

An important feeding area for juvenile Cowtail Stingrays (*Pastinachus ater*) in the Gulf of Carpentaria, Queensland, can come at a predatory cost

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Abstract

This note documents multiple observations of juvenile Cowtail Stingrays in the near shore habitat in the south-eastern corner of the Gulf of Carpentaria, their stranding and mortality in beach gutters and predation of individual stranded rays by White-bellied Sea-eagles.

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Introduction

The Cowtail Stingray (*Pastinachus ater*) is a large, uniformly coloured stingray widely distributed along the Australian northern coast and through the tropical Indo-west Pacific (Kyne *et al.* 2021). Despite being a common and widespread species, there is little known of its basic biology. Here, I describe observations of feeding juvenile Cowtail Stingrays along a shallow sandy beach frontage becoming stranded by the receding tide and being consumed by avian predators.

Between the 25th August and 5th September 2021, a section of coast was traversed daily by vehicle as part of a program to assess frequency of marine turtle nesting along the beachfront area of Rutland Plains Station (approx. 240 km NNE of Karumba). In addition, two helicopter flights were made to survey for turtle nesting and nest predators along the full 45 km of the property's beachfront boundary on the 28th August and the 4th of September 2021, respectively.

A total of 10 observations were made of Cowtail Stingrays (singletons through to aggregations)

between the 29th August and the 5th September. Observations were predominately of one or two individuals (Fig. 1) that appeared to have become trapped with the receding tide in shallow, water-filled gutters that ran parallel along the beach (Fig. 2). Four observations were of single, recently deceased individuals on the beach (i.e. specimens largely intact and not desiccated). Seven dried carcasses (i.e. highly desiccated) were found amongst fallen trees that had almost certainly been used as a raptor roost. Three observations were of live rays, one of a still living ray being consumed by a White-bellied Sea-eagle (*Haliaeetus leucogaster*) on the beach adjacent to a gutter, and two of rays swimming in gutters cut off from the sea by low tide, in water less than 40 cm depth. All observations were of juvenile, but not pup-sized rays, ranging from an estimated 30–40 cm in disc width (DW). Two dead individuals that were fresh enough to be measured accurately were 34 and 35 cm DW, respectively.



Figure 1. A dead juvenile Cowtail Stingray stranded in the intertidal zone. On its underside, injuries at the base of the tail were present indicative of raptor feeding. Photo: Alastair Freeman.



Figure 2. Coastline typical of the study area. The water filled gutter on the beach is typical of the type of feature in which the stingrays would get stranded with the receding tide. Photo: Alastair Freeman.

As well as on ground, two observations were also made from a helicopter of stingray aggregations in very shallow water adjacent to the beach. At one site (S 15.64361; E 141.44156), a total of 60 individuals was counted in closely spaced groups of 2–4 individuals along a 150 m stretch of beach. Twelve and a half kilometres further south (S 15.75372; E 141.42213), a group of 24 individuals was recorded in similar habitat, these were also clumped in groups of 2–4 individuals. All rays observed from the helicopter were Cowtail Stingrays, similar in size to those recorded from the ground (30–50 cm DW). From the air these stingrays appeared to be feeding.

Young rays are known to use shallow water habitats for avoiding predators (Martins *et al.* 2020) and for foraging (personal observation). The Gulf of Carpentaria waters are home to many stingray predators including Bull Shark (*Carcharhinus leucas*), Tiger Shark (*Galeocerdo cuvier*), Great Hammerhead (*Sphyrna mokarran*) (Last & Stevens 2009) and Estuarine Crocodile (*Crocodylus porosus*). As well as predator avoidance, shallow inshore waters are also used by juvenile stingrays for feeding. The diet of Cowtail Stingrays is thought to encompass crustaceans, gastropods, and polychaetes as well as small bony fish (O'Shea *et al.* 2013; Elston *et al.* 2020). Macrobenthic organisms which include these taxa are known to reach high densities in the intertidal areas of beaches (Defeo *et al.* 2009). Unfortunately, because of the presence of Estuarine Crocodiles in the shallows it was not possible to observe what the rays may have been feeding on.

The presence of feeding juvenile Cowtail Stingrays in substantial numbers in very shallow water along a gentle sloping sandy beach suggests that this part of the eastern Gulf of Carpentaria coastline is an important foraging area for this species. However, feeding at this site does not appear to be without cost with some individuals becoming stranded by the falling tide in shallow water gutters on the foreshore being predated by White-bellied Sea-eagles.

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