

asteries and parks was initiated to gather information regarding the distribution of macaques outside of forest conservation areas in Thailand. A preliminary assessment of human attitudes towards macaques at the 52 study sites was also undertaken in order to characterize the conservation implications of human-primate contact at these diverse sites. Thai culture is strongly influenced by the Buddhist religion which has a great respect for the rights of all living things. In rural areas, the Thai Buddhist wat or 'temple' is the center of religious activities. In Thailand, most populations of macaques that occur outside of protected areas are found in and around Buddhist temples and forest monasteries. Temples, besides providing a safe refuge for macaques, also assure food supply through provisioning. Unfortunately, Buddhist practices towards macaques are not applied so strictly away from temple areas. Macaques that range outside of the temple complexes are usually subjected to hunting, they are either killed for meat or because they are pests to crops and property. This practice is in keeping with Thai Buddhism which is noted for its tolerance for deviation from principles when people are in need of subsistence.

Methods of ingestion and incisal designs.

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Anthropoids ingest food in variable fashion (Osborn *et al.* 1987, Ungar 1991, Yamashita 2003), making mechanical analysis difficult. Yet variation in incisal size, procumbency, over/under-bite, and ease of dentinal exposure needs explaining. Categorizing incisal use as either (i) *fracturing* objects between upper and lower teeth or (ii) *gripping* objects, we ran mechanical tests to establish structural factors that favor these possibilities. Artificial upper and lower incisal pairs were cut from dental study models (Nissin, Kyoto) and mounted on a portable mechanical tester with variable tooth orientation. Teeth were driven into food blocks (cheeses) at angles of +60 to -40 degrees to movement direction (positive angles represent procumbent, negative angles retroclined, crown orientations). The work to fracture standardized crack surface areas varied significantly with attack angle, being minimal at zero degrees. However, lower incisors were hardly sensitive to angulation unless > +40 degrees. Frictional coefficients were measured using a sliding test jig for 10 individual up-

per/lower real human incisors, dry or wetted by saliva, against upper surfaces of *Ficus benjamina* (Moraceae) leaves. Coefficients for lowers were smaller than for uppers, particularly with wetted leaves, but there was no relationship with tooth size.

Most incisal usage in leaf-eating involves frictional grip, fracture events being distant from tooth edges. This favors vertical orientation for loading efficiency; tooth size is unimportant. Fruit-peeling is sculpture; size matters there. If lower incisors peel while uppers anchor the fruit, then this favors the uppers being more obliquely oriented than lowers.

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Cranial morphology of callitrichid genera: variability and diversification.

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Since 1990, eight new species of callitrichid have been discovered, ten more taxa elevated to species status and a new genus proposed for the dwarf marmoset, *Callibella humilis*. These recent discoveries highlight both the deep biodiversity of the Amazon world and the overwhelming need for swift and effective conservation. Intelligent and targeted conservation efforts, however, require a clear understanding of the delineation and geographic extent of species about which very little is reliably known. The examination of morphological features, especially cranial characters, may provide supporting data about the ecology and behavior of species which are difficult to locate and observe at length, and may also allow for a more informed understanding of taxonomic relationships. Here we assess the variability in cranial morphology of callitrichids within and between genera, species and populations where possible. We focus on details of mandibular shape, which may reveal diagnostic aspects of diet and behavior. We apply principal components and discriminant analyses to test for variability and separation within and among callitrichid taxa, and present our results in the context of conservation biogeography. We find that *Callibella* is morphologically discrete and unique within the callitrichids, and merits generic status; but we do not find morphological evidence to support the separation of Amazonian *Callithrix* into the distinct genus *Mico*.

Midfacial variation in recent human, Zhoukoudian Upper Cave, and Paleoindian crania.

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This study tests the hypothesis that the midfaces of select Late Pleistocene Asians and Paleoindians cannot be distinguished from recent Amerindians. Recent interpretations of Paleoindian remains have highlighted their variability and affinities to a variety of living non-Amerindian human populations. Although midfacial anatomy has been touched upon in some of these analyses, metric treatment of upper and lower midfacial anatomy has not been thoroughly examined. Given that midfacial anatomy is useful for determining population affinities among recent people, it may also prove effective at assessing past prehistoric population affinities.

Measurements of the upper and lower midface were collected on samples of three extant human populations: Amerindians (n=46), African Americans (n=58), and Euroamericans (n=62). Measurements were also collected on casts of the three crania from Zhoukoudian Upper Cave and the Spirit Cave and Wizards Beach Paleoindian specimens. The Upper Cave crania were chosen since they may represent a population ancestral to the first people to colonize the Americas. Spirit Cave and Wizards Beach were chosen since their differences epitomize the degree of variation and contrasting population affinities of North American Paleoindians. Using discriminant function analysis, Spirit Cave fell in the area of overlap between Amerindians and African Americans, while the other fossil crania had a higher probability Amerindian classification. Unlike some previous analyses, none of the fossil crania showed affinities with Europeans. Our results further indicate that the pattern of relationships and variation among Late Pleistocene Asians and Paleoindians was complex.

Reassessing the Tower Kiva skeletal remains from Salmon Ruins, New Mexico.

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In 1973 and 1974, excavators encountered human bones in a tower kiva destroyed by fire. The remains were interpreted as those of 35 to 45 individuals trapped on the roof at the time of the fire.