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A SIGHTING OF A STINKHORN FUNGUS, *DICTYOPHORA* SPECIES

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INTRODUCTION

This article reports upon a recent sighting of a stinkhorn fungus, *Dictyophora* species (family Phallaceae, order Phallales, class Agaricomycetes, division Basidiomycota), with dispersers and consumers upon it in the Central Catchment Nature Reserve, Singapore. A stinkhorn fungus is only apparent when it "blooms", with its slimy cap and white to orange veil/skirt around its stalk. In Singapore, the stinkhorn fungus is most often encountered after heavy rainfall on the damp forest floor, in thick leaf litter (forum, web and blog sources: Lai, 2003; Husky, 2005; Mervin, 2006).

Literature and web sources often cite insects as the dispersers of this enigmatic fungus (Tan, 1990; Beppu, 1994; Tuno, 1998; Volk, 1999). The stinkhorn fungus does not produce airborne spores as most other fungi. Instead, the cap of the mushroom (basidiocarp) produces a slimy mix of spores and mucus called gleba, and emits a strong odour of rotting flesh apparently owing to its rapid autodigestion, to attract carrion flies and other agents for spore dispersal (Tan, 1990; Tuno, 1998).

OBSERVATIONS

This encounter with a freshly "bloomed" stinkhorn fungus occurred in the morning of 30 Sep.2008 along the southern shores of the Upper Peirce Reservoir in the Central Catchment Nature Reserve (Fig. 1). The water level of the reservoir had receded, leaving a thick layer of leaf litter on the bank. There had been a heavy downpour the previous night, so the area was very moist. Upon closer examination of this fungus (ca. 12 cm tall), a portion of the cap and veil appeared to be damaged (Fig. 2). Land molluscs have been known to consume such fungi (S. K. Tan, pers. comm.). There were many *Drosophila* flies (Diptera: Drosophilidae) around the cap and veil (Fig. 3), apparently attracted to the odour and possibly serving a spore-dispersal role. Also present were some sap beetles (Coleoptera: Nitidulidae; Fig. 4), which specialise in feeding on odiferous material (H. K. Lua, pers. comm.). These beetles appeared to be feeding on the veil, and some were even observed under the cap. A more definitive identification of the sap beetle was not possible currently as there are many undescribed species in this family. Apparently, this sap beetle can be commonly found in aggregations on stinkhorn fungi (L. F. Cheong, pers. comm.). A casual search around this specimen found no other conspecifics in the vicinity.

DISCUSSION

The strategy of spore dispersal of *Dictyophora* has been speculated to be adhesion on the external surfaces of the bodies of insects that feed on the gleba, until Beppu (1994) hypothesised that spore dispersal was possibly through the guts of the insects and via excrement. This was proven by Tuno (1998) through in vitro experiments on drosophilid flies found feeding on two species of *Dictyophora* in Japan. This situation is most probably similar to that reported here. Tuno (1998) also suggested the strategy of attracting a wide range of generalist mycophagous insects by the rotting odour, so that these insects can consume the gleba and egest out viable spores, as they cannot digest the spores effectively.

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Fig. 1. Stinkhorn fungus amongst thick leaf litter on the southern shores of the Upper Peirce Reservoir.

Fig. 2. Damaged cap and veil of the fungus.

Fig. 3. *Drosophila* flies (with red eyes) on stinkhorn cap and veil, and beetles only on the veil.

Fig. 4. Coleopteran beetle found on the stinkhorn fungus. Scale bar = 1 mm.

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