

set, was first identified in 1998 (van Roosmalen, et al.) and placed in a new, monotypic genus in 2003 (van Roosmalen and van Roosmalen). It is distinctive in pelage, behavior, ecology, DNA, and craniodental anatomy. Recent work has also confirmed the distinctions between Amazonian marmosets (*Mico*), Atlantic coastal marmosets (*Callithrix*), and pygmy marmosets (*Cebuella*) including postcranially. This is the first description of the postcranium of *Callibella*.

Discriminant function analyses place *Callibella* outside of the distributions of all other marmosets, in discrete morphometric space. While sharing general marmoset traits, *Callibella* shares no special affinity with *Callithrix*. The forelimb is closest to that of *Mico*, approaching *Mico* in its narrow elbow articulations. However, the hindlimb is most like the generalized tamarin *Saguinus midas*. It particularly lacks most of *Cebuella*'s many highly derived hindlimb traits, sharing only a few, such as a narrow, short femoral head and narrow lateral knee articulation. *Callibella* does have several unique features of the pectoral girdle, forelimb, and hindlimb.

These results support suggestions elsewhere for a three-way division of the Amazonian marmoset ancestor into separate *Mico*, *Callibella*, and *Cebuella* lineages. The marked differences in their skeletons suggests that high dependence on exudates evolved independently in the pygmy and dwarf marmosets, associated with different postcranial adaptations, in agreement with results of analysis of cranial anatomy. These specializations likely relate to the apparent heavy use of a single tree species by dwarf marmosets.

#### **Application of population demographic modeling to the predator-prey interactions of chimpanzees and red colobus monkeys in Gombe National Park.**

M. Fourrier, R.W. Sussman, G. Childs. Department of Anthropology, Washington University.

Construction of deterministic demographic models can have many uses in understanding primate behavior and ecology. They can be used to validate the quality of observed data as well as to project population-level responses to future changes in mortality, fertility and migration schedules. We used age-specific death rates from the literature for groups of red colobus (*Procolobus badius*) in Gombe National Park, Tanzania. We then constructed life tables using conservative high and low mortality estimates. Our

objective was to evaluate the viability of colobus populations under various degrees of predation by chimpanzees. Consideration was given to variation among red colobus monkey life-history traits and their potential response to various mortality schedules in an attempt to understand the population's intrinsic capacity to buffer severe levels of predation. Results indicate that if fertility and mortality schedules remain constant, intensely hunted red colobus populations will experience negative intrinsic rates of growth when certain assumptions of stable age structure life tables are allowed to persist into the future. Plasticity in life-history traits, such as inter-birth interval, as well as movements of individuals between groups show some limited ability to buffer the effects of predation. However, at Gombe, current predation pressures in conjunction with site-specific factors such as small reserve size and isolation allow us to predict the extinction of the hunted red colobus groups in the near future.

#### **Sexual dimorphism and morphological integration in baboons.**

B. Frazier, K. Aldridge, J.T. Richtsmeier. Department of Anthropology, Pennsylvania State University.

Morphological integration (MI) reflects developmental relationships between parts of an organism. Sexual dimorphism results from differences during development in males and females, therefore differences in patterns of MI between males and females should mirror differences in development. Savanna baboons are highly sexually dimorphic primates, indicating strong differences in development between males and females. This study compares patterns of MI in the skulls of male and female savanna baboons, to assess sexual dimorphism in developmental associations between regions of the skull.

Three-dimensional coordinates were collected for 26 landmarks from the midline and right side of the neurocranium, face, and palate of adult baboon skulls in the collections of the AMNH and NMNH (N=28 males, 19 females) using a Polhemus 3Space™ digitizer. MIBoot© was used to statistically compare the patterns of MI in males and females of three subspecies of *Papio hamadryas*: *P. h. cynocephalus*, *P. h. anubis*, and *P. h. ursinus*.

Results show an overwhelming pattern of significantly increased MI in the skulls of male baboons. The highest levels of MI in males represent the relationship of landmarks on the premaxilla with the rest of the skull, indicating the robust incorpo-

ration of the extended rostrum with the rest of the skull in males. These results suggest a plan of modularity that allows for overlapping and hierarchical patterns of integration in males, as well as differences in the degree of canalization of development in male and female baboons.

Work supported in part by PHS Grant 1P60 DE13078.

#### **The truth is out there: how NOT to use FORDISC.**

D. Freid<sup>1</sup>, M.K. Spradley<sup>1</sup>, R.L. Jantz<sup>1</sup>, S.D. Ousley<sup>2</sup>. <sup>1</sup>Department of Anthropology, University of Tennessee, Knoxville, <sup>2</sup>Repatriation Osteology Laboratory, Department of Anthropology, National Museum of Natural History, Smithsonian Institution.

FORDISC is an interactive computer program designed to classify an unknown adult cranium based on the reference samples in its database. FORDISC uses discriminant functions to construct a classification matrix and assign group membership of the unknown cranium into one of the selected reference groups. The researcher guides the analysis by choosing the populations against which to classify the unknown, choosing from eleven population samples from the Forensic Anthropology Data Bank or twenty-eight population samples from Howells' (1989) worldwide database. The utility and efficacy of FORDISC has been criticized for providing 'incorrect' classifications, however these disputed results are often due to inappropriate reference samples and failure to properly evaluate the typicality and posterior probabilities provided by the program. In this paper, unknown crania from populations known not to belong to any of the reference samples will be analyzed, demonstrating the interpretation of posterior and typicality probabilities provided in the FORDISC output and the importance of the use of an appropriate reference sample.

#### **An application of ancient DNA analysis to an early Byzantine monastic community.**

A.M. French<sup>1</sup>, F.A. Kaestle<sup>1,2</sup>. <sup>1</sup>Department of Anthropology, Indiana University, <sup>2</sup>Department of Biology, Indiana University.

The degree of contact among ancient populations and the extent of human historical movement have long been topics of interest and debate. While archaeological, linguistic, and textual evidence provide much information on historical patterns of