

# Circadian Rhythms in Lemurs

Over 100 species of lemurs have evolved in Madagascar, a large, but isolated island off the east coast of Africa. The diversity in the physiology and the behavior of these lemurs is also quite large. Little is known about the circadian rhythms of these species other than some are primarily active during the day while others are primarily active at night. This simple dichotomy is, however, poorly representative of how lemurs interact with their luminous environment. Some lemurs, for example, are active during the full moon but inactive under starlight at night. Some lemurs are primarily active during the beginning of the day,

while others are active both during the morning and the evening.



Photo: David Harting, Duke Lemur Center



Photo: Ken Glander, Duke Lemur Center

White-fronted (left) and ringtailed lemurs are two of the many species of prosimians living at the Duke Lemur Center. Their Daysimeters will measure their light exposure and amount of daily activity.

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Photo: Ken Glander, Duke Lemur Center

A lemur models one of the LRC's Daysimeters, encased in a special waterproof housing.

The Duke Lemur Center (DLC) in Durham, North Carolina, houses and protects 15 different species of lemurs. The DLC and the LRC are collaborating to develop a better understanding of circadian rhythms in lemurs. Because survival and reproductive success of these endangered species is, in part, dependent upon the seasonal and monthly differences in the luminous environment, the research is aimed at understanding how the different species of lemurs respond to controlled patterns

and amounts of light and dark in captivity. The research will lead to a basic understanding of the underlying retinal mechanisms that control their circadian rhythms. From that understanding, more sophisticated and better controlled lighting patterns will be provided to lemurs held in captivity to improve their reproductive success and their overall health and well-being. In addition, the collaboration is aimed at developing practical, collar-worn, light dosimeters for use in Madagascar so that field scientists will be better able to understand how lemurs respond to the natural light-dark cycle and how electric light from human encroachment affects lemur behavior.



An LRC researcher assembles a prototype light fixture with LEDs that will be used in the lemurs' habitat to control the lighting amount and spectrum.