Management Imperatives for *Varecia* in Captivity

A review of the captive history and status of *Varecia* is presented followed by specific management recommendations for both *Varecia v. variegata* and *Varecia v. rubra*. The total living captive population for the nominate form numbers 398 animals while that for the red and black form numbers 148 individuals as of 31 December 1986. *Varecia v. variegata* is reported to be a rapidly growing population originating from a founder population (wild-born animals which have produced offspring) of 21 animals. Management direction for this subspecies includes equalization of founder representation and controlled reproduction. *Varecia v. rubra* is reported to be more highly inbred with 79.35% of the captive population originating from 3 of 8 founders. The management imperatives for this subspecies include: 1) acquisition of a small number of wildborn red ruffed lemurs to be infused into the captive population over an extended period of time; 2) increase population; 3) equalize founder representation; 4) locate space. Encouragement of *in situ* research and conservation activities is strongly advocated.

Representing the third most numerous lemur species in captivity, the ruffed lemur appears to be one of the most successful examples of a threatened population being rescued from potential extinction. In the case of *Varecia*, however, population size is but one criteria for long-term propagation. As a manager of this taxon, I will describe the species, its present status, and suggest management imperatives which bear upon its long-term survival.

Confined to the tropical rainforests of eastern Madagascar, the Vari or ruffed lemur is severely threatened by hunting and a continuously diminishing forest habitat. The species remains ill-defined in nature, particularly as it relates to phenotypic variation, distribution, population size and social organization. Currently, two subspecies are recognized as taxonomically distinct: the black and white ruffed lemur *Varecia variegata variegata*, and the red ruffed lemur *Varecia v. rubra*. The former subspecies ranges from Farafangana in the south to Maroantsetra in the north (Figure 1). PETTER (1977) and TATTERSALL (1982) among others, describe up to four distinct pelage variations within the subspecies, but conclusions regarding these variations await *in situ* population analysis. The range for *Varecia v. rubra* is significantly more limited, being confined to the Masoala Peninsula (TATTERSALL, 1982). Reports of variations from the primarily black and red coat color have been made in recent years (Nick Lindsey, personal communication) with certain populations being described as being red and white. Hybridization between the two subspecies is known to occur in the wild, most likely a consequence of human encroachment and shrinking habitat.

Serious captive propagation of *Varecia* began during the ten-year period between 1962 and 1972 when 20 wild caught black and white ruffed lemurs and 8 wild caught red ruffed lemurs were exported to North America. Between 1960 and 1985, an additional 14
Varecia v. variegata and 4 Varecia v. rubra went to collections in Great Britain, the German Federal Republic, France, Switzerland and the Republic of South Africa. Between 1960 and 1985 a total of 36 Varecia v. variegata and 12 Varecia v. rubra were exported from Madagascar for captive propagation (Brockman, et al., 1986).

Today the captive living population of the nominate form numbers 398 (221.167.10) animals, while that for the red ruffed lemur numbers 148 (80.68) as of 31 December 1986 (Brockman, 1986). The rate of population growth for the species has been steadily increasing (Figure 2). During the last three years Varecia v. variegata has averaged a 15% overall increase in population, while Varecia v. rubra has averaged a 19% population increase. Both populations are well into their fourth generation.

From this brief summary, one might get the impression that the species has been successfully snatched from the jaws of oblivion and simply awaits possible reintroduction into a secure Malagasy habitat. But such is currently not the case. Successful captive propagation of a species is based on more than population size and generational level. A closer examination of each subspecies reveals differing critical management imperatives which bear on the future of each population.

As previously mentioned, 398 black and white ruffed lemurs reside in over 80 institutions worldwide. All of these animals originate from 21 wild caught individuals (founders), the remaining 15 imported animals having died without progeny (Brockman,