



Title	Generic monophyly and floral morphology of <i>Disepalum</i> (Annonaceae): investigating a possible evolutionary shift in pollination system
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Citation	The 2012 Annual Meeting of the Association for Tropical Biology and Conservation (Asia-Pacific Chapter), Yunnan, China, 24–27 March 2012. In Program Book, 2012, p. 87-88
Issued Date	2012
URL	http://hdl.handle.net/10722/149309
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Stripe-throated bulbul, *Pycnonotus finlaysoni*, moults in favorable climatic conditions

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Moult of wing feathers in passerine birds occurs annually to maintain flight abilities. This process is costly due to the time and energetic requirements involved in the synthesis of new feathers. This study presents basic information of moult in the adult Stripe-throated bulbul (*Pycnonotus finlaysoni*), a sexually monomorphic passerine, and focuses particularly on primary and secondary wing feathers. We observed moult patterns in free-living birds in the seasonal tropical forests of northern Thailand. We tested whether climatic variables have any influence on moult performance. Moult progression can be fit to a simple linear regression which estimated moult periods began in mid June and lasted until early November of 2009; primary moult began approximately 20 days before secondary moult. We suggest that the onset and duration of feather moult in Stripe-throated bulbuls is related to: (1) the amount of rainfall available to increase food abundance, (2) long day-length to increase foraging time, and (3) suitable environmental temperatures that may indirectly affect feather synthesis. These climatic variables may be advantageous conditions for feather synthesis and performing moult.

Generic monophyly and floral morphology of *Disepalum* (Annonaceae): investigating a possible evolutionary shift in pollination system

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Taxonomic opinion regarding the delimitation of *Disepalum* (Annonaceae) has been divided: some researchers recognise a broadly circumscribed genus, characterised by pollen grains that develop in octads, and monocarps that are borne on an elongated ‘carpophore’; whilst others adopt a narrower delimitation (characterised by a calyx of only two sepals, and a fused corolla), with three species segregated in the genus *Enicosanthellum* (with three sepals, and unfused petals, as in most Annonaceae). Previous morphological research (Johnson, 1989) included hypotheses on evolutionary changes in floral morphology, although it is unclear whether these changes were adaptive (in response to shifts in pollination system) or non-adaptive (possibly resulting from a disruption to the homeotic gene control). We have reconstructed the phylogeny of the group using Bayesian methods based on sequences of four chloroplast regions (*matK*, *ndhF*, *trnL-F* and *ycf1*), with the objective of clarifying generic delimitation and testing hypotheses on floral evolution. The resultant phylogeny is well-resolved and strongly supported, and reveals *Disepalum sensu stricto* and *Enicosanthellum* as sister groups; although this topology is consistent with both approaches to generic delimitation, the distribution of morphological synapomorphies provides greater support to the inclusion of *Enicosanthellum* within *Disepalum*. Morphological characters of particular functional importance are mapped onto the phylogeny using a parsimony approach. The pollination ecology of morphologically diverse representatives (*Disepalum anomalum* from Brunei; *D. petelotii* from Yunnan; and *D. plagioneurum* from Hainan) are being investigated, with assessments of floral phenology, pollinators, floral thermogenesis, and floral scent chemistry. Preliminary results reveal evidence of protogyny in *D. anomalum*, with overlap between the pistillate and staminate phases. Bees were

attracted to the flowers during the period of overlap between the two phases. Bees are uncommon pollinators in the Annonaceae, presumably because of the widespread occurrence of protogyny, in which pollen is not available during the pistillate phase.

Seasonality and aseasonality in phytophagous beetle abundances in an "aseasonal" rainforest in Lambir, Borneo

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Seasonal or annual population fluctuations have been reported for various tropical insect species, exhibiting one or more peaks in abundance at certain times of the year. However, the fluctuation patterns in the insect populations have rarely been investigated in rainforests of the central part of Southeast Asia where climatic factors fluctuate unpredictably on an annual basis. We aimed to determine the prevalence of seasonal or aseasonal trends in the population fluctuations of phytophagous beetles (26 Chrysomelidae and 13 Scarabaeidae) in the rainforest of Lambir Hills National Park, Borneo. Approximately 20% of the 39 beetle species exhibited clear seasonality in population fluctuations, while approximately 72% showed less seasonal population fluctuations. These results suggested that the wide range of temporal pattern in insect population abundance occurs in the aseasonal Bornean rainforest, and that aseasonal patterns dominate when compared with other tropical areas.

Monthly and spatial variation in abundance and size composition of fish in the tidal creek and soft sediment pools of Obitsu-gawa river estuary, Tokyo Bay, Central Japan at low tide

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Fishes are potentially important in the transfer of production from intertidal- to subtidal estuarine habitats but those inhabiting the tidal creek and soft sediment pool receive less attention and their contribution to the overall production of estuaries and the adjacent aquatic habitats of inner Tokyo Bay is yet to be resolved. Monthly and spatial variation in abundance and size composition of fish in the tidal creek and soft sediment pool of Obitsu-gawa River Estuary, Central Japan were studied at low tide. Fix nets were used to collect fish in the tidal creek while dip nets in the soft sediment pool from July 2009 to June 2010. Twelve species of gobies constituted 98% of the total catch. *Gymnogobius uchidai*, *Gymnogobius macrognathos*, *Gymnogobius breunigii*, *Eutaeniichthys gilli*, *Pseudogobius masago* and *Favonigobius gymnauchen* were the most abundant species in both habitats. Monthly variation in abundance was evident for *F. gymnauchen*, *G. breunigii*, *G. macrognathos* and *G. uchidai* in the tidal creek while *G. macrognathos* and *G. uchidai* in the soft sediment pool. Variation in size across months was apparent for the 6 most abundant gobies in the tidal creek while *E. gilli*, *G. macrognathos*, *G. uchidai* and *P. masago* in the soft sediment pool. Spatial variation abundance in a given month was closely related to monthly size distribution. Larvae and early juvenile gobies were