*Notornis, 2011, Vol. 58: 98-100*
0029-4470 

SHORT NOTE

# Ground nesting of parea (Chatham Islands pigeon, *Hemiphaga chathamensis*)

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The height above ground that forest birds build their nests is often dependent on the availability of suitable sites, and therefore on the composition, age, height, and structure of the forest and its understorey. Most volant species of birds in New Zealand place their nests well above ground, although some individuals will occasionally nest within 1-2 m of the ground (*e.g.*, Powlesland 2000). However, there are exceptions, such as the kea (*Nestor notabilis*) which nests mainly in holes in the ground (Higgins 1999), and the North Island saddleback (*Philesturnus rufusater*), South Island saddleback (*P. carunculatus*) (Higgins *et al*. 2006), morepork (*Ninox novaeseelandiae*) (Higgins 1999) and falcon (*Falco novaeseelandiae*), which occasionally nest on the ground in forest habitat (Marchant & Higgins 1993). Cavity nesters, such as kaka (*Nestor meridionalis*) and yellowhead (*Mohoua ochrocephala*), nesting in tall *Nothofagus* forests, usually occupy cavities more than 4 m above ground level (Powlesland *et al*. 2009; Elliott *et al*. 1996). Even so, kaka on Kapiti I were found nesting at ground level in hollow tree trunks (Moorhouse 1991). While not known to nest on the ground, some passerines occasionally nest within a metre of it, such as the North Island robin (*Petroica longipes*) (Armstrong *et al*. 2000; Powlesland *et al*. 2000), tomtit (*Petroica macrocephala*) (Knegtmans & Powlesland 1999), fantail (*Rhipidura fuliginosa*) (McLean & Jenkins 1980; Powlesland 1982) and grey warbler (*Gerygone igata*) (Gill 1983). A large proportion (15 of 70; 21%) of bellbird (*Anthornis melanura*) nests on the Poor Knights Is were in rock faces usually concealed behind dense vegetation (Sagar 1985).

*Received 13 Jun 2011; accepted 17 Aug 2011*
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Here we report observations of some nests of the parea, or Chatham Islands pigeon (*Hemiphaga chathamensis*) that were found on or within a metre of the ground (Fig. 1). Ground nesting in parea seems surprising given that the species is slightly cumbersome when taking off from the ground in a confined space and so its vulnerability to predation is increased. Mr. R.E. Paynter of Pitt I noted that most of the few nests he found prior to 1909 were on the ground (Drummond 1909). In a detailed study of the ecology of parea from 1991-1995, 2 of 101 nests were on the ground and 5 were within 1 m of it (Flux *et al*. 2001). During 3 subsequent population surveys, we found further evidence that ground-nesting in parea is a regular feature of their breeding: 3 of 7 nests in 1999 (Powlesland *et al*. 1999), 3 of 10 nests in 2005 (Adams *et al*. 2005), and all 6 nests in 2009 (Dilks *et al*. 2009) were on the ground or within 1 m of it (total 12/23 nests).

The apparent increased incidence of parea found nesting on or close to the ground during our surveys may relate to the small number of nests found and where we looked for nests - valleys having low stature forest with adjacent 1-2 m high shrub and fernlands. Even so, each of the 6 pairs that we located nests of in 2009 had access to forest >2 m in height. In comparison, while most nests of the kereru (New Zealand pigeon, *H. novaeseelandiae*) have been found well above ground level (Higgins & Davies 1996), on the Chickens Is, Northland, nests were between 0.5 and 4.0 m above ground level (mean = 2.1 m, $n$ = 16), with 62% being in the lower understorey (Pierce & Graham 1995).

Why parea occasionally nest on the ground or close to it may relate to improved protection from strong winds, harrier (*Circus approximans*) predation, and/or disturbance by crash-landing seabirds. It can be very windy through the east-west aligned valleys along the southwest coast of Chatham I where a large proportion of parea are distributed (Dilks *et al*. 2010). Having a nest in tall canopy vegetation would make it vulnerable to collapse from vegetation movement during windy weather. Also, nests in the canopy might be more visible to predatory harriers, especially during windy conditions. However, perhaps the most plausible reason for the ground-nesting habit of parea relates to the crash-landings of seabirds nesting in forest. Prior to the arrival of people, large seabird colonies occurred on the Chatham Is, both in coastal and inland forests. Abundant species would have included the sooty shearwater (*Puffinus griseus*), Chatham Island taiko (*Pterodroma magentae*), Chatham petrel (*Pt. axillaries*), broad-billed prion (*Pachyptila vittata*), fairy prion (*Pa. turtur*) and white-faced storm petrel (*Pelagodroma marina*) (Atkinson & Millener 1990). Individuals of these species tend to crash-land through forest each evening during the breeding season to reach their burrows, and so would have been a hazard to birds nesting in the branches of trees away from trunks, such as canopy-nesting parea. Crash-landing petrels are known to be a major cause of nest loss for passerines on the Snares Is (McLean & Miskelly 1988) and Rangatira Island (Cemmick & Veitch 1985). Therefore, placing nests under dense cover on the ground or in low vegetation would have provided some protection from disturbance by seabirds. In this regard it is of note that both the Poor Knights Is (bellbirds nesting behind dense vegetation on rock faces) and Chickens Is (kereru nesting in the lower understorey) have large numbers of seabirds nesting on them (Kinsky & Sibson 1959, Skegg 1964).

**Fig. 1.** Parea on its nest on the ground under bracken fern (*Pteridium esculentum*), Awatotara Valley, Chatham I, Aug 2009 (Photo: P.J. Dilks).

Despite the apparent adaptive function of ground nesting when sympatric with seabirds, parea nesting on the ground today are exposed to introduced predators, such as feral cats (*Felis catus*), feral pigs (*Sus scofa*) and weka (*Gallirallus australis*), and this may result in adults, eggs and chicks being more vulnerable to predation than if they nested well above ground. Future conservation management of parea would benefit from systematic studies of the fledging success of ground nesting parea to determine if pest control should be targeted at one or more of the potential introduced predatory species.

**ACKNOWLEDGEMENTS**

Our thanks to Liz and Bruce Tuanui for access about their property and covenants when carrying out parea conservation observations, to the Chatham Islands Area Office, Department of Conservation, for logistical support, to Ian Southey for making RGP aware of the Drummond newspaper article, and to Paul Sagar and John Innes for constructive comments on drafts of the manuscript.

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**Keywords** parea; Chatham Islands pigeon; *Hemiphaga chathamensis*; ground nesting, wind; predation; sea-birds