

Ecological Evidence for Distinguishing Two Species of Ground-Thrushes in Central Eastern Australia

By GLENN HOLMES, 'Glenisle', West Wiangaree Road, via Kyogle, N.S.W. 2474

There are at least three distinct populations of ground-thrushes in Australia. Currently they are recognised simply as subspecies of the widely distributed White's Thrush *Zoothera dauma* (e.g. Condon 1968, Schodde 1975), but it has been demonstrated recently that two species are concerned (Ford 1983). This is corroborated by ecological evidence that I have obtained since February 1980 in and near the McPherson Range of extreme north-eastern New South Wales. It shows that the forms *lunulata* and *heinei* are partially segregated with respect to altitude.

The ground-thrushes of this region are distinguished readily by their songs. These are uttered mainly at dawn and dusk and are more persistent during the nesting season, about July to January. Accordingly it seems reasonable to conclude that they both serve the same function, to advertise territory. It is inconceivable that they are alternative calls of a single species, used in varying circumstances or by different sexes.

At higher altitudes of the Tweed Range only one song is heard. It is modulated and sustained, thus resembling the song of the Blackbird *Turdus merula*. This song may be ascribed to *lunulata* because all thrushes seen there are generally brown in coloration, with a relatively long tail that has little white at the tips of the outer feathers.

Another song is heard at intermediate and lower altitudes. Typically it consists of two clear whistled notes, the second lower, and may be rendered 'wheer-doo'. Occasionally one note undulates slightly. It is reasonable to ascribe this song to thrushes that conform in appearance with *heinei*. They are rufescent in coloration, with a short tail that is often noted to be conspicuously tipped white.

Based essentially on the occurrence of these two songs, it is clear that *lunulata* and *heinei* coexist between at least 550 and 775 m (Table 1). Both species inhabit rainforests and wet eucalypt forests. I have recorded *lunulata* in the Tweed, Nightcap and Koreelah Ranges from 550 to 1040 m, and *heinei* at these and other localities from 250 to 775 m. They have been recorded together at precisely the same sites at 750 m in the Tweed Range (5 September 1981, 6 October 1982) and 700 m in the Koreelah Range (9 October 1981). They have also been recorded in close proximity in the Nightcap Range (2 November 1982).

The restriction of *lunulata* to higher altitudes is consistent with its Bassian geographic distribution. It occurs from extreme south-eastern Queensland through eastern New South Wales to Victoria, Tasmania and south-eastern South Australia. It seems likely that there is a northward trend of occurrence at increasing altitudes, culminating at the Atherton Tableland of north Queensland, where the isolated form *cuneata* has been identified as the same species (Ford 1983). An analogous situation prevails among so many other bird species that it is a notable phenomenon.

Table 1

Occurrence of singing ground-thrushes in extreme north-eastern New South Wales with respect to altitude.

Locality		<i>Zoothera lunulata</i>		<i>Zoothera heinei</i>		
		Alt. (m)	Date	Alt. (m)	Date	
Tweed Range	(1)*	1040	16. 4.83			
	(2)	1000	22.10.80			
	(3)	970	8. 1.81			
	(4)	970	18. 8.82			
	(5)	900	19. 3.81			
	(6)	900	27. 7.82			
	(7)	750	5. 9.81	750	11. 8.81	
			6.10.82		5. 9.81	
			18.10.82		6.10.82	
			19.10.82		7.12.82	
	(8)	550	18. 8.82			
	(9)			450	29. 1.83	
Nightcap Range	(10)	780	2.11.82			
	(11)			750	2.11.82	
					3.11.82	
	(12)			250	2.10.81	
	Koreelah Range	(13)	720	16. 5.83		
		(14)	700	9.10.81	700	7.10.81
Richmond Range					9.10.81	
					16.10.82	
	(15)			700	11. 2.80	
	(16)			700	19. 4.80	
Findon Creek	(17)			400	14. 5.81	
	(18)			300	7.11.82	
	(19)			680	23. 7.82	
	(20)			660	1. 9.82	
Mount Gipps	(21)			650	23. 7.82	
	(22)			650	31. 8.82	
	(23)			775	30.11.82	
	(24)			550	30.11.82	
Mount Warning	(25)			300	7. 8.82	
	(26)			450	2.12.81	

* Numbers refer to different sites at each general locality.

These species include the Spotless Crake *Porzana tabuensis*, Crimson Rosella *Platycercus e. elegans*, Flame and Scarlet Robins *Petroica phoenicea* and *P. multicolor*, Olive Whistler *Pachycephala olivacea*, Satin Flycatcher *Myiagra cyanoleuca*, Yellow-throated Scrubwren *Sericornis citreogularis*, White-throated Treecreeper *Climacteris leucophaea*, Lewin's Honeyeater *Meliphaga lewinii*, White-naped Honeyeater *Melithreptus lunatus*, New Holland and White-cheeked Honeyeaters *Phylidonyris novaehollandiae* and *P. nigra*, Eastern Spinebill *Acanthorhynchus tenuirostris*, Spotted Pardalote *Pardalotus punctatus* and Satin Bowerbird *Ptilonorhynchus violaceus*. Most plausibly, each species selects a particular climatic regime or type of vegetation. Competition between closely related species may also operate, especially in the instance of such similar species as the ground-thrushes.

It is possible that the partial segregation of *lunulata* and *heinei* applies only to nesting birds. Since ground-thrushes are known to wander widely

in winter, *lunulata* could occur regularly at lower altitudes when not breeding. However, I have certainly recorded *lunulata* singing above 700 m in all months of this period except June. The problem would be best resolved by capturing a number of birds at lower altitudes, as in most circumstances it is difficult to determine specific identity by plumage characters.

References

- Condon, H. T. (1968), *A handlist of the birds of South Australia*, S. Aust. Orn. Assn, Adelaide.
 Ford, J. R. (1983), 'Speciation in the ground-thrush complex *Zoothera dauma* in Australia', *Emu* vol. 83, 141.
 Schodde, R. (1975), *Interim list of Australian songbirds — passerines*, RAOU, Melbourne. ■

Short Notes —

Notes on the Territorial Defence and Nest Building Behaviour of Wedge-tailed Eagles

Observations have been made since 1966 on the raptors of Widgee (26°13' S 152°28' E), near Gympie in south-eastern Queensland. In 1978 a pair of Wedge-tailed Eagles *Aquila audax* built a nest on our property, and have occupied it each breeding season since then. The nest tree is on the western side of a slope with a slight northerly aspect. The nest is in a large fork about ten metres above the ground and just above the tops of surrounding trees. All perch trees and the nest tree are partly dead old Spotted Gums *Eucalyptus maculata* which stand well above the surrounding trees. The branches of the fork which holds the nest spread at an angle of about 45° from each other.

The eagles raised two young in 1981 and one in 1983. The young were first noticed in the nest tree in October 1981, at which time they could fly reasonably well. In early September 1983 the young was large and active but still downy. The adult eagles have performed the same behaviour routine each year.

December to May

Five to seven eagles are present for most of the time, usually two females and three to five males. The sexes are distinguished by relative size; the two immature birds raised in 1981 are included as males.

May

The dominant female is attacked by the males, although one male stays away from the fights. The males one at a time dive at the female, who when seemingly fed up will turn to face the attacker, or present her talons, or chase the attacker after he has dived past. When they have been driven off the female joins her presumed mate of the past five years, who has been soaring high above the conflicts. The other female appears to take no interest in the proceedings, though if she approaches too closely the dominant female chases her away. These fights may go on for two weeks or so and are of almost daily occurrence. After the female joins the male waiting above, the pair fly towards the nest tree and commence a spiralling flight which starts just above the