

# Communal cooperative aquatic foraging by Wandering Whistling-Ducks *Dendrocygna arcuata*

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**Abstract.** Communal cooperative foraging from the surface of water is here reported for the first time in the Wandering Whistling-Duck *Dendrocygna arcuata*. Five adult Wandering Whistling-Ducks were observed to form a circle of outwardly facing individuals, using their legs and feet to churn the water beneath them and then to duck-dive into the disturbed water within the circle to forage. Such a specific cooperative foraging technique does not appear to have been previously documented in this or any other species of waterfowl.

## Introduction and observations

Cooperative aquatic foraging among the waterfowl (Order Anseriformes, Family Anatidae) is recorded in the literature for two species of piscivorous mergansers *Mergus* spp. in the Northern Hemisphere and the filter-feeding Pink-eared Duck *Malacorhynchus membranaceus* in Australia (see Discussion for details).

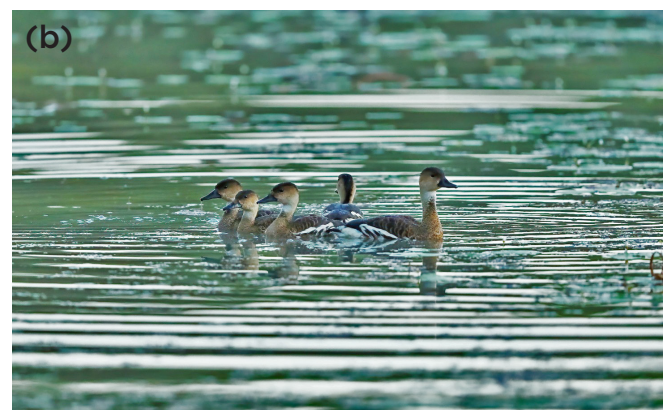
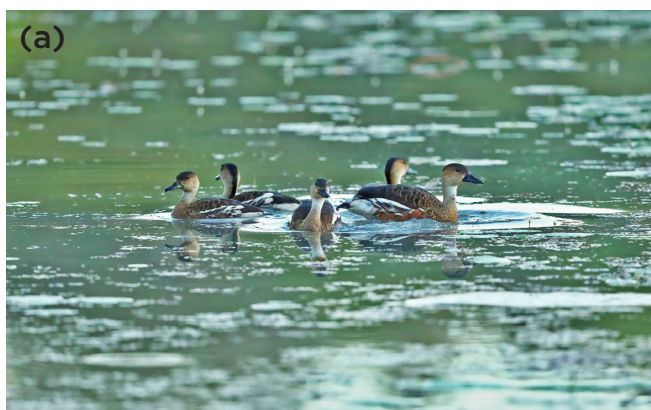
Travelling through Rinyirru (once Lakefield) National Park, Cape York Peninsula, North Queensland, on a fine, partly cloudy, day with the temperature at 17 °C, AM was staying at the Horseshoe Lagoon camping area. At 0714 h on 31 August 2023, he observed five Wandering Whistling-Ducks *Dendrocygna arcuata* forming an outward-facing circle and churning the water underneath them by quite clearly and vigorously using their legs and feet for several minutes. Usually, one at a time they then dived under the surface of the water head first to forage upon vegetation, resurfacing 5–10 seconds later. This foraging behaviour was observed by AM several times in different areas of the waterhole concerned, and two good images of this foraging formation and activity were captured (Figure 1). The water depth beneath the birds was probably between 0.5 and 1 m, taking into account the slope of the bank

falling toward where they were located. Sometimes there were Green Pygmy-geese *Nettapus pulchellus* with them, but these were not observed to actively churn water as did the Whistling-Ducks.

Other groups of individual Wandering Whistling-Ducks were also observed behaving in the same way, but in smaller groups. They always seemed to take turns ducking down after stirring up the sediment. None were actually seen with food in the bill, although some resurfaced with vegetation on the head and neck.

## Discussion

It has been noted that many swans, geese and ducks use “vertical foot-paddling movements when feeding in water that is deeper than [where food] can be obtained by reaching down while tipping-up” (Johnsgard 1968, p. 24). Their foot movement “agitates the water and brings food particles nearer the surface, where they can be easily extracted”, but this was not reported as part of cooperative foraging by any species of waterfowl. It has been observed that Pink-eared Duck “often swim in echelon so that each bird has the advantage of animals disturbed from the bottom mud by the one in front” (Frith 1967, p. 237). Of



**Figure 1.** Two digital images of five Wandering Whistling-Ducks forming an outward-facing circle to cooperatively disturb the water within the circle with their legs and feet in order to forage on foods thus raised from the substrate. The left-hand image (a) clearly shows the water surface being disturbed by the ducks. Photos: Andy Mason

this species and the shovelers (*Anas* spp.), it is noted that they “feed cooperatively by swimming in formations that presumably either channel or concentrate small prey items on the surface film. These formations include lines and chevrons in which successive birds feed in the wake of others, or circles which perhaps create a vortex to draw planktonic food to the surface.” (Kear 2005, p. 49).

The only other mentions of cooperative feeding by any other members of the Order Anseriformes and Family Anatidae concern different, and behaviourally less complex, forms of foraging, in piscivorous or filter-feeding species rather than herbivores. For example, in the Northern Hemisphere, flocks of Common Merganser *Mergus merganser* and Red-breasted Merganser *M. serrator* will hunt fish apparently cooperatively by driving, herding, or corralling them to facilitate their capture (Kear 2005) and flocks of Steller’s Eider *Polysticta stelleri* dive simultaneously in search of benthic invertebrates or small fish in Arctic seas (Simmons *et al.* 1977). Pink-eared Ducks sometimes associate in couples, or rarely trios, to cooperatively forage upon shallow water by ‘vortexing’, involving the birds circling or spinning constantly about a central point, presumably to concentrate prey organisms in the vortex caused by the rotating ducks, the head of one bird being opposite the tail of the other (Marchant & Higgins 1990; Kear 2005).

Recent comprehensive reviews of waterfowl biology make no mention of cooperative feeding by birds churning water as they float on the surface to then duck-dive into the disturbed water in any of the seven species of *Dendrocygna* whistling-ducks, or any other waterfowl species (Johnsgard 1965, 1968; Frith 1967; Madge & Burn 1988; Marchant & Higgins 1990; Carboneras 1992; Kear 2005). Marchant & Higgins (1990) reported a different type of cooperative feeding by Wandering Whistling-Ducks, with tight flocks appearing to roll forwards, with birds at the front diving while birds at the rear fly over them. It is possible that other duck species might forage cooperatively by feeding in close proximity and thus each derive some advantage from the activity of the other(s). We consider our record of this complex outward-facing circle of birds foraging for plant food by vortexing through use of the

legs and feet in the Wandering Whistling-Duck likely to be the first reported for any whistling-duck or other species of waterfowl, especially herbivores. Wandering Whistling-Ducks are generally considered to feed mainly on plant material (Marchant & Higgins 1990), though some animals may well be ingested incidentally.

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## References

- Carboneras, C. (1992). Family Anatidae (ducks, geese and swans). In: del Hoyo, J., Elliott, A. & Sargatal, J. (Eds). *Handbook of the Birds of the World, Volume 1: Ostrich to Ducks*, pp. 528–628. Lynx Edicions, Barcelona, Spain.
- Frith, H.J. (1967). *Waterfowl in Australia*. Angus & Robertson, Sydney.
- Johnsgard, P.A. (1965). *Handbook of Waterfowl Behaviour*. Constable & Co. Ltd., London, UK.
- Johnsgard, P.A. (1968). *Waterfowl: Their Biology and Natural History*. University of Nebraska, Lincoln, USA.
- Kear, J. (Ed.) (2005). *Ducks, Geese and Swans*. Oxford University Press, Oxford, UK.
- Madge, S. & Burn, H. (1988). *Wildfowl: An Identification Guide to the Ducks, Geese and Swans of the World*. Christopher Helm, London, UK.
- Marchant, S. & Higgins, P.J. (Eds) (1990). *Handbook of Australian, New Zealand & Antarctic Birds, Volume 1: Ratites to Ducks*. Oxford University Press, Melbourne.
- Simmons, K.E.L., Ferguson-Lees, I.J., Gillmor, R., Hollom, P.A.D., Hudson, R., Nicholson, E.M., Ogilvie, M.A., Olney, P.J.S., Voous, K.H. & Wattel, J. (Eds) (1977). *Handbook of the Birds of Europe, the Middle East and North Africa. The Birds of the Western Palearctic, Volume 1: Ostrich to Ducks*. Oxford University Press, Oxford, UK.

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