

## **Limited Evidence for Individual Signatures or Site-Level Patterns of Variation in Male Northern Gray Gibbon (*Hylobates funereus*) Duet Codas**

### **ABSTRACT**

Many animals rely on acoustic signals to mediate social interactions with conspecifics. Duets—the alternating vocal exchange between two animals—are of particular interest given the presumed intra- and intergroup communicative functions. Importantly, when there are sex-specific differences in duet contributions, the contribution of each sex may serve different function(s). We investigated variation in male Northern gray gibbon codas from seven sites on Malaysian Borneo using three complementary approaches. First, we used supervised classification to see how well we could classify male gibbon codas to the respective male. Second, we investigated the relative contribution of intramale, intermale, and intersite variance to total variance using a Bayesian multivariate, variance components model. Lastly, we investigated small-scale patterns of variation (<10 km) in male codas from a single site to test two mutually exclusive hypotheses related to small-scale patterns of variation. First, if call features are transmitted from father to offspring, we predicted neighboring males would have codas that were more similar to each other than males at further distances. Alternatively, if males actively differentiate from their neighbors, we predicted to see the opposite pattern. We did not find high levels of vocal individuality in male codas, as individual classification accuracy was relatively low (<63%) and there were no site-level differences in codas. We did not find support for either of our hypotheses regarding small-scale patterns of variation. Taken together, our findings indicate high levels of intraindividual variation in male codas. Future work that explores both the function(s) of the male and female contribution to the duets, along with investigations of heritability of duet features will be informative.