fish's heads to find out exactly how the grunts produce the distinctive sounds (p. 3862).

The team found that the grunts produced by the fish were pitched at around 700 Hz; however, their hearing sensitivity was strongest at 300 Hz, suggesting that they weren't specifically tuning into the distress calls of their own species. Next, they scrutinised the high speed movies, where they could clearly see the teeth from the top jaw rasping across those of the lower jaw. And when the team took a close look at the

structure of the grinding teeth with scanning electron microscopy, they found that the enamel was slightly worn. They suggest that the fish use the same grinding motion that they use to pulverize food to produce their grunting sounds, and say, 'Sound production is probably an exaptation of the food-processing mechanism in this species'.

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Bertucci, F., Ruppé, L., Van Wassenbergh, S., Compère, P. and Parmentier, E. (2014). New insights into the role of the pharyngeal jaw apparatus in the sound-producing mechanism of *Haemulon flavolineatum* (Haemulidae). *J. Exp. Biol.* **217**, 3862–3869.

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