

SHORT NOTE

Chatham Island pipit (*Anthus novaeseelandiae chathamensis*) use of farm and fern land in spring

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The Chatham Island pipit (*Anthus novaeseelandiae chathamensis*) is a passerine that favours open country, coastlines, pakihi, lake, and wetland margins (Young 1976; Gaze 1987; Beauchamp 1995, 1998). Pipits are 1 of the few endemic birds to have survived on Chatham Island since the arrival of man in or about the fourteenth century (Freeman 1994; Bell 1996; King 1996) and introduced mammalian predators including wild cats (*Felis catus*), hedgehogs (*Erinaceus europaeus*), 3 species of rats (*Rattus rattus*, *R. norvegicus*, *R. exulans*), and mice (*Mus musculus*) (Imber *et al.* 1994; Millener 1996). The Department of Conservation's Chatham Island pipit management plan recognises the pipit as an endemic subspecies, for which there is a lack of knowledge of its biology, but which it indicates that it will only carry out 5-yearly surveys for the foreseeable future.

In a study on a small area of farmland and bracken (*Pteridium esculentum*) fernland on south-western Chatham Island in May 1997 (Fig. 1). I found that pipits used the open short grassland and bracken fern margins for foraging, and they formed dynamic flocks of up to 5 birds. Walking counts there, and in various other habitats on Chatham Island found pipits at rates of 2.4-3.6 km⁻¹ (Beauchamp 1998).

During 5-20 November 1999 I returned to the site visited in May 1997 to look at the behaviour of pipits in spring, assess breeding status of the population, and map paired and non-paired pipits. However, much of the area used in 1997 (Beauchamp 1998, Fig. 1) lacked pipits, and the study area was extended to cover the 2 km² of coastal fringe and farmland (0-180 m a.s.l.) between the Taiko Camp,

Moriori Creek the lower Tuku-a-tamatea Valley, and the area south of the Waterfall Creek track (Fig. 1). This area was covered on foot using the principal routes shown on Fig. 1. Most routes were walked between 3 and 20 times during the 15 days. The upper fields were undulating, with peat-soil covered ridges and dissecting swampy marshes. Isolated remnant live and dead *Dracophyllum arboretum* trees were present in the eastern fernlands but were almost absent on the farmland especially west of the road and track to Taiko Camp. The fern on the outer western margins was less than 0.3 m high, while east of the road, and in the Waterfall Creek region, most fern was 0.3-0.7 m high and patches exceeded 1.8 m. Pig rooting was common and well dispersed in the western fernlands south of the Tuku-a-tamatea stream. Pastures were well grazed by cattle and sheep and soils were moist with saturation confined to some seeps. During the study 11 days were cloudy with strong to gale south-west winds; 2 days were calm with fog and light rain; and 2 days were fine with light winds.

Pipit foraging data was obtained between 0915-1945 NZST, at 5-70 m from the birds, using 10x binoculars and recording to tape via a lapel microphone. The visibly larger and darker buff-breasted bird in each pair was assigned as the male and this was confirmed using conflict behaviour.

Male and female activity was recorded by alternating observations of partners on average every 5.2 m (SD = 3.9, *n* = 32; Table 1). Foraging behaviours recorded were hopping, walking, feeding (bill movements on the ground or against objects), stand searching (looking for food), dashing after food objects, and dash-flying after winged invertebrates (Beauchamp 1995). Standing searching for food, and standing looking for other pipits, could not be separated at all times. Activities were collated at 5 s intervals from tapes, using the same method as in 1998 at this site,

and elsewhere (Beauchamp 1995, 1998). Feed motions and call rate records were tabulated from the same tapes as activity analysis. Home range estimates were minimum values estimated from a minimum of 6 pair sightings or pair observation periods.

The maximum number of pipits known to be within the c.190 ha study site in any day was 19. Pipits were found in 5 loose groups, as individuals and in 2 possible and 6 confirmed pairs (Beauchamp 1998; Fig. 1). Groups consisted of on average 3.2 (SD=0.4, $n=5$) pipits and at most 2 solo birds were seen during any day. Groups occurred on fields, and were active on exposed headlands of the Tuku a tamatea Valley when winds exceeded 20 km h⁻¹, and during rain. The habitat used by of groups changed from damp open grassland in May 1997 (Beauchamp 1998), to damp to wet seeps in November 1999.

Groups of unpaired birds showed courtship behaviour (Wilkinson & Wilkinson 1952; Verbeek & Hendricks 1994) in November. In the 5 groups, 60-100% of the pipits gave a *tjwee* call on average every 3.5 s (SD = 1.4 $n=69$, 6 birds) from the ground, on fence posts and in the air. Three pipits called with large insects in their bills.

On 2 occasions, solo birds joined groups briefly, and appeared to reject advances from those birds and moved away. On 3 other occasions solo visitors got crouched and were circled by a group-associated bird with its wings out and beating, and with its tail fanned at 60° upwards. These displays lasted 45-90 s and ended with the central bird flying off with the circling bird in pursuit. No calls were given. These displays were typical of pipits in mainland New Zealand (Secker 1955) and elsewhere (Verbeek & Hendricks 1994), and suggest that the groups were predominantly males, and that some birds -predominantly females- visited groups for only short periods.

Groups and pairs remained separate. The *..tjwee..* call is given by adult pipits, and other work using the recorded calls of solo males has shown that if these calls were given within a pair's home range the male would drive off the solo bird. Paired females do not respond to solo male pipit *..tjwee..* recordings (Beauchamp, unpubl. data.).

The 6 pairs found ranged over minimum areas of 2.9-6.3 ha (Table 2) and all home ranges were at or above 100 m a.s.l. The areas used by 2 of these pairs could have been considerably underestimated because pair contact appeared more restricted, and sightings of single birds outside known boundaries could have included members of these pairs. All pairs had low fern, seeps and some form of bare ground, either road or banks, within their home ranges. All home ranges had high vantage sites of isolated live or dead *Dracophyllum arboretum* or *Cyathodes robusta*, fence posts, high banks or tall bracken. These vantage sites were considered important by Secker (1955) who reported a reduction in pairs when vantage

Table 1 The behaviours of Chatham Island pipits (*Anthus novaeseelandiae chathamensis*) in pairs in 3 habitats, as percentages of total units represented by that activity in that habitat type, ns = not seen.

	Female			Male		
	fern	open	seep	fern	open	seep
Walk	59.0	38.3	50.9	24.4	35.5	52.9
Peck/Feed	4.0	50.0	11.5	2.6	21.1	8.0
Stand	28.0	8.3	30.2	41.3	24.1	27.6
Hop	3.7	ns	4.1	2.1	0.4	6.2
Fly-dash	0.3	ns	1.0	0.5	1.3	2.5
Fly	4.0	3.3	1.5	26.7	12.7	2.2
Preen	0.3	ns	ns	ns	ns	0.3
Fluff	ns	ns	0.8	ns	4.8	ns
Courtship	ns	ns	ns	2.6	ns	0.3
Total units	325	60	391	780	228	323
No. of pipits	4	3	3	6	5	4
Collection periods	7	3	3	12	6	5

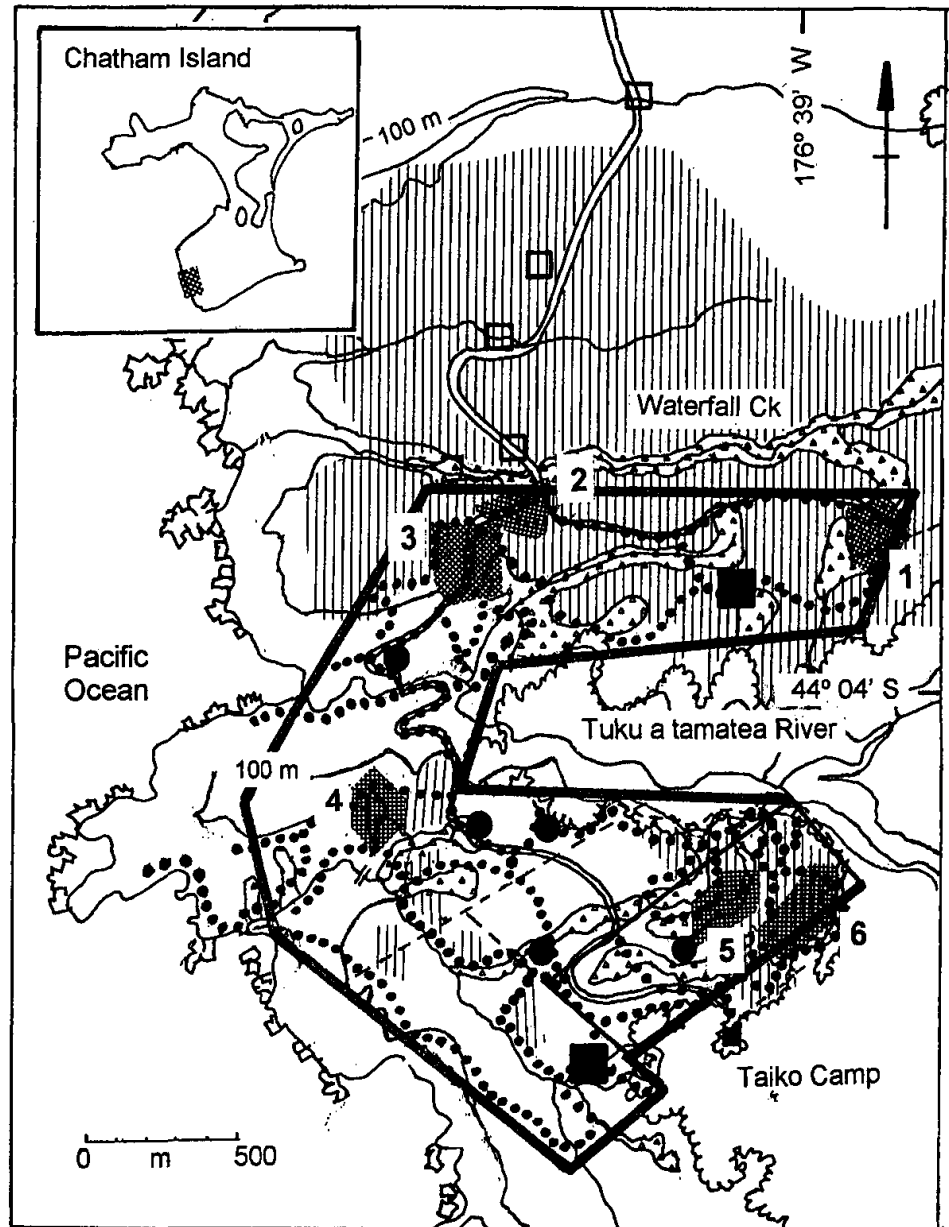
Table 2 Chatham Island pipits (*Anthus novaeseelandiae chathamensis*) home range composition (ha). np, not present; #, areas potentially greatly underestimated because of limited pair cohesion.

Habitat	Pair					
	1	2 #	3	4 #	5	6
Wet seep	0.2	0.05	0.02	0.06	0.5	0.2
Dry seep	0.6	0.2	0.4	np	0.7	0.1
Fernland	3.0	1.7	4.4	0.3	1.0	5.5
Open grazed grassland	np	0.3	0.4	2.5	0.6	np
Road or open track	0.1	0.5	0.6	np	np	0.5
Steep rock or cliff face	np	0.3	0.3	0.3	0.1	np

points were removed from areas. The 2 home ranges that lacked high fern had dead *Dracophyllum* spp. branches and banks. Three pairs used formed roads and 2 pairs were in areas with firebreaks and copious amounts of pig roosting. No home ranges were found in low fern and farmland, and no pairs used the open grassland and seeps that were the favoured habitat in May 1997 (Beauchamp 1998).

The incidence of foraging behaviours used by paired pipits were significantly different in seeps, open low cropped grassland and fern (Kruskal-Wallis $H = 11.523$, 2 df, $P < 0.003$). Males pecked at objects or fed on average 1.3 (SD = 1.5), 12.0 (SD = 19.5) and 4.8 (SD = 4.2), and females 2.2 (SD = 1.5), 34.1 (SD = 22.6) and 5.0 (SD = 4.1) times m⁻¹, in fern, open ground and seeps, respectively. Dashing to obtain food, which is generally associated with catching flying insects (Beauchamp 1998), was more

Fig. 1 The location of pairs, and groups of Chatham Island pipits (*Anthus novaeseelandiae chathamensis*) in southwestern Chatham Island 5-20 November 1999. Thick line, extent of 1999 study area; thin line north of Taiko Camp, 1995 study area; small dots, principal routes used to assess pipit presence; triangles, seeps; vertical stippled area, fern; shaded area, pipit home ranges; in filled squares, probable pair sites in the study area; open squares, other known pairs; filled circles, non-paired pipit congregations; bold numbers, pair number.



frequent at seeps, and stationary repeated pecking generally associated with feeding on seeds and ants, was more common in grasslands.

There were major differences in the between behaviours repertoire between the sexes of pairs in fern and open areas, resulting from the high incidence of male home range surveillance and what appeared to be female guarding behaviour (Table 1). Males perched on the top of fern near foraging females, and followed the female, flying low over her, between perches. Males chased and fought challenging males for 5-46 ($n = 4$) minutes. During the longest chase the males flew within 0.5 m of each other over many hundreds of metres, both within and outside the known home range of the pair. The paired male and gave a *..tzju..eeoot..* call (Secker 1955; Drury 1961; Garrick 1985), with the former phrase given on the descent and the latter

during the ascent (Garrick 1985, Verbeek & Hendricks 1994) during 7 high-speed passes over the female. In this chase males locked bills and feet in the air and descended 4 times to fight on the ground. After this chase both males and female gave *..tjwee..* and *..tjwee-tjit-it-it..* calls (Secker 1955).

Pipits in New Zealand and the Chatham Islands have been reported as having multiple-clutches between August and March (Wilkinson & Wilkinson 1952; Oliver 1955; Soper 1965; Heather & Robinson 1996). However, Nilsson *et al.* (1994) concluded from records from South East Island, near Chatham Island, that fledging took place from December to February. No nests were found in the study area in November 1999, and no brightly plumaged pipits (Oliver 1955) typical of those fledged in the season were seen there.

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