

Seed spitting and seed swallowing by wild orang-utans (*Pongo pygmaeus morio*) in Sabah, Malaysia

Abstract

Wild orang-utans (*Pongo pygmaeus morio*) studied at the "Kinabatangan Orang-utan Conservation project", Sabah, Malaysia, are mainly frugivorous. They are regularly observed to swallow large seeds (length longer than five mm) from 37 different plant genera and to spit large seeds from 27 plant genera. For three of these genera, we compared the time to first germination, the germination success, the 50% germination time and seedling mortality of seeds that were spat out, swallowed or left unprocessed by orang-utans. Our results show that mean time from planting to germination was shorter and seed germination rate was higher for seeds swallowed or spat than for seeds collected from the parent tree for two tree species (*Dracontomelon dao* and *Koordersiodendron pinnatum*, both species being part of the Anacardiaceae Family). For *D. dao*, germination success was better for seeds that were spat than swallowed, showing the potential importance of seed-cleaning and seed-spitting by orang-utans for certain tree species occurring within the natural orang-utan habitat.