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**Characterization of the Vocal Repertoire of Sri Lankan Jackal (*Canis aureus nariya*)**

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**Abstract**

Vocalization is an intriguing ecological phenomenon shown across the animal kingdom. In mammals, the structure and context of vocalization are highly variable. The Sri Lankan Jackal (*Canis aureus nariya*) is the only wild canid species and the third largest carnivore in the island, however, little is known about its vocalization. The objective of this study is to characterize the vocal repertoire of the Sri Lankan Jackal. Provoked and spontaneous jackal vocalizations were studied from August 2021 to May 2022 as part of a broad ecological study of the species. A playback acoustic method was used to provoke the Jackal's vocal response. Pre-recorded howling calls were broadcasted using a speaker in several known locations where jackals are known to occur including Athurugiriya (Western Province), Periyakamkulam (Northern Province), Sellankandalwewa (Northwestern Province) and Udawalawe National Park (Sabaragamuwa Province). Unprovoked vocalizations were studied in Mannar (Northern Province), Sigiriya (Central Province) and, Gampaha (Western Province). Complete group howls and other vocalizations were recorded at the Udawalawe National Park using an Omni-directional Microphone fitted to a parabolic reflector and a Marantz solid-state recorder. Spectrometric analyses were done using Raven Pro (v. 1.6.3) bioacoustics software. Different syllable types and vocal types were identified using the differences in duration of notes (sec), frequency (Hz), frequency modulation (Hz), and the number of emphasized harmonics. Our results suggested that the jackal vocal repertoire consisted of phrases of syllable series forming a continuum and a variety of recognizable sounds. The jackal vocalization comprised of a total of 23 syllable types forming 05 vocal types, that include the bark (n=1), whimper (n=6), whine (n=12), short-lone howl (n=4), and group yip-howl (n=3). The group-yip howl is its group vocalization as well as its major vocal type in the repertoire—forming the iconic jackal howl. Our results further indicate that the functions of their vocal repertoire may be related to re-union, territorial defense as well as reinforcing group bonds.

**Keywords:** Canidae, Frequency modulation, Vocal behavior, Vocal ecology, Nariya