



# Managing Aggression in Prosimians

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- Aggression in lemur groups can be common seasonally and during introductions of new group members or during reintroductions of group members that may have been separated from the group for multiple reasons.
- This aggression occurs in all group sizes (though generally larger than a pair) and compositions (both single-sex and mixed-sex), and is often predictable with breeding season, but can occur at other times of the year as well.
- Breeding season in particular is a time when the social hierarchy may be disrupted, though aggression can occur at other times of the year as well.
  - Ring-tailed lemur: September – March
  - *Eulemur*: October- March
  - *Varecia*: November- March
  - Sifaka: July- September
- Another common time we see aggression in lemurs is when offspring get pushed out of their natal group. Typically seen around time of maturity (~2-3 years) but can be earlier or later depending on individuals.



# Breeding Season



- Male-male aggression often increases at this time as males compete for mating opportunities.
- Females may also become increasingly aggressive during breeding season in anticipation of reproductive and energetic stress.
- It is best to keep groups intact with minimal levels of aggression present (i.e. chasing, displacement, a few hair pulls, and even minor wounding) rather than separate an individual and have to re-introduce them to the group.
- It is normal for one or two females to be peripheral from the group during breeding season. It is also normal for one male to stay close to a breeding female while other males are kept peripheral to the group
- Different institutions will need to define their own acceptable levels of aggression.

# Breeding Season

- ▶ Groups do not need to be breeding for aggression to spike during breeding season.
- ▶ Individuals do not need to be intact for aggression to spike during breeding season.
- ▶ During breeding season in particular, you may also see increased aggression between mixed-species groupings.



# Breeding Season- Husbandry Changes



- ▶ Tactful Separation
  - ▶ If any individual needs to be removed from the group for any reason (medical, training, etc) the importance of separating based on ranking is important in their housing, when possible.

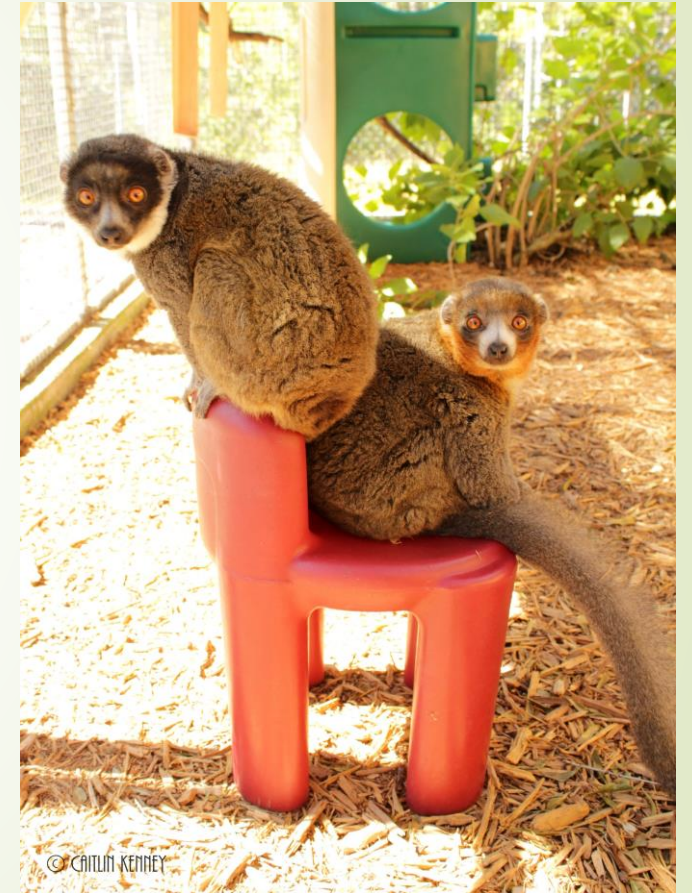
# Breeding Season- Husbandry Changes



- ▶ Adjust food presentation and schedule.
  - ▶ Provide more food bowls, feeding stations, and/or station train for feeding.
  - ▶ Vary heights, locations, and amounts of diets items provided at a given feeding.
  - ▶ Reducing or eliminating high value food items from diet (consider lowering sugar and raising fiber amounts given)
  - ▶ Offering more frequent browse allows for natural group feeding and scent marking behaviors.
  - ▶ Favoring submissive individuals may increase tension in the group.

# Breeding Season- Husbandry Changes

- ▶ Use enrichment opportunities to your advantage.
  - ▶ Do not use novel food/high value items in enrichment.
  - ▶ Vary the types of enrichment and increase frequency of enrichment, give enough items so there are more than enough for all group members.
  - ▶ Do not use food enrichment if aggression is present.
  - ▶ Increasing foraging opportunities.
  - ▶ Use training opportunities as possible distractions, but be aware of hierarchies during training sessions and discontinue if this increases aggression



# Breeding Season



## Female/Female Aggression

- ▶ Females of any status within the group may challenge others in the months leading up to or during breeding season.
- ▶ Unrelated females may also become the target of aggression.
- ▶ Lower ranking females may try to gain hierarchy position by challenging other low or midlevel ranking females.

## Male/Male Aggression

- ▶ In a bachelor group, attempt to rotate a single individual with another compatible group member in order to not have a singly housed lemur.
- ▶ This can be done for longer periods of 2-3 months or more throughout the breeding season.

# Breeding Season



## ➤ Aggression in Mixed-sex Groupings

- In a mixed sex group, if the males become aggressive toward each other, separate them for 2-3 weeks with visual access.
  - If aggression persists, then separating males during the entire season can be beneficial. The group may go back together after breeding season hormones have subsided.
  - In breeding groups with multiple males, it is possible to remove the non-breeding males (and male offspring) to a separate stall/holding area when the breeding season starts (~October). Once females are pregnant/non-cycling, reintroduce the “extra” males, or reintroduce all males back when breeding season tensions have subsided.
- Move the female(s) between them every 1-2 days, and if possible, allow the males equal time with the exhibit (i.e., their territory).

# Birthing Season

- ▶ Female/Female Aggression during birthing season
  - ▶ If separating after birth is necessary, be tactful about giving dominant females visual/olfactory access to the group as to not alter group dynamics.
  - ▶ If aggression leads to separation during a time when infant lemurs are present, wait until the young are at least a month to 6 weeks old before attempting reintegration.
  - ▶ In some cases, dominant females who did not have successful infants may target lower ranking females and their infants.
- ▶ Male/Female Aggression after parturition
  - ▶ Sometimes seen in collared lemurs. Can use 'time-outs' and other similar techniques mentioned here to manage.



# Introducing Social Groups



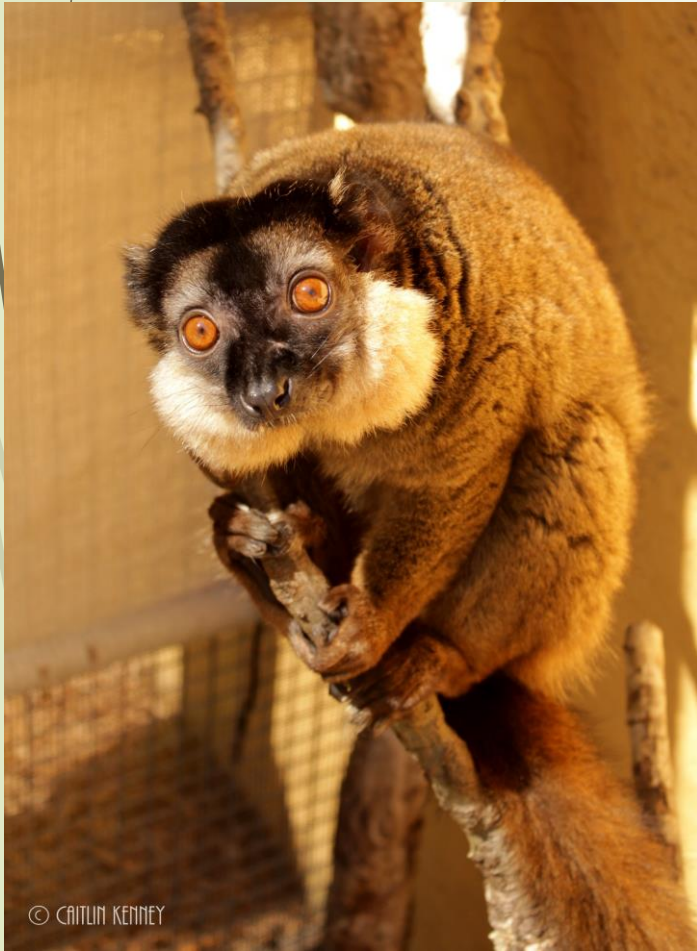
- Some institutions find it beneficial to do olfactory introductions first, by moving bedding, furniture, branches or other items between two groups (even if one group is in quarantine).
- It may help to exchange housing if possible, giving each group access to the other's space. The visual acclimation period may be reduced before physical introductions can begin.
- When introducing a new member into an existing troop, whether male or female, the dominant individual should be introduced first then the rest of the group to follow.
- Group introductions, especially of a larger number of animals or animals with a history of aggression towards one another, benefit from as much space as possible. Example: 4 indoor stalls plus outdoor habitat.

# Introducing Social Groups

- ▶ If an introduction is successful, only leave the group together for the daytime hours, and continue observations throughout the day.
- ▶ Do not leave them together overnight until management and keeper staff are confident that they can be left together safely.
- ▶ Lengths of introductions can vary depending on group dynamics, number of individuals, or available housing.
- ▶ It is important to remember that there may be initial aggression that can dissipate once a group is together full time. However, there is a balance that needs to be met so that introduction periods do not take too long.
- ▶ Separation times depend on staff resources for observations and the number of times the aggressive individual has been removed. The more times the individual has to be removed the longer the duration of separation (hours to days) from the group. Continue to evaluate the social dynamics of the remaining group members to ensure stability remains. May need to separate others to decrease possibilities of another aggressor arising.



# Reintroduction of Social Groups



- ▶ Before a reintroduction, keep the two groups in separate holdings with visual access until they are acclimated to each other.
- ▶ Similarly, when keeping individuals temporarily separated out of a social group, attempt to maintain visual and olfactory contact between the individual and the group.
  - ▶ The aggressor's ranking in the group may determine whether separation with visual access is appropriate
- ▶ Easily implemented visual barriers can be extremely helpful. Items such as blankets or sheets, towels, tarps, and burlap.
  - ▶ Barriers can be utilized at times where supervised howdies are not possible, temporary separation when aggression escalates during a howdy, or as visual blocks in an exhibit space.
  - ▶ Additionally, adding thick areas of browse or bamboo can add visual complexity and make it difficult for lemurs to approach each other quickly.

# Reintroduction of Social Groups

- Exchanging bedding/ blankets can provide olfactory stimulation that can serve to distract aggressors during introduction, giving them opportunities to explore and scent mark the items from other individuals rather than aggress directly toward the new individual. In a way, this serves to over-stimulate the senses of aggressors during introductions.
- When attempting reintroductions of individuals, allowing the aggressor to have more time away from the group may help to alleviate aggression upon reintroduction. This can last as short as a few days or up to a couple of months to allow breeding season to pass.
- All reintroductions are a case-by-case situation, and managers and animal keepers should judge that if interactions are positive, the reintroduction can move faster than planned. Be cautious, but continue to make forward progress.



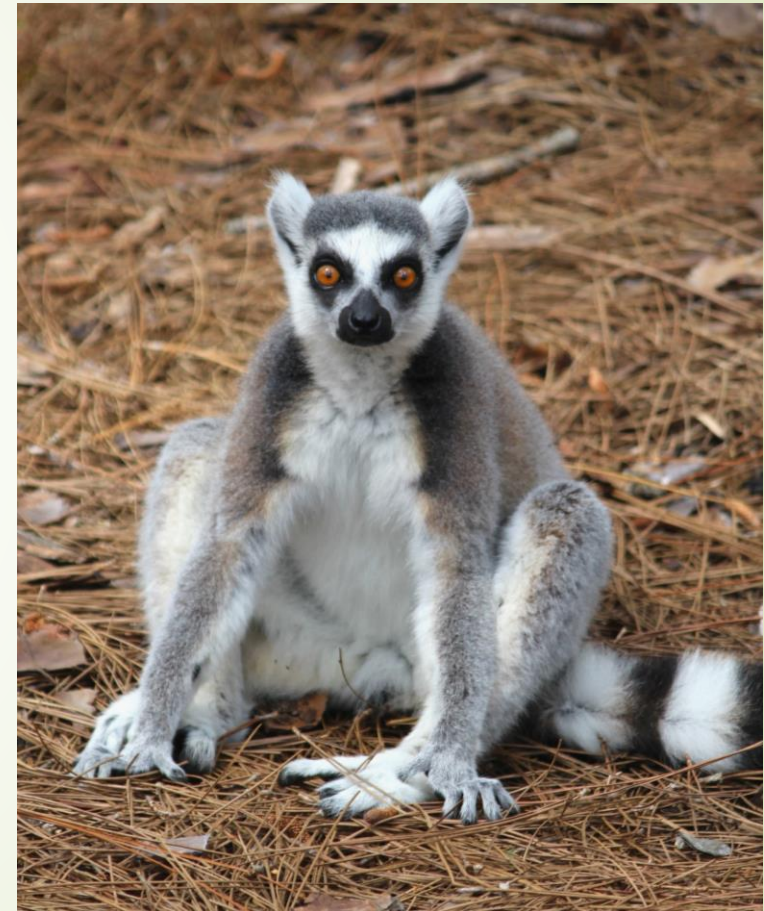
# Chemical or Surgical Intervention



- ▶ Chemical or surgical methods to decrease aggression should only be used after all other methods have been attempted and after consultation with the SSP Coordinator.
- ▶ There is very little scientific evidence that suggests that surgical methods (vasectomies OR castration) can eliminate all aggression in males long-term, and they do not always solve seasonal aggression issues.
  - ▶ Not all testosterone is produced by the testicles, so hormones may still surge, particularly during breeding season.
- ▶ Aggressive behavior patterns may be learned over time, which can make hormonal control ineffective. If this is the case, make changes to the group's daily husbandry or schedule.

# Chemical or Surgical Intervention

- ▶ Attempting to suppress hormones and aggression in RTL males with depo-lupron injections has had little success. The injections cause a spike in testosterone before they suppress it, which may lead to short bursts of aggressive behavior with long-lasting consequences
- ▶ Female contraception may be unlikely to alter behavior in males or females. Aggression is likely to be seasonally present no matter the reproductive status of the animals in the group.
- ▶ Because ring-tailed lemur skin is tighter than that of other lemurs, subcutaneous MGA implants do occasionally fall out. A sudden, unexpected loss of contraception in females may incite aggression by males during breeding season.
  - ▶ The SSP recommends you check implants regularly.
  - ▶ Add Depo-provera injections if it is suspected that MGA implants have come out.
- ▶ Please contact the SSP and the RMC with questions regarding lemur contraception.



# PTAG Contacts

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