

SHORT NOTE

Observations of southern New Zealand dotterel | pukunui (*Charadrius obscurus obscurus*) foraging on tātaraheke | sand coprosma (*Coprosma acerosa*) at Mason Bay

BRUCE MCKINLAY*

Department of Conservation, 265 Princes Street, Dunedin 9016, New Zealand

DANIEL COCKER

Department of Conservation, 15 Main Road, Rakiura 9846, New Zealand

ROSE COLLEN

62 Bain St, Invercargill, 9812, New Zealand

SHONA SANGSTER

108B Elgin Terrace, Oban, Stewart Island 9818, New Zealand

The diet of the plovers (subfamily Charadriinae) is reported as consisting mainly of marine and intertidal invertebrates (Burton 1972; Marchant & Higgins 1993; Wiersma 1996), however many plovers feed on terrestrial and freshwater invertebrates and not all plovers are coastal. The diet of the New Zealand dotterel (*Charadrius obscurus*) consists of a wide range of marine and terrestrial molluscs, insects, amphipods, crabs and fish (Marchant & Higgins 1993). Relatively little is known of the diet of the southern subspecies (*C. o. obscurus*), but it includes crabs and small flounders (Barlow 1993), and spiders and earthworms (Marchant & Higgins 1993). For much of the year, most adult birds also feed on tidal flats, taking a similar range of invertebrates. Chicks, however,

must feed in the rocky areas and wet herbfields on mountain tops until they fledge.

The pukunui (the Te Reo name for *Charadrius o. obscurus*) nests in the subalpine wet herbfields and cushionfields above about 300 m on the uplands of Rakiura / Stewart Island (Heather & Robertson 2015; Marchant & Higgins 1993). The subspecies assembles in post breeding flocks on Rakiura at Paterson Inlet and Port Pegasus, and at Awarua Bay near Invercargill. At high tide the birds find roosts nearby, except in the case of Paterson Inlet where the birds travel some 10 km to the sand dune and 'stonefield' areas of Mason Bay (Dowding & Murphy 1993). At Mason Bay, pukunui roost in loose aggregations across a matrix of sand, pebbles, and cobbles with isolated vegetation. We record here observations of several pukunui at the Mason Bay roost site eating the fruit of sand coprosma

Received 15 February 2024; accepted 29 August 2024

*Correspondence: bmckinlay@doc.govt.nz

(tātaraheke, *Coprosma acerosa*).

All observations were conducted through x10 magnification binoculars or x20 spotting scopes during daylight high tide hours. Photographic images were captured using a Canon Powershot SX 70. These observations were conducted as part of the post-breeding flock counts and mark-recapture observations of colour-banded pukunui as part of the Department of Conservation management programme of pukunui.

On 14 Feb 2022 and again between 28 Feb and 4 Mar 2022, observations of the activity of pukunui were made at Mason Bay, on the west coast of Rakiura (Stewart Island: 46°55' S, 167° 46' E.). This area is known as the “stonefields” and has been described as a community of discontinuous vegetation on sand, stony ground and rock. In these areas bare ground is typically more than 50% and can often be up to 100% (Wilson 1987).

At around 14:47 (NZDT) on 3 Mar 2022, a pukunui was observed alongside a prostrate shrub of the tātaraheke or sand coprosma. The bird was repeatedly pushing into the bush and successfully grabbing and swallowing blue-coloured drupes from the tips of the branchlets. It was actively looking around the bush to find suitable drupes and would reach up as well as into the bush to peck for them. The activity was not that of snapping for a flying insect. Nor was the behaviour that of pecking to capture an invertebrate on a branch. It was clearly observable that the bird was plucking drupes from branchlets and swallowing them. In February 2024 similar activity was observed and the bird was



Fig 1: Pukunui, southern New Zealand dotterel holding *Coprosma acerosa* drupe, Mason Bay stonefields, April 2024.

clearly seen with a drupe in its bill (Fig 1).

Approximately three birds out of a flock at that time of 55 birds during our time at Mason Bay undertook similar behaviour. Repeatedly, pukunui were observed near or on *C. acerosa* and were actively seen to peck and swallow drupes. Noose mats were deployed to catch pukunui, and these were baited with mealworm (*Tenebrio molitor*) larvae. Occasionally *C. acerosa* drupes were placed beside the noose mats. Pukunui would investigate the drupes on the noose mats and some birds were observed swallowing them.

Globally, the diet of most shorebirds, including plovers, consists largely of invertebrates, but many species do sometimes consume other items, including plant material (Byrkjedal 1980; Pearce-Higgins & Yalden 2004). Many shorebird species appear to be opportunistic feeders, and their diet can differ depending on habitat type and prey availability (e.g. Knopf 1998). The other members of the genus *Charadrius* that breed in New Zealand are northern New Zealand dotterel (*C. o. aquilonius*), banded dotterel (*C. bicinctus*) and the Auckland Island banded dotterel (*C. b. exilis*).

Other members of the genus *Charadrius* are recorded in New Zealand as vagrants, and so assessing the details of diet is problematic and lacks New Zealand context. Red-capped plover (*C. ruficapillus*) is reported as consuming “some vegetation” including seeds (Marchant & Higgins 1993). ‘Seeds’ are recorded in the diet of oriental dotterel (*C. veredus*, Wiersma & Kirwan 2023).

Northern NZ dotterel diet has been reported on in more detail but is still summarized as “No detailed studies” (Marchant & Higgins 1993). For northern NZ dotterel, aquatic and terrestrial invertebrates, live or recently dead, with small fish taken occasionally on tidal estuaries, and small crabs are an important part of the diet; on dry sandy beaches, sandhoppers (*Talorchestia* spp.) are a common prey item (Dowding *et al.* 2006). We are aware of one other record of NZ dotterel eating plant material. At Taramaire, Firth of Thames, in 1985 and again in 1997, observations were made of northern NZ dotterel feeding on the young tips of glasswort (*Sarcocornia australis*; Chudleigh 1998).

Banded dotterels (*C. b. bicinctus*) have long been known to include plant material in their diet, including berries of *Coprosma petriei* and *Muehlenbeckia axillaris*; (Hughes 1997; Pierce 1980; Stead 1932). There is a single record of an Auckland Island banded dotterel (*C. b. exilis*) specimen reported as containing “many small seeds”, but most birds appear to eat invertebrates (Pierce 1980). There is also one record of a small amount of grass ingested by a wrybill (*Anarhynchus frontalis*) (Burton 1972), but it is not clear whether this was eaten deliberately. The shore plover (*Thinornis novaeseelandiae*) has apparently not yet been recorded

eating vegetation (Marchant & Higgins 1993).

Our observations of pukunui eating fruit add to the list of plovers that will occasionally include plant material in their diet.

ACKNOWLEDGEMENTS

We thank Emma MacDonald for her observations. This note benefitted from review by John Dowding, Richard Ewans, and David Melville.

LITERATURE CITED

- Barlow, M. 1993. New Zealand dotterel: South Island historical notes and Southland coastal records. *Notornis* 40: 15–25.
- Burton, P. 1972. Some anatomical notes on the wrybill. *Notornis* 19: 26–32.
- Byrkjedal, I. 1980. Summer food of the golden plover *Pluvialis apricaria* at Hardangervidda, southern Norway. *Ecography* 3: 40–49.
- Chudleigh, B. 1998. New Zealand dotterel (*Charadrius obscurus*) eating plant material. *Notornis* 45: 155–156.
- Dowding, J.E.; Lovegrove, T.G.; Ritchie, J., Kast, S. N.; Puckett, M. 2006. Mortality of northern New Zealand dotterels (*Charadrius obscurus aquilonius*) following an aerial poisoning operation. *Notornis* 53: 235–239.
- Dowding, J.E.; Murphy, E.C. 1993. Decline of the Stewart Island population of the New Zealand dotterel. *Notornis* 40: 1–13.
- Heather, B.; Robertson, H.A. 2015. *The field guide to the birds of New Zealand*. Auckland, Penguin Random House.
- Hughey, K.F.D. 1997. The diet of the wrybill (*Anarhynchus frontalis*) and the banded dotterel (*Charadrius bicinctus*) on two braided rivers in Canterbury, New Zealand. *Notornis* 44: 185–193.
- Knopf, F.L. 1998. Foods of mountain plovers wintering in California. *Condor* 100: 382–384.
- Marchant, S.; Higgins, P.J. 1993. *Handbook of Australian, New Zealand & Antarctic birds*. Volume 2, Raptors to Lapwings. Melbourne; Oxford University Press.
- Pearce-Higgins, J.W., Yalden, D.W. 2004. Habitat selection, diet, arthropod availability and growth of a moorland wader: the ecology of European golden plover *Pluvialis apricaria* chicks. *Ibis* 146: 335–346.
- Pierce, R. 1980. Habitats and feeding of the Auckland Island banded dotterel (*Charadrius bicinctus exilis* Falla 1978) in autumn. *Notornis* 27: 309–324.
- Stead, E. 1932. *The life histories of New Zealand birds*. London: The Search Publishing Co. Ltd.
- Wiersma, P. 1996. Red-breasted plover in: del Hoyo, J., Elliott, A. & Sargatal, J. (eds) *Handbook of the birds of the world*. Vol. 3. Hoatzin to Auks. Lynx Edicions, Barcelona.
- Wiersma, P.; Kirwan, G.M. 2023. Oriental plover (*Anarhynchus veredus*). In: *Birds of the world* (J. del Hoyo, A. Elliott, J. Sargatal, D. A. Christie, & E. de Juana, eds). Cornell Lab of Ornithology, Ithaca, NY, USA. <https://doi.org/10.2173/bow.ori plo1.01.1>
- Wilson H.D. 1987. *Vegetation of Stewart Island, New Zealand*. Supplement to the *New Zealand Journal of Botany*. Department of Scientific and Industrial Research, Wellington, N.Z. 131 pp.

Keywords: New Zealand dotterel, *Charadrius obscurus*, diet, foods, *Coprosma acerosa*