



define habitat types and to record bonobos indices (tracks, food remains and nesting sites) in 200km² of forests in Southwestern Lake Tumba Region. Our results show that bonobos clearly prefer specific habitats for nesting, and, within these nest-forest types, an understory of Marantaceae *Haumania sp.* is preferentially chosen. To evaluate edge effect on nesting behavior, we counted nesting sites in 100m distance classes from the forest edge. Our results indicate a uniform distribution of nesting sites, but with a negative edge effect in the first 100m. When we analyzed tracks and food remains distribution, we didn't find any habitat type preferences or any edge effect. These results indicate that, although bonobos are known to favor dense forests, they can also adapt to fragmented forests environment. Habitat types appear to be more relevant to understand their distribution and range.

ABSTRACT # 124

FLEXIBILITY IN COPING WITH THE AFTERMATH OF HURRICANES EMILY AND WILMA

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The response of animals experiencing dramatic environmental change may vary according to their behavioral flexibility. In 2005 two hurricanes, Emily and Wilma, passed through the natural protected area of Otoch Ma'ax Yetel Kooch in Yucatan, Mexico, where wild spider monkeys have been part of a long-term study. The hurricanes caused damage to 72% of trees surveyed. To investigate the spider monkeys' capacity to cope with the damaged forest we compared their behavioral patterns between the dry seasons before and after the hurricanes. We used data on diet and activity budget collected with instantaneous scan sampling during focal observations and changes in subgroup size collected with all occurrence sampling. In the aftermath of the hurricanes spider monkeys replaced fruits with leaves as their primary food source and moved less. Furthermore, spider monkeys' subgroup size decreased in the dry season following the hurricanes. The reliance on a low quality and more evenly distributed food source may explain the reduction in time spent moving as an energy saving mechanism. The decreased subgroup

size after the hurricanes appears to be a means of reducing intra-group feeding competition. In conclusion, the high degree of fission-fusion dynamics, which is a key characteristic of spider monkeys' social organization, may facilitate flexible responses that allow them to cope with the negative effects of hurricanes.

ABSTRACT # 125

IF YOU'RE COMFORTABLE, YOU'RE NOT DOING CONSERVATION!

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My revelation sitting in a steamy bar in the French Quarter of New Orleans more than a decade ago. It was the eve of a dynamic and productive process that continues to this day. John Oates was several weeks away from the public release of a sure to be unpopular tome highlighting the increasingly common failures of conservation organizations in West Africa with an eye to a central flawed assumption dictating conservation policy throughout the tropics- that biodiversity conservation is a natural byproduct of human economic development. I was lucky enough to have been adopted by a band of NYCEP students and John one evening during the annual ASP meeting and joined a passionate discussion of the topic. Since that evening, "Myth and Reality" along with John Terborgh's "Requiem for Nature" have forced the conservation and development communities to address a number of difficult realities to collaborate more effectively where possible and to recognize when their goals will require different paths. Throughout his career, John forwent the comfort of familiarity in support of conservation. In the process, he demonstrated the value of multi-site primatology. He also left his comfort zone in promoting the use of the best tools for conservation- advising students integrating population genetics and advanced spatial analyses. I strive to follow John's example in my own work.

ABSTRACT # 126

DOES OVERLAPPING CHANGE BETWEEN INDRIS SONGS EMITTED IN DIFFERENT CONTEXTS?

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The "singing" primates are often compared to the singing behavior of some tropical birds, which establish monogamous couples, live in forest environments and perform duets or choruses. In some bird species there is evidence that the degree of overlap between songs of different individuals may change in relationship with specific factors (e.g. neighbor-stranger discrimination, aggressiveness). In *Indri indri*, males and females within a social group emit loud, long distance calls in a coordinated manner. An indri may start emitting a vocal utterance before the end of another individual's contribution, resulting in different degrees of overlap between individual songs. This study provides the first quantitative analysis of the overlap between individual contributions in the indris' song. We analyzed 52 songs emitted in 3 different contexts (advertisement, territorial, cohesion). We found that overlap is present in the song given in all contexts we examined. The total duration of the song, the ratio between voiced and unvoiced portions, the ratio between the total overlap and the total duration of the song, and the ratio between unvoiced parts and the total overlap showed significantly differed across context ($p < .05$). These results suggest that characteristics of different songs can transmit context-specific cues to conspecifics.

ABSTRACT # 127

TAKING A MULTIFACTORIAL APPROACH TO UNDERSTANDING POPULATION CHANGE: THE INTERACTION OF DIET, CORTISOL, AND PARASITES IN DETERMINING THE POPULATION DENSITY OF BLACK HOWLER MONKEYS (*ALOUATTA PIGRA*) FOLLOWING A HURRICANE

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Many primates live in forest fragments, making them especially vulnerable to stochastic environmental disturbances. As a result, many primates are becoming more vulnerable to potential extinction, increasing the importance of understanding how such habitat changes affect them. This study explores the interacting effects of diet, cortisol levels, and parasites on the density of a black howler (*Alouatta pigra*) population following a hurricane. Immediately following the hurricane the population density fell by 40%. The population continued to decline for 3 years reaching losses of 80%, at which point it stabilized and began to



recover. From 2001-2006, demographic, behavioral, and dietary data along with fecal samples were collected from six monkey groups in the Monkey River forest. A path analysis, which examines interactions among variables to calculate their direct and indirect effects, revealed that changes in population density over the five year period were explained primarily by low fruit consumption directly through energy malnutrition (BETA = 0.53; SE = 0.20) and indirectly through it leading to increased stress (fecal cortisol) (BETA = -0.58; SE = 0.23). Cortisol levels had a lesser direct effect on population density and were affected by low fruit consumption and multispecies parasite infections (BETA = 1.20; SE = 0.51). This study highlights the importance of taking a multifactorial approach when trying to determine what factors may regulate primate population density and dynamics.

ABSTRACT # 128

CONSERVATION IMPLICATIONS OF INTER- AND INTRA-SPECIFIC TRAIT VARIABILITY IN SPIDER MONKEYS

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All four species of *Ateles* are considered in some level of threat by the International Union for the Conservation of Nature. While this suggests that there is some general propensity of the genus to be affected by habitat loss and degradation (the main threats to their populations, in addition to hunting), there are important differences among species and even among populations of the same species in their tolerance of habitat loss and degradation. As several talks in the symposium will show, the flexibility in the spider monkeys' diet, social organization, grouping and movement patterns allow them to withstand some degree of perturbation, which makes them a relatively abundant primate species throughout the Neotropics. But how much? What are the limits of this tolerance to perturbation? Are there types of disturbance that are less threatening to their survival than others? It is likely that the more variability exists, the more likely a genus is to persist in the face of multiple threats and uncertain environmental changes. Therefore, one should not aim to conserve only representative populations of a given taxon, but the variability in traits which allows them to cope with different threats.