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Sound production by pinnipeds can be modified by contingency learning

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In contrast to terrestrial mammals, pinnipeds (seals, sea lions and walruses) have remarkable flexibility in the ways that they can learn to use and modify their amphibious sound emissions. The experiments that we will describe are drawn from captive studies which show that changes in sound production can occur as a result of contingency learning, using food as positive reinforcement. A range of specialized physiological and anatomical adaptations appear to play a critical role in controlling sound production in pinnipeds. These adaptations include breath-holding and buoyancy mechanisms, as well as fine muscular control of the mouth, lips and tongue that may be used primarily in feeding. The manipulation and modulation of air flow through these components of the vocal tract and associated super-laryngeal filters appears to be susceptible to some of the same reinforcing consequences that are routinely used to establish reliable control over motor behaviors, such as flipper waving, in operant conditioning contexts.