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THE TAITA MOUNTAIN DWARF GALAGO *GALAGOIDES* SP: A NEW PRIMATE FOR KENYA

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ABSTRACT

Surveys in the forests of the Taita Hills yielded a new primate record for Kenya. Based on direct observations and tape recordings of its vocalizations, this primate is identified as a dwarf galago *Galagoides* sp. Identification to the species level is not possible at this stage as molecular data are not available, and more morphological and vocalization data are required. The vocal repertoire of the "Taita mountain dwarf galago" is qualitatively different from other known populations of dwarf galagos, including the mountain dwarf galago *Galagoides orinus* and the Zanzibar galago *Galagoides zanzibaricus cocos*. The Taita mountain dwarf galago might represent a hitherto unknown subspecies, or even species. The possible identity of the Taita mountain dwarf galago is briefly discussed in terms of biogeography. We also confirmed the presence of Garnett's small-eared galago *Otolemur garnettii lasiotis* and present biometric measurements from trapped animals.

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INTRODUCTION

The Taita Hills (03° 20' S, 38° 15' E) are located in southeast Kenya, 25 km west of Voi and 165 km from the Indian Ocean in Taita-Taveta District, Coast Province. The Taita Hills rise out of the Tsavo Plains at 600–700 m to reach 2208 m at Vuria Peak. The forests of the Taita Hills are submontane and montane, and are described as 'upland moist' or 'upland mist forest' (Beentje, 1988). The climate is moderated by altitude and influenced by the Indian Ocean. Annual rainfall above 1,400 m exceeds 1,500 mm. In addition, heavy mists occur throughout much of the year (Beentje, 1988).

Due to human influences, the indigenous forest in the Taita Hills is highly fragmented and all remaining forest fragments are small. The biggest forests are Mbololo (168 ha), Ngangao (92 ha), and Chawia (50 ha). All the other fragments are less than 5 ha (Beentje 1988, Bytebier 2001). Details on the vegetation, history and ecology of the Taita forests can be found in Beentje (1988), Wilder *et al.* (1998), and Chege & Bytebier (submitted).

The Taita Hills, together with Mount Sagala and Mount Kasigau, form the northern-most part of the Eastern Arc Mountains. These indigenous forests are of high conservation value since they contain an unusually high proportion of threatened and endemic animals and plants (Beentje, 1988; Lovett & Wasser, 1993; Collar *et al.*, 1994; Brookes *et al.*, 1998a,b). Together with the coastal forests of Tanzania and Kenya, they are ranked as one of the world's 25 "Biodiversity Hotspots" (ICBP, 1992; Mittermeier *et al.*, 1998; Myers *et al.*, 2000).

Despite the importance of the Taita Hills forests for the conservation of biodiversity, only a few mammal and no galago surveys have been undertaken. Loveridge collected three small galagos from Mt. Mbololo, Taita Hills, in 1934. These were deposited with the Museum of Comparative Zoology, Harvard University (Allen & Lawrence, 1936; Lawrence & Washburn, 1936). Loveridge and his colleagues were able to differentiate between the small, forest-dwelling, *Galagoides* spp., and the large, woodland-dwelling, *Galago* spp. (Allen & Lawrence, 1936; Lawrence & Washburn, 1936). Two of the specimens (MCZ 31723 and MCZ 31725) were identified as northern lesser galagos *Galago senegalensis braccatus* based on pelage, and body and cranial measurements (Lawrence & Washburn, 1936). Allen and Lawrence (1936) state that these animals have "...the outer side of the limbs and the middle of the belly washed with pale yellow." This is the typical pelage coloration of *G. s. braccatus*. The body measurements of MCZ 31724 (female) and MCZ 31725 (male) (Allen & Lawrence, 1936) are as follows:

head/body length: 160 mm, 170 mm;
tail length: 170 mm, 240 mm;
ear length: 30 mm, 42 mm;
hindfoot length (male only): 60 mm

These measurements lie within the range for *G. senegalensis,* and are generally outside of the range for any of the dwarf galagos (*Galagoides* spp.) (Olson & Nash, in press).

It is unclear where exactly on Mt. Mbololo each of the galagos was collected by Loveridge. Allen and Loveridge (1936) state that, "The male *Galago crassicaudatus lasiotis* was shot within a few hundred feet of the male *G. s. braccatus* in the rain forest capping the mountain at 4300 feet." From this statement, it is not clear whether this *G. s. braccatus* (MCZ 31725) was collected within forest or not. Note that 4300 ft (1,300 m) is about half way up the slopes of the Taita Hills. Today, most of the land at this elevation is under agriculture. Where forest is present at this altitude, it is classified as "submontane". This observation is interesting since, during our study, we did not find *G. s. braccatus* either

within or outside of forest on the mid-altitude slopes of the Taita Hills. It is not uncommon, however, to find *G. senegalensis* at this elevation over much of Kenya (see below). A third *G. s. braccatus* (MCZ 31274) in the same series was taken from woodland at the "Tsavo River" at the base of the Taita Hills. We also observed *G. senegalensis* in woodland at the base of the Taita Hills (although at low densities). There is no information in Allen and Lawrence (1936), or in Lawrence and Washburn (1936), that indicates or even suggests that any of the three small galagos collected by Loveridge in the Taita Hills in 1934 were species other than *G. s. braccatus*.

The other two specimens taken from the Taita Hills are labelled *Galago crassicaudatus lasiotis* (specimen numbers; MCZ 31721 and 31722) (Allen & Lawrence 1936). Subsequent taxonomic revisions have renamed these as *Otolemur garnettii lasiotis* and placed the name *Galago crassicaudatus lasiotis* in the synonymy of *Otolemur garnettii* (Schwartz, 1931; Allen 1939; Swynnerton & Hayman, 1951; Hill, 1953, Olsen, 1979, Grubb *et al.*, in press).

The most recent faunal list (Beentje, 1988) mentions the occurrence of the large-eared greater galago *Otolemur crassicaudatus*. However, Kingdon (1997) and Nash *et al.* (1989) suggest that the large galago in the Taita Hills may be Garnett's small-eared greater galago *Otolemur garnettii*, by virtue of the species' preference for moist forests (whereas *O. crassicaudatus* occurs in dry woodland habitats). Based on skin specimens, Groves (2001) identified the greater galago in the Taita Hills as *O. g. lasiotis*.

Recent research, based on differences in vocalizations, reproductive anatomy, and genetics, indicates a greater diversity of galago species than previously realised (Masters, 1988, 1995; Nash *et al.*, 1989; Bearder *et al.*, 1995; Honess, 1996; Bearder, 1999; Groves, 2001). Three new galagos for East Africa have recently been described: mountain dwarf galago *Galagoides orinus*, Rondo dwarf galago *Galagoides rondoensis*, and Udzungwa dwarf galago *Galagoides udzungwensis* (Honess & Bearder, 1996). However, it now appears that *Galagoides udzungwensis* is conspecific with *Galagoides zanzibaricus* (A. Perkin, unpublished data). A fourth, Grant's galago *Galagoides granti,* was reassigned species status (Honess & Bearder, 1996; Grubb *et al.,* in press) after Thomas & Wroughton (1907) first described the form. Grant's galago is, however, also considered to be a subspecies of *G. zanzibaricus* by some authors (Olson, 1979; Jenkins, 1987).

Since other Eastern Arc Mountains sub-montane and montane forests usually contain both *O. garnettii* and *G. orinus*, the possibility that a dwarf galago might also occur in the Taita Hills was considered. Several authors (Nash *et al.*, 1989; Dorst & Dandelot, 1990; Kingdon 1997) suggest that *G. senegalensis* might be present in the Taita forests by virtue of its extensive range. However, we believe this is unlikely as *G. senegalensis* is only known to occur in *Acacia, Isoberlina* and *Julbernadia* woodland, *Cynometra* thicket, and certain montane forest margins, as is the case on Mount Elgon (L. Ambrose, unpublished data.) and Mau Forest (T. Butynski, unpublished data), but not in closed canopy moist forest (Nash *et al.*, 1989). Several specimens labelled as *G. senegalensis* in the mammal collection of the National Museums of Kenya were indeed collected in the *Acacia-Cynometra* thicket in the Voi and Taveta plains at the base of the Taita Hills at 700m. There are, however, two species of forest dwarf galagos, *G. orinus* and *G. zanzibaricus*, with ranges, which potentially extend to the Taita Hills. *G. zanzibaricus cocos* occurs along the lower Tana River and the coastal forests of Kenya and north-eastern Tanzania (Groves, 2001, A. Perkin & T. Butynski, unpublished data) between 0 and 300 m. *G. orinus* is restricted to the Eastern Arc Mountains between 650 and 2,400 m (Honess, 1996; Butynski *et al.*, 1998; Perkin, 2000a).

We conducted surveys for galagos in the Taita Hills as part of a wider study to assess the taxonomic, biogeographical and conservation status of galagos in the Eastern Arc Mountains

and Coastal Forests of Tanzania and Kenya. We concentrated on the two largest forest fragments, Mbololo and Ngangao, which were surveyed from 8 to 23 July 1999, and from 18 to 27 July 2000. This paper presents our findings.

METHODS

We walked along paths from 18:30–23:30 h (or later when weather permitted), and from 05:00–06:00 h, and observed galagos and other animals with the aid of battery-powered torches and binoculars. Many nights were windy, wet and foggy, which affected the ability to listen for and record calls, and possibly affected the calling behaviour of the galagos. Notes were taken on all galagos sighted and/or heard, forest strata used, foods eaten, and support types used.

In the field, galago species are most easily identified by their vocalizations since each species has a distinctive repertoire of 10 or more loud calls (Zimmermann *et al.*, 1988; Zimmermann, 1990; Masters, 1991; Bearder, 1999). Mature adult galagos are known to make vocalizations in the context of vocal advertisement to keep companions together, to keep rivals apart, and to warn kin of danger (Bearder & Doyle, 1974; Bearder, 1999). Young galagos up to maturation are not known to make loud calls, particularly in the context of advertising (Bearder & Doyle, 1974; Courtenay & Bearder, 1988; Zimmermann *et al.*, 1988).

We used a Sony WM-C6C audio tape recorder and Senheiser K6-ME66 directional microphone to record vocalizations.

Chardonneret box traps (Charles-Dominique, 1977) were used to trap animals. These were baited with bananas and 'mnazi' an alcoholic drink locally brewed from coconut tree sap. Insects and geckos were also used as bait. Traps were set at a variety of heights (up to 5 m) in places where dwarf galagos were seen. All galagos trapped were removed, examined and measured, and kept quiet and safe in the trap until release the next evening. Length measurements, body mass, pelage, penile morphology, and face 'mask' were used to identify the captured specimens (Anderson, 1998, 1999; Bearder, 1999).

RESULTS

Garnett's Small-eared Greater Galago *Otolemur garnettii lasiotis*

O. garnetti were encountered every night. They were abundant in the indigenous forests, in plantations of exotic trees, and on farmland from 1,500 to 1,900 m. *O. garnettii* utilized branch support sizes greater than 3 cm in diameter, and were seen and heard at all levels above 1 m from the ground.

The overall encounter rate from 91 h of total survey time, based on both observations and vocalizations, was greater than five *O. garnettii*/h, and was higher on the edge of forests than in the interior. All individuals seen and trapped were identified as *O. garnettii lasiotis*. They were morphologically consistent with the description of this subspecies as presented by Groves (2001). That is, they are, "lighter and more greyish than in nominotypical *O. g. garnettii*; end of tail generally only slightly darker and often sharply white at the tip itself; underside grey-white rather than yellowish".

Seven *O. garnettii* were trapped in Mbololo (table 1). Males (mean 916 g, range 820–990 g) were notably larger than females (mean 755 g, range 650–815 g). Another four were trapped in Ngangao but not measured. The pelage of *O. g. lasiotis* in Taita seemed lighter in

colour than the *O. garnettii lasiotis* in the coastal forests. The gross morphology of the penis of the animals examined (n=4) is consistent with other populations studied in the field (Honess, 1996, A. Perkin, unpublished data). Microscopic analysis of individual penile spines can reveal taxonomic differences (Dixon, 1987; Anderson 1998), but this was not possible on live animals in the field. In *O. garnettii,* the spinal pattern, the way the baculum protrudes from the glans penis to be the most distal point of the penis, and the size and shape of the penis were consistent with those drawn by several authors (Hill, 1953; Dixson, 1987, 1989; Kingdon, 1997; Anderson, 1998). This compares with the penis morphology of *O. crassicaudatus* where the spinal pattern differs, the glans penis protrudes only slightly and is not the most distal point, and the distal part of the penis is more bulbous (Dixon, 1987).

The following calls made by *O. garnettii*, were tape-recorded: "cries", "squawks", "trailing calls", and "cackles" (Bearder *et al.*, 1995; Honess, 1996; Bearder, 1999).

Table 1. Biometrics of seven Garnett's small-eared greater galagos Otolemur garnettii lasiotis *trapped in Mbololo Forest, Taita Hills, Kenya.*

Measurement /Sex	M	M	M	M	Male mean (range)	F	F	F	Female mean (range)	Males & females mean (range)
Weight (gm)	990	910	820	945	916 (820-990)	815	800	650	755 (650-815)	847 (650-990)
Head-body (mm)	280	280	270	350	295 (270-350)	280	291	280	284 (280-291)	290 (270-350)
Tail (mm)	350	340	330	340	340 (330-350)	320	314	323	319 (314-323)	331 (314-350)
Hind-foot(mm)	90	94	85	90	90 (85-94)	82	88	82	84 (82-88)	87 (82-94)
Ear (mm)	54	43	46	46	47 (43-54)	47	46	45	46 (45-47)	47 (43-54)

Taita Mountain Dwarf Galago *Galagoides* sp.

Dwarf galagos were observed on 12 occasions in Mbololo between 1,600 and 1,800 m, and on 10 occasions in Ngangao between 1,750 and 1,900 m. They were seen in indigenous forest, between 2 and 30 m above the ground utilizing supports ranging from small vertical saplings (1–4 cm diameter) to large tree trunks (>20 cm diameter). The animals were estimated to weigh 80–100 g, with a head and body length of 110–140 mm, and a tail length of 140–160 mm.

The encounter rate was 0.4 animals/h from 91 h of total survey time. These dwarf galagos have cinnamon-brown on the dorsum and flanks, with an orange-brown tinge on the shoulders and thighs. They have a pale nose stripe, and the end of the muzzle appears 'turned up' (reminiscent of a Demidoff's dwarf galago *Galagoides demidoff*). The pelage of the tail varies from greyish-brown to cinnamon-brown, but is generally the same colour as the dorsum apart from a darkening towards the tip. The tail is slightly "bushier" over the distal one-third. Although traps were set for a total of 87 trap nights, no dwarf galagos were captured.

The dwarf galagos called briefly at dusk, and then rarely during the night and at dawn. Eight types of calls were tape-recorded (table 2). The advertisement calls were almost all heard around dusk but the alarm calls could be heard throughout the night.

Table 2. Vocalizations tape-recorded of the Taita mountain dwarf galago Galagoides sp. *The alarm calls are highly varied making it impossible to be precise about the numbers of calls.*

Call	Number recorded	Context
Yap sequences on their own (table 3)	1	Alarm
Yaps and bouts of rapid descending yaps	1	Alarm
Yaps and descending screeches (table 3)	4	Alarm
Grunt screeches and yaps (table 3)	1	Alarm
Incremental calls (figure 3)	3	Vocal advertisement
Double unit (figure 1, table 3)	5	Vocal advertisement
Buzzes and screeches (table 3)	1	Alarm
Whistled buzz (table 3)	1	Alarm

DISCUSSION

The vocalizations and morphology of *O. garnettii* in the Taita Hills were consistent with other populations in East Africa (Masters, 1991; Honess, 1996; A. Perkin, unpublished data). This species is abundant in the Taita Hills, where it occupies forest edge, secondary vegetation, and wooded farmland habitats. The differences in weight of males and females are consistent with the Kenya coastal population of this species (Harcourt & Nash, 1986).

We identify the dwarf galagos of the Taita Hills as a form of *Galagoides*. From what we saw and heard, this animal is most similar to *G. orinus*. This represents a new primate species record for the Taita Hills and Kenya. We do not believe that the dwarf galagos of the Taita Hills were the same as the specimens taken by Loveridge.

The vocal repertoire of the "Taita mountain dwarf galago" is qualitatively different from that of *G. senegalensis* (Zimmermann *et al.*, 1988), *G. zanzibaricus*, *G. rondoensis* (Honess & Bearder, 1996; Perkin 2000b), *G. demidoff*, and Thomas's dwarf galago *Galagoides thomasi* (Wickings *et al.*, 1998; Bearder, 1999; Ambrose & Perkin, 2000). The contact/advertisement "double unit" call and the two alarm calls ("yaps and descending screeches", and "whistled buzz") of the Taita mountain dwarf galago resemble those of *G. orinus*, but the Taita animals were not heard to give two calls known for *G. orinus* at other sites in the Eastern Arc Mountains ("grunt shriek" and "high pitch squeak") (table3). In addition, the "double unit call" (figure 1) is different in structure and quality to the "double unit" call of *G. orinus* in the East and West Usambara, Uluguru, Udzungwa and Rubeho Mountains (figure 2). The situation is further confused by the fact that the Taita mountain dwarf galago gives an "incremental" advertisement call (figure 3) not heard from *G. orinus* elsewhere, and which is similar to the "incremental" call of *G. z. cocos* (figure 4.) (Courtenay & Bearder, 1988; Bearder *et al.*, 1995; A. Perkin & T. Butynski, unpublished data).

Table3. Vocal repertoire of the mountain galago Galagoides orinus *in the Uluguru, Udzungwa, Rubeho, and Usambara Mountains, Tanzania. Names of calls as assigned by Honess (1996). The asterisk (*) denotes calls heard in the Taita Hills, Kenya.*

Name of call	Description
* "Double unit call"	Comprised of two soft units. First unit made at a higher pitch than second, and uttered in a series up to six times at a regular tempo to form a phrase. This probably the call Honess (1996) describes as the "repetitive call", but the call heard in the Ulugurus differs due to altering pitch levels. This seems to be the contact/advertisement/territorial-call. Counter-calling often heard; sometimes between three animals (particularly at dawn and dusk).
* "Yaps and descending screeches"	Series of phrased "screeches" linked by "yaps" (very short high-pitched units). "Yaps" may be uttered for more than 3 minutes before breaking into "screeches", which only last 5-10 seconds. The entire calling bout may last 5 minutes to over 60 minutes. Used in intense alarm situations (*e.g.* when a potential predator is spotted). Given at any time during the night.
* "Whistled buzz"	Strange, descending "buzz" lasting 1-2 seconds. Sometimes uttered in a descending series or as a start to a series of "yaps" and/or "shrieks" depending on the degree of alarm. 'Buzzes' uttered alone indicate mild alarm, surprise or curiosity, possibly when something unusual is present (*e.g.* torchlight).
"Grunt shriek"	Quiet, low pitch, low volume call made by swallowing air rapidly while simultaneously uttering screeches. This call usually implies extreme alarm (due to the considerable physical effort used to make this call).
* "Yap"	Very short high pitched call. Usually uttered in series and in conjunction with other calls like "screeches" and "buzzes". Made in a variety of contexts from mild alarm to extreme alarm. The rapidity, frequency and amplitude usually increases with the degree of alarm.
"High pitch squeak"	Very high pitch call uttered singly, or in series of 2-3 units, or breaking into "screeches". Often given high in the canopy. Unclear in what behavioural context this call is made.

The Taita mountain dwarf galago is considerably smaller (estimated to be 80–100 g) than *G. zanzibaricus* (104–203 g) or *G. senegalensis* (112–300 g) (Olson & Nash, in press), indicating that it belongs to the smallest (dwarf) group of galagos, which includes *G. orinus* (45–95 g) (Honess & Bearder, 1996; Kingdon, 1997; Perkin, 2000a,b). The characteristically reddish-brown bushy tail of *G. orinus* was not observed in the Taita animals. Instead, the tail is greyish-brown to cinnamon-brown with a dark tip, like that of *G. zanzibaricus*.

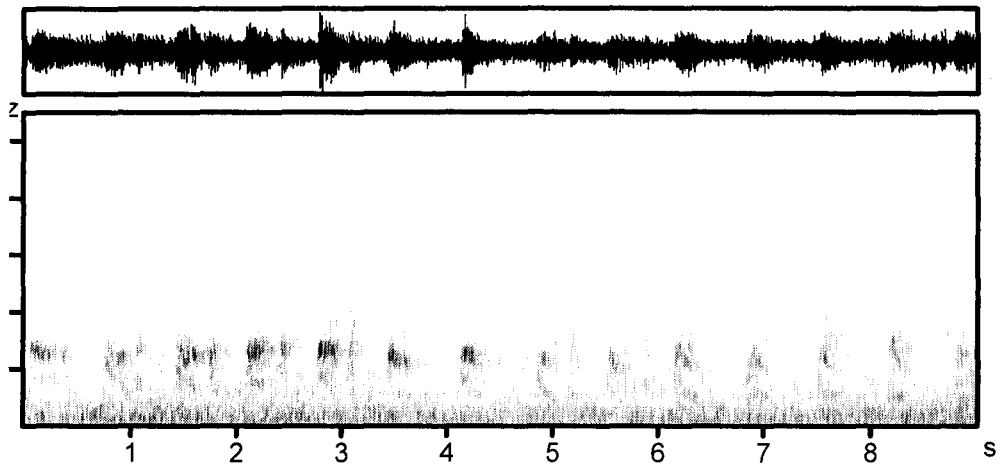

Figure 1. Sonogram of the "double unit" advertisement call of the Taita mountain dwarf galago Galagoides sp. *This call resembles the "double unit" call of* Galagoides orinus *in other Eastern Arc Mountains (figure 2). The two units are given close together, but the first unit is stronger in amplitude and longer than the second unit. The "fundamental frequency" is that part of the call with the lowest frequency and greatest amplitude and, therefore, is the farthest travelling element of the call. The fundamental frequency of the "double unit" of the Taita mountain dwarf galago is 2.67 kHz.*

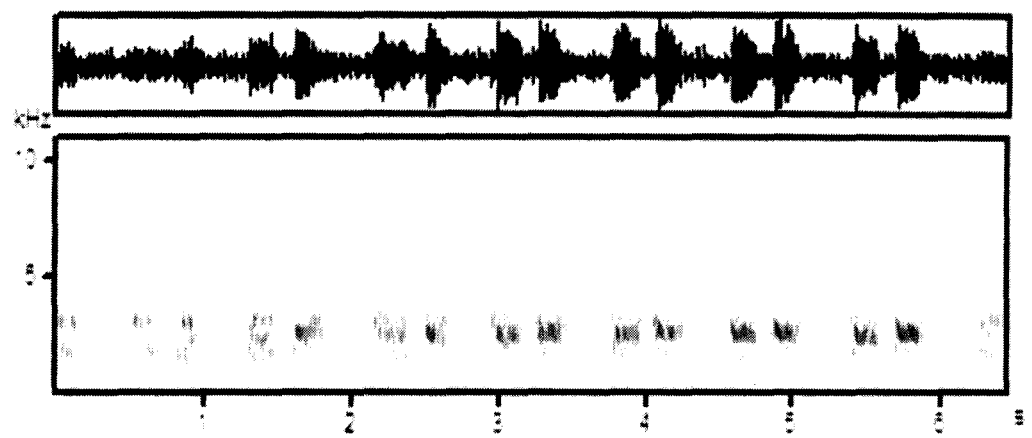

Figure 2. Sonogram of the "double unit" advertisement call of the mountain galago Galagoides orinus *in the Uluguru Mountains, Tanzania. Each part of the double unit is equal in amplitude and frequency, and there is sometimes a single unit at the beginning and at the end of the call (A. Perkin, unpublished data). The fundamental frequency is 1.56 kHz.*

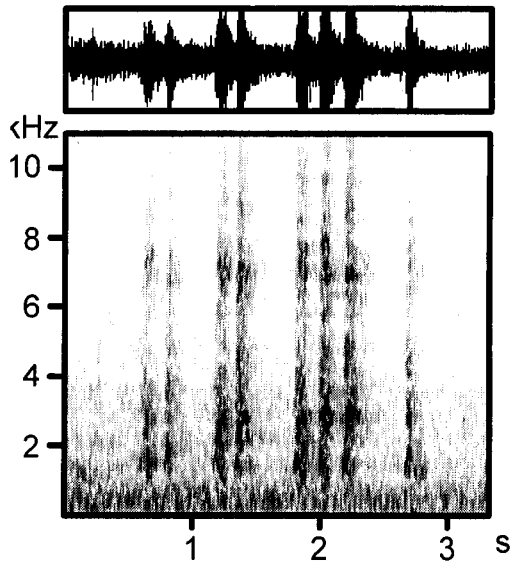

Figure 3. Sonogram of the "incremental" advertisement call of the Taita mountain dwarf galago Galagoides sp. *This call resembles the "incremental" call of the Zanzibar galago* Galagoides zanzibaricus cocos *on the Kenya coast (figure 4). Units are uttered together and the number of units increases "incrementally", as does the amplitude and frequency. The "extra" single unit at the end is not uttered in a typical "incremental" call. There is no discernable fundamental frequency in this call and the units have a wide frequency range (2 – 11 kHz).*

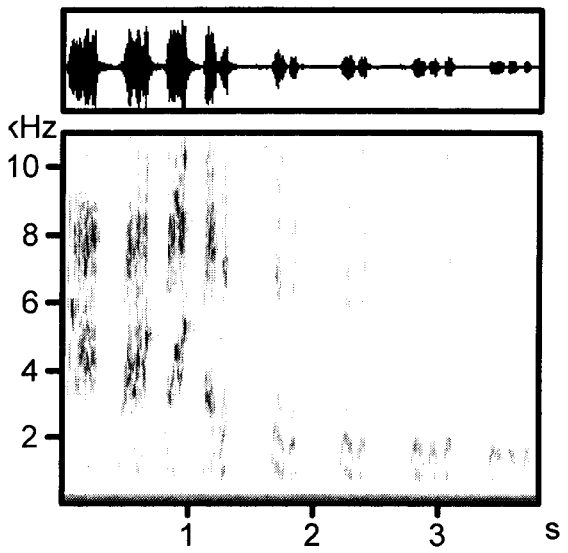

Figure 4. Sonogram of the "incremental" call of the Zanzibar galago Galagoides zanzibaricus cocos *from Diani Forest on the coast of southern Kenya. This call has four strong bursts of "chirrups"' followed by shorter phrases of units increasing incrementally (S. Bearder, unpublished data). There is no discernable fundamental frequency in this call and the units utilise a wide frequency range (1.5 – 11kHz).*

The elevation of the forests of the Taita Hills where the Taita mountain dwarf galago occurs (1,600–1,900 m) is similar to the elevation of the other forests in the Eastern Arc Mountains where *G. orinus* occurs (650–2,400 m). *G. zanzibaricus* is not known to occur above 1,000 m (Butynski et al., 1998, T. Butynski, C. Ehardt & A. Perkin unpublished data). The habitat and forest strata use by the Taita mountain dwarf galago are also similar to those used by *G. orinus* (Honess, 1996; Perkin, 2000a). The frequency of calling was much lower in the Taita Hills (0.4 animals/h) than for *G. orinus* at other sites. For example, 2.7 and 5.4 calling animals/h were heard for two sites in the Uluguru Mountains (Perkin, 2000a), and similar high rates were noted for more than a dozen sites in the Udzungwa Mountains (T. Butynski & C. Ehardt, unpublished data).

Calling rates and encounter rates in the Taita Hills are also much lower than those of *G. z. cocos* on the coast of Kenya where encounter rates are as high as 12/h (A. Perkin & T. Butynski, unpublished data). In the coastal forests of Kenya, densities of *G. z. cocos* were estimated to be 170–180 individuals/km^2 (Harcourt & Nash, 1986). The apparently low densities of the Taita mountain dwarf galago may be due to the small size of the forest fragment, or to animals that are perhaps particularly shy and cryptic. The surveys were conducted during July, which may coincide with low levels of calling (possibly related to territoriality and breeding).

Similarities in size, morphology, habitat, elevation, and vocal repertoire with *G. orinus* support the provisional identity of this dwarf galago as *G. orinus*. However, some differences in vocalizations, colour, and morphology indicate the possibility that the Taita mountain dwarf galago represents a new taxon (sub-species or species) of *Galagoides* closely related to either *G. orinus* or *G. zanzibaricus,* or both.

The specimens of the small galagos collected by Loveridge in 1934, were all identified as *G. senegalensis braccatus* by Loveridge, as well as by Allen and Lawrence (1936), and Lawrence and Washburn (1936). Based on the information available to us, we agree, and concluded that Taita mountain dwarf galago was not among the specimens obtained by Loveridge. As far as we are aware, the Taita mountain dwarf galago has never been collected or otherwise previously identified.

Preliminary analyses of vocalization and morphology data for *G. orinus* in other long-isolated Eastern Arc Mountains forests, such as the Ulugurus (Perkin, 2000a), the Udzungwas (Butynski *et al.*, 1998; Perkin, 2001), and the East Usambaras (Honess, 1996; Perkin 2000a), show interpopulation differences. The significance of this variation is not yet understood. The Taita mountain dwarf galago might be different to other dwarf galagos due to the long isolation of the Taita Hills forests, both from other forest refugia within the Eastern Arc Mountains, and from the East Africa coastal forests. Indeed, a pattern of endemism in the Taita Hills has already been demonstrated both for plants and animals (Beentje, 1988; Lovett & Wasser, 1993; Collar *et al.*, 1994; Brookes *et al.*, 1998a,b; Bytebier, 2001). Molecular data, together with additional data on the morphology, vocalizations, behaviour, and ecology of the Taita mountain dwarf galago, are necessary to confirm its taxonomic status, and to evaluate its interpopulation variability and biogeographical affinities.

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