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BRIEF COMMUNICATION

PISONIA GRANDIS DOES NOT APPEAR TO HARBOUR FUNGI KNOWN TO INVADE SEA TURTLE NESTS AT HERON ISLAND, EASTERN AUSTRALIA

Hatching success of loggerhead sea turtle nests is significantly lower at Heron I. (23°26′ S, 151°55′ E-Capricorn Group, southern Great Barrier Reef), than on the adjacent mainland[1]. Fungal invasion appears to play a major role in inter-specific and inter-habitat variation in egg mortality between loggerhead (*Caretta caretta* L.) and green (*Chelonia mydas* L.) sea turtles at coral cay and mainland rookeries[1], and hawksbill (*Eretmochelys imbricata* L.) and flatback (*Natator depressus* Garman) turtles at other major rookeries in eastern Australia[2].

The fungi *Fusarium oxysporum* Schlecht., *F. solani* (Mart.) Sacc. and *Pseudallescheria boydii* Negroni and Fischer have been isolated from failed turtle eggs at Heron I.[2] *Pseudallescheria boydii* is an opportunistic infectant of humans and other animals[3] but there is no record of its being involved in plant disease. However, numerous strains of *F. oxysporum* are wilt pathogens and *F. solani* may cause root rot, canker and wilts[4]. Since one of the most distinguishing features of Heron I. is the dense, central *Pisonia grandis* R. Br. forest, it seems possible that this might be acting as a reservoir for anthracnose fusaria which are also able to invade sea turtle nests.

In its wild state *P. grandis* (Nyctaginaceae) is almost exclusively confined to small uninhabited islands with large seabird colonies[5,6], throughout the Indian and Pacific Oceans[5,6,7,8,9]. In the Capricorn/Bunker group of the southern Great Barrier Reef, *P. grandis* is found on all of the islands. A central forest is usually surrounded by natural fringing vegetation, although erosion may bring the forest to the beachfront[7]. The presence of such forests appears heavily reliant upon abundant seabirds and a specific soil and rock base[6,9]. The Jemo Series[10] are richly organic, acidic, phosphatic, soils in association with a hardpan or coral conglomerate transformed into calcium phosphate[11]. This edaphic condition occurs only on coral and coral debris beneath bird colonies[8] and is almost exclusive to forests dominated by *P. grandis*[10].

Pisonia grandis is often associated with islands hosting pigeons, gannets (*Sula* spp.) or noddy terns (*Anous* spp.). If the bird colonies desert the islands, for whatever reason, the *P. grandis* forest disappears as it seems unable to survive without the phosphate enriched soil[6,7] that aids germination and early development[6]. It is believed *P. grandis* utilises seabirds for epizoic dispersal[5], although this has been disputed[12].

Previously, the only fungus associated with *P. grandis* at Heron I. was an unidentified basidiomycete ectomycorrhizal symbiont[13]. This fungus appears to be unique to *P. grandis* or at least have a limited host range[14], and could not be one of the three turtle nest mycoflora reported[2] as none of these is a basidiomycete.

To determine whether *P. grandis* harboured any of the fungal species isolated from failed eggs in sea turtle nests, five individual *P. grandis* trees at the Heron Island Research Station, whose foliage showed anthracnoses, were examined. Two leaves from each tree were collected and washed with sterile, distilled water to remove bird guano before refrigerated storage. Leaf fragments (1 cm^2) were surface sterilised in 1% $AgNO_3$ for 2 min then rinsed in 5% NaCl for 1 min. A final wash in sterile distilled water for 2 min was undertaken to remove any residual silver cations. Fragments were cultured as a central inoculum on half-strength Potato Dextrose Agar at 28° C for 7 days prior to identification.

Colletotrichum gloeosporioides (Penz.) Penz. and Sacc. was isolated from all leaf fragments with leaf spots. Culture of unblemished fragments did not result in any fungal growth. *Colletotrichum* is one of the most important genera of plant pathogenic fungi worldwide[15] and can affect stems, shoots, fruit, pods, flowers and leaves[16]. It has not been isolated from failed sea turtle eggs and so it seems unlikely that the *P. grandis* forest of Heron Island is hosting fungi likely to have an adverse effect on sea turtle nests.

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[1] **Limpus, C. J., Reed, P. & Miller, J. D.** (1983) Islands and turtles. The influence of choice of nesting beach on sex ratio pp. 397-402 *In* Baker, J. T., Carter, R. M., Sammarco, P. W. & Stark, K. P. (Eds) "Proceedings: Inaugural Great Barrier Reef Conference, Townsville, Aug. 28-Sept. 2" (JCU Press, Townsville).
[2] **Phillott, A. D., Parmenter, C. J. & Limpus, C. J.** (2001) Chel. Conserv. Biol. In Press.
[3] **Rippon, J. W.** (1982). "Medical Mycology. The Pathogenic Fungi and the Pathogenic Actinomycetes 2nd Edn" (W. B. Saunders and Co., Philadelphia).
[4] **Booth, C.** (1971) "The Genus Fusarium" (Commonwealth Mycological Institute, Surrey).
[5] **St John, H.** (1951) Webbia **8**, 225-228.
[6] **Airy Shaw, H. K.** (1952) Kew Bull. **1952**, 87-97.
[7] **Stemmerik, J. F.** (1964) Flora Malesiana Ser. **6**, 450-468.
[8] **Hunt, D. R.** (1967) Kew Bull. **21**, 251.
[9] **Cribb, A. B.** (1969) Qld Nat. **19**, 110-114.
[10] **Fosberg, F. R.** (1954) Soil Sci. **78**, 99-107.
[11] **Christophersen, E.** (1927) Bishop Mus. Bull. **44**, 1-79.
[12] **Walker, T. A.** (1991) Atoll Res. Bull. **350**, 1-23.
[13] **Ashford, A. E. & Allaway, W. G.** (1982) New Phytol. **90**, 511-519.
[14] **Cairney, J. W. G., Rees, B. J., Allaway, W. G. & Ashford, A. E.** (1994) *Ibid.* **126**, 91-98.
[15] **Sutton, B. C.** (1992) The Genus *Glomerella* and its anamorph *Colletotrichum* pp. 1-26 *In* Bailey, J. A. & Jeger, M. J. (Eds) "Colletotrichum: Biology, Pathology and Control" (CAB International, Wallingford).
[16] **Dodd, J. C., Estrada, A. & Jeger, M. J.** (1992) Epidemiology of *Colletotrichum gloeosporioides* in the tropics pp. 308-325 *Ibid.*

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