long-term field studies, we gathered ranging and demographic data from all eight noncallitrichine primates present at the site. For each species, we collected location records regularly during full-day follows, by mapping the group's position relative to previously mapped and georeferenced trails and reference trees. From these records, we characterized daily travel paths and calculated day range lengths and home range sizes for each species, as well as inter- and intraspecific range overlap, using ArcGIS, and we compared these to measures of body size, group size and biomass, and diet. Home range size varied considerably across species (from ~4 ha for titis to well over 200 ha for capuchins). Home range overlap between species was extensive, and neither range size nor day range length was clearly associated with diet or group biomass. Though some of our results echo those in other ranging studies, there are some intriguing differences that might be explained by interspecific competition in this large primate community.

Center of mass movements in primates.

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Recently physical anthropologists have focused on limb stiffness during walking in primates compared to other mammals. It has been suggested that primates use a relatively compliant gait (with high joint yield) and that this is associated with requirements of locomotion on thin, flexible branches. However, joint yields represent a surrogate measure for movements of the center of mass (COM) and few studies have made such measurements directly. Animals who walk with relatively stiff limbs oscillate their COM vertically in such a way that allows an efficient exchange of potential energy (PE) and kinetic energy (KE), reducing the external work done on the COM. High degrees of exchange are indicated by a high percentage recovery. The purpose of this project is to examine if primate gait compliance leads to reduced exchange of PE and KE. Center of mass movements derived from force plate recordings for *Lemur catta* (N=3;), *Eulemur fulvus* (N=3), and *Macaca fasciularis* (N=2) walking on a runway and simulated arboreal supports will be presented. Current data on lemurs shows substantial variation. The majority of steps have extremely low values for exchange (< 20% recovery). However, some steps within the same individuals have high exchange values (> 50% recovery). If supported by data on a wider range of primates, the use of a compliant walking gait with low energy exchange represents a distinct difference between primates and most other legged animals and allows a better understanding of specific mechanical adaptations associated with the origin of primates.

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Sex differences in cranial form assessed via non-rigid deformation analysis of high-resolution CT images.

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The use of computed tomographic (CT) imaging in fossil and skeletal studies has increased substantially in recent years. Because these images are essentially density measurements in three-dimensional (3D) space, they can be used to assess complex shapes in mathematically interesting ways. Image analysis methods developed for functional brain imaging studies allow the morphing of objects (e.g., crania) into common coordinate systems, resulting in transformation maps that describe, in detail, where and by how much a given object differs from another object. The methods used to create these maps are anatomically reasonable, in that they focus on local distortions, rather than simply globally scaling the entire object. In principle, these methods can be applied to 3D images of any type (MRI, CT, laser scan, etc.). They can also be applied to sets of images, resulting in population maps of localized morphological variation, as well as allowing comparisons of localized differences between populations.
We illustrate the usefulness of these techniques by showing how sex differences in cranial form can be assessed in a population of male and female crania from the Morton collection at the Museum of Archaeology and Anthropology at the University of Pennsylvania (CT's were obtained from the Open Research Scan Archive at Penn, http://grape.anthro.upenn.edu/~lab/pennct/). Maps of significant t-values for sex differences at each point in 3D space will be shown. Comparison with previous studies of sex differences in cranial form will be discussed. The usefulness of these methods for a wide range of anthropological analyses will be discussed.

The quiet life? Indications from a rural late Anglo-Saxon village.

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The human skeletal remains from Bishopstone, Sussex, England represent a late Anglo-Saxon rural coastal community. Preliminary skeletal analysis has indicated that the frequencies of trauma and disease within this collection differ from other Anglo-Saxon communities dating to a similar time period. Of the 40 individuals identified in the Bishopstone collection, 47.5% (19 of 40) show evidence of trauma and 35% (14 of 40) show evidence of disease. The trauma observed varies widely among individuals, ranging from cases of blunt force trauma, likely associated with cause of death, to more mundane cases of healed broken fingers. When compared to the frequencies of trauma and disease observed from two other Anglo-Saxon collections, St. Nicholas Shambles, London (White, 1998) and Raunds, Northamptonshire (Boddington, 1996), the frequencies observed at Bishopstone are markedly higher. At St. Nicholas Shambles observed frequencies of trauma and disease were 5.5% (13 of 235) and 7.7% (18 of 235) respectively (White, 1998). Similarly, in the remains from Raunds trauma is observed in 6.9% (25 of 363) and disease in 8.8% (32 of 363) of the individuals analyzed (Boddington, 1996). Although the overall size of the Bishopstone collection is considerably smaller than those from both Raunds and St. Nicholas Shambles, the collection could be extremely important to discussions of Anglo-Saxon life in a rural area.

Assessment of the time of origin of New World primates and rodents.

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The abrupt appearance of primates and rodents in early Oligocene deposits of South America has puzzled mastozoologists for decades. Geoclimatic changes that occurred during the Eocene/Oligocene transition period may have enabled mammalian invasions in the continent. This unsolved issue is a fertile field for divergence time methods using molecular data. Although traditional molecular clock approaches are unpractical when dealing with rodent and primate sequences altogether, techniques that relax the assumption of rate uniformity allow the tackling of such problems. In this study, we have used mitochondrial genomes of selected mammals and three different methodologies of rate relaxation - Bayesian inference, maximum likelihood estimation with local clocks and automatic rate assignment - in order to validate a consistent timescale for the emergence of New World primates and rodents. We found that the dates of origins of these mammalian groups are stable and all clock-relaxing methods performed similarly.

Evidence for clans in a population of wild hamadryas baboons.

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Hamadryas baboons are known for their complex, multi-level social structure consisting of troops, bands, and one-male units (OMUs). Abegglen (1984) observed a 4th level of social structure consisting of several