

possess the distinctive, narrow diagonal crossbars on both dorsal and ventral surfaces so conspicuous in northern *S. orcutti*. The barring, extensively obscured in adult *S. orcutti*, persists at least on the sides of the body in the largest specimens. Other differences are noted in Table 1. Southern *S. orcutti* appear to maintain these distinctions, although we do not now have substantial recent material to support this contention.

Clearly these data do not provide evidence for past or present introgression between the distinctly larger, larger-scaled *S. orcutti* and the smaller, smaller-scaled *S. hunsakeri*. To conclude this comparison we are left with the problem of assessing the taxonomic level of difference between populations which are and have been geographically separated. Our experience with the genus leads us to regard the observed differences as a strong indicator that the two taxa would be genetically isolated if they were in contact either through parapatry or sympatry, and therefore that *S. hunsakeri* should be recognized as a full species, rather than as a subspecies.

S. licki vs. *S. orcutti*. *S. licki* would never have been closely compared with *S. orcutti* if it had not been for the confusion of *S. licki* and *S. hunsakeri* from the very outset (see next paragraph), perpetuated by Smith (1939). Early workers referred or compared material representing *S. licki* to *S. undulatus consobrinus* apparently because of similarities in pattern observed also by Hall. Yarrow (1883:61) and Belding (1887:98) so identified materials taken in 1882 at "La Paz" by Belding, and Van Denburgh's (1895) primary comparison of *S. licki* was with *S. consobrinus*. That association does not now seem rational since the closest relatives of *S. licki* certainly occur in more nearly adjacent territories.

General comments on the S. orcutti complex

A single paratype of *S. licki* was recorded in Van Denburgh's description (1895:114) from San José del Cabo, taken Sept. 16, 1890, by W. E. Bryant. Given the probable lack of *S. licki* habitat there and the verified presence of *S. hunsakeri* in later collections, the Bryant specimen was probably the earliest acquisition of *S. hunsakeri*. Van Denburgh also recorded a dark central gular patch in one male of his Miraflores series (1895:112; 1922:357); that

specimen must likewise represent *S. hunsakeri*, since later collections from Miraflores confirm that both *S. hunsakeri* and *S. licki* are present in the vicinity.

Unfortunately, the California Academy of Sciences collection (including the *S. licki* type and all but three paratypes distributed to other museums) was destroyed in the San Francisco earthquake and fire. Nevertheless, Van Denburgh's type-description referred to the striped form, which he clearly differentiated from *S. orcutti* by its smaller and more sharply keeled ("rougher") dorsal scales, from *S. magister* and *S. zosteromus* by smaller and more mucronate scales, and from all of these species by color pattern. Each of the three surviving *licki* paratypes is clearly the striped morph. Two paratypes entered in the Stanford University collection at the time of the fire have since been returned to the California Academy of Science. One of these was designated by Smith (1939) as a neotype under its Stanford University tag number (neotype: CAS 1423 = LSJU 2987a; when seen by Hall, both tags were still on the specimen). The other specimen from this series is CAS 1426 = LSJU 2988. The third paratype is from the Miraflores series, and is in the U.S. National Museum of Natural History (USNM 23,749).

Stejneger (1893) described *S. orcutti* from USNM 16,330, from Milquatay Valley, San Diego County, California, collected by C. R. Orcutt. In reference to the type-locality it may be of interest to record that the bottle containing the holotype also contains a rather fragile note dated Aug. 14, 1934, signed by L. M. Klauber. We quote it here to insure against loss of the information it contains: "Orcutt once told me that the 'Milquatay' referred to was the flat just east of Campo, San Diego Co., Calif. Milquatay is said to mean wheat field in Indian, and almost any flat was known as Milquatay. The town of Guatay (or Quatay) is not the type locality of *orcutti*."

The preanal escutcheon of *S. hunsakeri* and *S. licki* discussed in the preceding account occurs in *S. orcutti* and several other species of the *S. spinosus* group as well. The development of the escutcheon in *S. orcutti* is very similar to the pattern seen in *S. hunsakeri*. However, its histology, functions, distribution in other species, and general taxonomic value remain to be explored.

Dr. George Gorman and his students at UCLA have recently begun a survey of the electrophoretic variability of the Baja California *Sceloporus*. They inform us (person. commun.) that

genetic distances between representatives of *S. orcutti*, *S. licki*, and *S. hunsakeri* are all consistent with our separation of these populations at the specific level. They also report that there appears to be electrophoretic evidence suggesting that even *S. orcutti* as we have restricted its definition may be polytypic. However, we see no supportive external morphological evidence.

Given the many taxonomic problems involved in classifying allopatric populations, we do not here make any formal attempt to allocate *S. orcutti* complex populations on the Gulf of California islands to any of the three peninsular species. This cannot be done definitively until information on the biochemical genetics of both mainland and insular populations is more complete, although external morphology and coloration will yield preliminary indications. Prior to such examination, we suggest that the Espiritu Santo and Ballena island populations may be provisionally classified with *S. hunsakeri* (although some differences in coloration are evident), and that populations from the more northern islands be grouped with *S. orcutti*.

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APPENDIX

ADDITIONAL SPECIMENS EXAMINED

(All from Baja California Sur, Mexico, unless otherwise noted.)

Sceloporus licki. *Neotype*: Sierra San Lázaro (CAS 1,423 = LSJU 2,987). *Paratypes*: Sierra San Lázaro (CAS 1,426 = LSJU 2,988); Miraflores (USNM 23,749). *Other specimens*: Boca de la Sierra (LMK-SDSNH 30,187); 2 mi. NNW of Cerro San Antonio (SDSNH 53,136-43); El Sauce (=El Sauz), 4000 ft., Victoria Mts. (MVZ 11,702-08); Guamuchil Rancho (CAS 46,809); La Burrera (SDSNH 45,062-64, 53,132-35); Arroyo Palmellar, 6 mi. ENE of Rancho La Burrera (LACM 34,592-93); "La Paz" (USNM 53,392); 40 mi. S of La Paz, 2 mi. above El Valle Perdido (CAS 90,544, 90,558); Miraflores (USNM 64,472); nr. km 70, Mex. Hwy. 1, 8 km SE of San Antonio (MCZ 136,188); San Bartolo (CAS 46,780-1, 46,783-86; UMMZ 56,044; MVZ 144,809-13); 1.1 mi. SE of San Bartolo (CAS 91,383); 1.5 mi. E of San Bartolo, ±500 ft. (MVZ 73, 589); 3 mi. E of San Bartolo, ±500 ft. (MVZ 73,570).

Sceloporus orcutti. *Holotype*: California: San Diego Co., Milquatay Valley, 2500-2600 ft. elevation (USNM 16,330). *Paratypes*: Same locality (USNM 16,238, -29, -33, -34). *Other specimens*: 15 mi. S of Canipole (LMK-SDSNH); 43 mi. N of Canipole (LMK-SDSNH); Rancho Chenque (SDSNH 51,044-46); Coyote Bay, 13 mi. SE of Mulegé (MVZ 37,318); 12 mi. E of El Arco (SDSNH 17,471); La Paz (LMK-SDSNH 38,339); 20.0 mi. W of La Paz, ±500 ft. (MVZ 73,590); San Ignacio (MVZ 10,653, -54, -56, 13,597, -99; LMK-SDSNH 4,053, -54; UMMZ 76,482[2], 80,900); Misión Santa Gertrudis [Baja California Norte] (SDSNH 17,529-36).

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**THE LARGE PALAEOTRAGINE GIRAFFID,
PALAEOTRAGUS GERMAINI, FROM
LATE MIOCENE DEPOSITS OF
LOTHAGAM HILL, KENYA**

C. S. CHURCHER¹

ABSTRACT. An isolated and slightly damaged left M¹ constitutes the first record of the species *P. germaini* in East Africa. This specimen matches in size and development of the buccal ribs and styles the upper molars of *P. germaini* from Oued el Hammam, Algeria.

An isolated and damaged left upper molar, probably M¹ (KNM-LT 414, field no. 138/67K), was collected by Dr. V. J. Maglio from Lothagam Hill, Kenya, in 1967. The tooth was found at Lothagam-I near the base of Member B (Patterson *et al.* 1970), and is deposited in the collections of the International Louis Leakey Memorial Institute for African Prehistory, Kenya National Museums, Nairobi.

The specimen (Fig. 1) is very slightly worn on the occlusal surface and derives from an immature individual. Minor damage has removed the mesial face of the crown, including the mesial half of the protocone, but the paracone is essentially entire. Slight damage to the distobuccal corner of the metacone has not destroyed the shape of the cusp or of the distobuccal wing of the hypoloph. Minor fragments of enamel are absent from the buccal surfaces of the apices of the paracone, metacone, and metastyle. The surface of the enamel is typically giraffid in its overall rugosity and thickness. The crown is tilted lingual on its roots in the anteroposterior (parasagittal) plane, and the roots tip distad. The mesial pair of roots is more damaged than the distal pair, all four roots are separate and are

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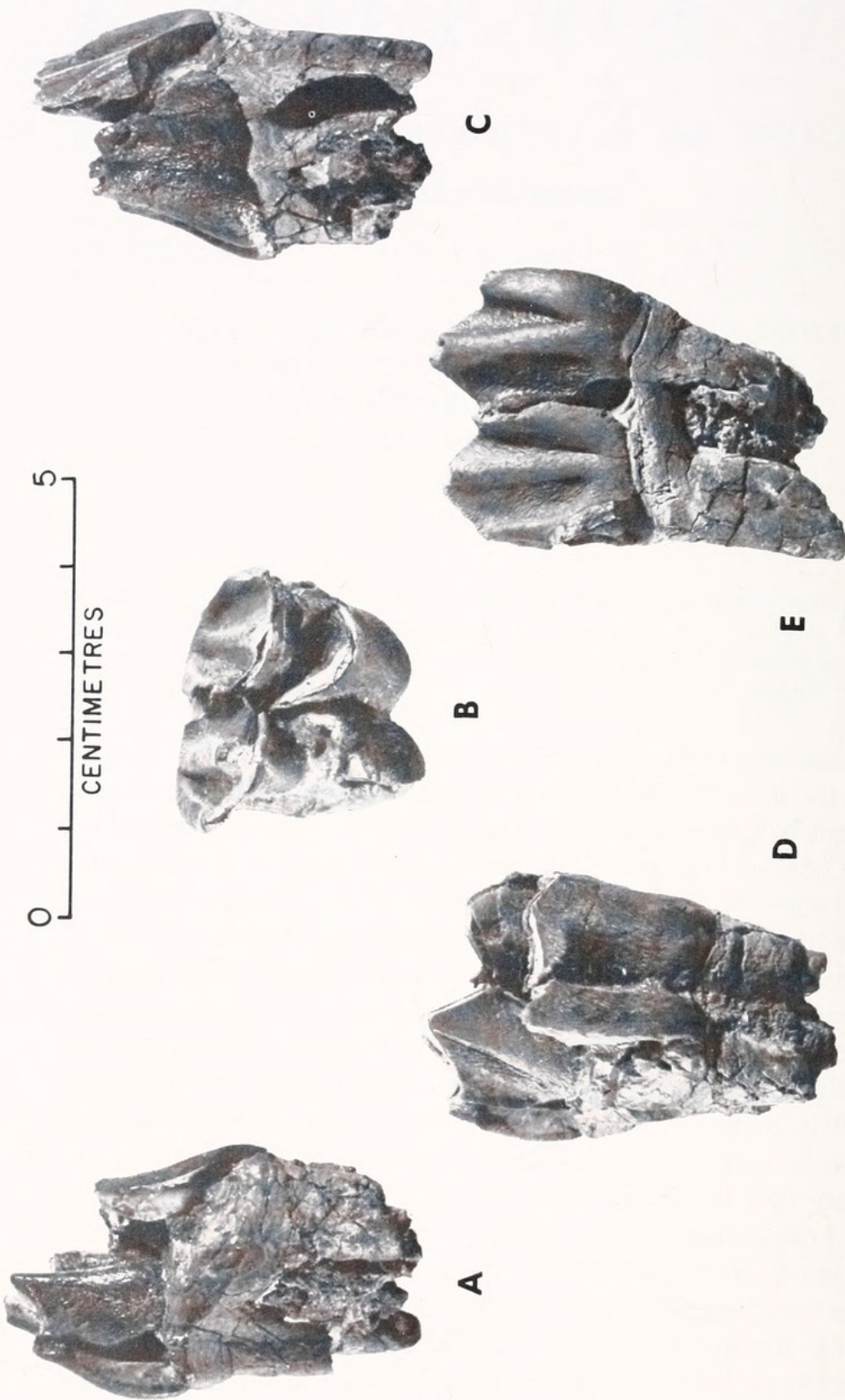


Figure 1. *Palaeotragus germaini*; left upper first or second molar from Lothagam-I, Kenya. A — mesial aspect; B — occlusal aspect with mesial towards A and buccal surface towards scale; C — distal aspect; D — lingual aspect; E — buccal aspect. A, C, D, and E are all oriented with roots nearest letters and crowns towards scale. Scale $\times 1$, in cms.



Churcher, C. S. 1979. "The large Palaeotragine giraffid, *Palaeotragus germaini*, from late Miocene deposits of Lothagam Hill, Kenya." *Breviora* 453, 1–8.

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