female was noticeably bigger, with body length perhaps 30% larger than the male, and was seen well only on the nest. The upperparts were grey-brown, lighter than the male. There was no nape spot. The ear-coverts were grey-brown. There was a very prominent sharply defined white supercilium. The iris was bright yellow. The cere was yellow and the rest of the bill dark. The throat was off-white with a prominent thick mesial stripe. Below this, the upper breast was streaked dark brown on a lighter brown background; there were teardrop-like streaks in the centre of the breast, and the belly and flanks were barred dark brown on a lighter brown background. The width of the dark brown bars was about the same as that of the intervening paler bars. The legs, claws, tail, and underwings were not well seen.

The main possible confusion species in Sichuan is Eurasian Sparrowhawk *Accipiter nisus* of the subspecies *melaschistos* (Sichuan Forestry Department 1994). *A. nisus melaschistos* is considerably larger than Besra (Ali and Ripley 1987). Also (like other races of Eurasian Sparrowhawk), *melaschistos* shows no mesial stripe, and the upper breast of the female is barred, not streaked (Ali and Ripley 1987).

There are suggestions that Besra may breed at fairly high altitudes in both Nepal and India. Inskipp and Inskipp (1985) show breeding near Kathmandu (Godavari Botanical Gardens, at 1,525 m), and Besra has also been noted in the breeding season at Namche Bazaar (86°45'E 28°N; 3,440 m). In north-west India, Besra is stated to be resident in Kashmir, Himachal Pradesh and Garhwal, up to 3,000 m (Ali and Ripley 1987). Breeding records from this area, however, come from 'between c. 1,000 and 2,000 m' (Ali and Ripley 1987). Likewise, Besra appears not to be a high-altitude breeder in eastern India, as Ali and Ripley (1987) observe that, while breeding has been noted 'eastward along the Himalayas to the Assam hills north and south of Brahmaputra river, and [in] Manipur (and East Pakistan?)' the altitudinal range given is 'between 1,000 and 2,000 m'.

Notably, Beaman (1994) defined the Palearctic boundary in W China to include 'the mountainous western margins of the Red Basin of Sichuan'. By location, forest type (closed spruce), and altitude (3,300 m), the observation reported here occurred in the Palearctic. Besra (breeding or otherwise) does not appear to be recorded from the Chinese Palearctic. Cheng (1987) lists the bird for the Oriental region of the country only. In the mid-China Region as defined by Cheng (1987), specimens of Besra have been obtained at about 108°E 34°N and 103°E 30°N; these sites are both in the Oriental part of the country.

Besra has not previously been recorded breeding in spruce forest (essentially a temperate zone climax vegetation type). Ali and Ripley (1987) report that the bird 'affects broken forested country', and has been seen on 'tall dead trees on the verge of evergreen jungle'. In Sichuan, typical habitat is given as the edges of broad-leaved forest (Sichuan Forestry Department 1994). In Hong Kong, breeding habitat includes secondary shrubland and secondary evergreen broad-leaved woodland (pers. obs., M. Leven *pers. comm.*).

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Jim Hackett, Tower 116B, Senior Staff Quarters, HKUST, Clear Water Bay, Kowloon, Hong Kong, China

Observations on Hume's Groundpecker *Pseudopodoces humilis*

TIZIANO LONDEI

I observed Hume's Groundpecker *Pseudopodoces humilis* in Qinghai, Gansu and Sichuan provinces of China from 10-15 August 1996. The route travelled, which was part of a longer bus tour, began with a visit to Lake Qinghai (3,200 m), westwards along its south side to the headland improperly called 'Bird Island', and thence returning to Xining. From this town, heading southwards along a provincial road, the route crossed the Huang He near Jainca, and ascended a tributary valley up to Tongren (2,500 m), Qinghai. Xiahe (also called Labrang, 2,900 m) in Gansu, was reached via a secondary road which ascended to 3,600 m. The 'highway' connecting Lanzhou and Chengdu was followed (reaching 3,600 m) from the vicinity of Xiahe to Zoigê, Sichuan (3,300 m). Afterwards, via a secondary road the route headed first eastwards up to the nearest

mountain tract (up to 3,800 m), then southwards to reach Songpan (2,800 m) in the Min river valley.

I saw Hume's Groundpecker in every part of the route above 3,100 m from Lake Qinghai to Zoigê. This species was always found in its typical habitat, the semi-arid Tibetan steppe above the tree-line, except for some birds seen in an agricultural village at Lake Qinghai (Figure 1). The highest densities occurred in two flat areas, near 'Bird Island' and Zoigê, respectively, where the sandy soil was marshy and housed dense colonies of pikas *Ochotona*. However, Madge and Burn (1993) stated that Hume's Groundpecker digs its own burrows for nesting, apparently making no use of existing mammalian burrows for this purpose. I saw Hume's Groundpeckers (near appropriate holes) in locations where no fossorial mammals were noted. I suggest that a common preference for certain soils may lead fossorial (and colonial) birds and mammals to be neighbours, even in the absence of interspecific dependence.

Zoigê (33°36'N 103°00'E) is a considerable distance north-east of the previously known eastern limit of Hume's Groundpecker in Sichuan, that is Litang in western Sichuan (Schäfer 1938), and the eastern limit for the species, in south Gansu near Jonê (Choni in Bangs and Peters 1928), is not much further east. Heading east from Zoigê, I was surprised at the absence of Hume's Groundpecker less than 20 km east of that place, because it could not be linked with a change in habitat (although there was an even more abrupt disappearance of pikas). In mid August I also failed to find Hume's Groundpeckers on Min Shan, even in apparently suitable grazing land up to 3,900 m. The question as to whether the species occurs south of Zoigê, in the the vast, undulating highlands north-west of the Min river drainage, remains unanswered.

Well-developed young birds were still begging food from adults. The foraging techniques noted were as previously reported in the literature, except one method, which I observed in four birds in the agricultural village. It consisted of delicately and methodically probing with the bill in the mud of an area flooded by waste water, recalling an example of similar behaviour noted for the Common Hoopoe *Upupa epops*. It matched well with the slender, decurved bill of Hume's Groundpecker, thus suggesting a frequent use in more natural habitat (marshy areas) and strong (convergent?) resemblance, among corvids, to the Red-billed Chough *Pyrrhocorax pyrrhocorax*. Incidentally, the latter is the only other corvid which excavates holes for nesting (Madge and Burn 1993).

The most conspicuous behavioural character of Hume's Groundpecker is the typical bouncing gait, which, together with the compact shape of the bird, has led some authors to make an apt comparison with a rubber ball. Indeed, I saw leaps of about three times the bird's total length, which were performed in sequence without any flaps of the wings, thus making the moving bird extremely difficult to track. All corvids can hop on the ground but, in general, the more terrestrial they are the more they use walking instead. The apparently closely related genus *Podoces* is no exception – the gait of the Xinjiang Ground-jay *Podoces biddulphi* has been described as a fast but corvid-like 'waddle' (Grimmett 1991). Why should Hume's Groundpecker employ jumping as well as having a more normal gait? Certainly, this is not a prerequisite to burrowing habits, as, for example, bee-eaters *Merops* are powerful diggers (in similar sandy soils) with no propensity for jumping. Future observations on Hume's Groundpeckers will hopefully solve this problem of eco-ethological relevance but, in the meantime, I propose the following as a tentative explanation. Being 'very obliteratingly coloured in its native environment' (Ali and Ripley 1987), Hume's Groundpecker must have undergone heavy predation pressure during its evolution. Compared to other terrestrial corvids, this species seems to be at special risk of predation because it lives in frequent (and apparently permanent) association with pika colonies; these colonies may attract astonishing concentrations of raptors. Certainly, the straight, weak flight of Hume's Groundpecker would not deter a pursuing raptor, but its bouncing gait might do, especially in comparison with pikas, which make much shorter jumps. After successfully preying on pikas, a raptor might well be stimulated to pursue Hume's Groundpeckers, which are similar in size and overall colour. However, those raptors would soon learn that the pursuit of such 'athletic pikas' would more likely than not end in failure.

Figure 1. Adult Hume's Groundpecker foraging on the roof of a farm at Lake Qinghai, China, 11 August 1996. Note the bird's structural attitude to jumping.

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T. Londei, Dipartimento di Biologia, Università degli Studi, Via Celoria 26, 20133 Milano, Italy.