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A BEHAVIORAL TAXONOMY FOR OWL MONKEYS (Aotus sp.)

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DEPARTMENT OF COMPARATIVE MEDICINE
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ABSTRACT

This paper describes a behavioral taxonomy of a captive breeding colony of owl monkeys (Aotus sp.) maintained in an artificial environment. The behavior was classified as noninteractive or interactive. Noninteractive behavior included feeding, drinking, locomotion, autogrooming, resting, elimination, and other motor acts. Interactive behavior included environmental and social behavior and infant care.

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PREFACE

Parts of this paper were presented at the Inaugural Meeting of the American Society of Primatologists, Seattle, WA, 16-17 April 1977 and the 28th Annual Session of the American Association for Laboratory Animal Science, Anaheim, CA, 2-7 October 1977. This paper provides a basis for continued quantification and analysis of owl monkey behavior.

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The importance of developing and defining a behavioral taxonomy for subhuman primate species has been documented (1). Because of the lack of published reports on owl monkey (Aotus sp.) behavior in an artificially controlled environment, we found it necessary to define a behavioral taxonomy for these animals.

At our laboratory we have an owl monkey breeding and research colony of approximately 110 animals maintained in an artificially controlled environment. The monkeys were kept in different social arrangements including single animals, breeding pairs with or without progeny and juvenile groups. The husbandry and environmental conditions for our colony have been described (2).

Some of the descriptions are based upon our observations while we were physically in the room with the monkeys. Other definitions were added to the taxonomy by our observations through a camera. It appeared that the presence of an observer in the room altered the monkeys' behavior. Therefore, we devised a system to observe them by using a closed circuit television camera (Model 2855B-202, COHU, Inc., San Diego, CA) with the images displayed on a high resolution monitor (Model SNA-90, Conrac, Covina, CA) located outside the animal room, and recorded the behavior on videotape (Model NV-2125, Panasonic, Mathushita Electric Industrial Co., Japan) for later analysis.

Behaviors such as facial expression and vocalizations are not included. Variable facial expressions were not discernable or did not occur. The owl monkey has thin small lips and perhaps the labial musculature or innervation does not allow for a range of facial expressions. Also, because of the nocturnal nature of this species, a wide variety of subtle expressions may have limited value in social communication. Moynihan (3) has already described owl monkey vocalization in detail. Because of technical difficulties in obtaining clear recordings and identifying specific vocalizing animals, we did not pursue this area of investigation.

After observing these owl monkeys in an artificially controlled environment for three years, we developed a glossary of terms for behavior we see in our animals. The behavior patterns were divided into two general classes, noninteractive and interactive, which were further subdivided. The taxonomy presented in this paper will help us to communicate consistently as we quantitatively analyze behavior and investigate its relationship to owl monkey colony management and breeding procedures.

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1. Kaufman, C., and L.A. Roseblum. Primate 7:205-258, 1966
 2. Kelley, S.T., et al. LAIR Report No. 49, 1978
 3. Moynihan, N. Smithsonian Misc. Coll. 145:1-84, 1963

BEHAVIORAL TAXONOMY

I. Noninteractive

A. Feeding

1. Chewing with manipulation

What appears to be mastication of the food, with the food in the hands.

2. Chewing without manipulation

What appears to be mastication, but the food is not held in the hands.

3. Carrying

The monkey carries the food, either in the mouth or the hands, away from the food source.

4. Discarding

Throwing the food down after manipulation or spitting the food out of the mouth.

5. Sniffing

Investigation or exploring the food with the monkey's nose.

6. Manipulation

Monkey manipulates the food with its hands but does not eat or chew the food or place it in its mouth.

B. Drinking

Self-explanatory.

C. Locomotion

1. Jumping

Quadrupedal leaping from any location in the cage to another.

2. Climbing
Hand over hand vertical movement.
3. Walking
Horizontal movement using the arms and legs.
4. Suspensory movement
Horizontal movement using the arms and legs. The monkey is suspended from either the roof of the cage or a perch bar.
5. Hopping
Movement of arms and legs together, similar to a rabbit.
6. Pivoting
Rotation of the body without a net change in location.
7. Flip
Any movement where the legs are brought over the head (a somersault motion).
8. Hanging
Suspended by the arms or legs.
9. Crawling
Low profile walking movement.
10. Running
Self-explanatory.
11. Standing
A temporary position as part of a transition movement.

D. Autogrooming

1. Scratching

Scratching any surface of the body with the digits of the hand.

2. Picking

Picking the fur, usually the appendages and tail. This does not imply that the monkey is purposely examining its skin or hair.

3. Licking

Licking the body surface with the tongue.

4. Nibbling

Nibbling or chewing the body surface.

5. Rubbing

Rubbing against the cage with any portion of the body.

6. Miscellaneous autogrooming

E. Resting

1. Crouch

The monkey is in an upright position with the plantar surface of both feet planted on the cage floor. The back is hunched, the arms are hanging down, the hands may or may not be touching the floor, the head is down with the eyes directed down.

2. Crouch with support

The monkey is in a crouched position but its body is supported by a vertical surface.

3. Recline

The monkey is resting with its back against a vertical surface, the legs stretched out in front or curled around the monkey. The arms are hanging in front or to the sides of the monkey.

4. Lying down

Totally horizontal position.

F. Elimination

1. Urination

Self-explanatory.

2. Defecation

Self-explanatory.

G. Other motor activity

1. Body shake

A rapid shaking of the entire body, may or may not include shaking of the head.

2. Head shake

Rapid shaking of the head, without shaking the body.

3. Marking

Using one or both hands, touching the perineal region, then directly wiping the hand across part of the cage surface or wiping the feet or another part of the body.

II. Interactive

A. Environmental

1. Retreat

Movement away from external stimuli.

2. Charge

Rapid movement toward an object, may be accompanied by an open mouth and vocalization.

3. Threaten

Semierect posture, the arms hanging, may be accompanied by weaving or bobbing of the head and vocalization.

4. Blocking

One animal, usually the male, positions itself between another monkey and environmental stimuli.

5. Cower

Semicrouched against the walls of the corner of the cage most remote from the external stimuli. The side of the animal is presented to stimuli. The monkey avoids direct eye contact.

6. Escape stance

Monkey is pressed into a corner. An erect posture is maintained with the arms and legs spread to grasp the side of the cage. The back is in contact with cage walls. Direct eye contact is avoided. Occasionally there is rapid pedaling motion of the legs.

7. Evasion

Rapid, often undirected escape movements, without regard to possible injury.

8. Gazing

Standing or crouching with or without head weaving. The gaze is fixed on environmental stimuli, may involve visual pursuit.

9. Browsing

Standing or crouching at a halt with the nose very close to a substrate.

10. Mouthing objects

Licking, chewing, or mouthing the cage surface or objects in the cage. Does not include food.

11. Handling

Picking up objects with hands, fingering cage or other objects. Does not include food.

12. Orienting

Rapid directed head movement toward an object.

B. Social

1. Approach

Movement towards another animal.

2. Nose touching

One animal touching its nose to the nose of another animal.

3. Exploration

Touching the body surface of another monkey, including hands, mouth, or nose.

4. Grooming

Use of the hands or mouth to comb across or pick through the fur of another animal.

5. Receiving grooming

The observed monkey being groomed by another monkey.

6. Nuzzling

Rubbing the top of the head against another monkey or pushing the face into the fur of another monkey.

7. Huddling

Resting in contact with another monkey; may be with arm or tail over the other animal; may straddle another monkey with the arms or hind legs or entire body.

8. Play

Rapid, out of context, non-sequential motor activity between two or more monkeys involving a variety of locomotor patterns and social interactions.

9. Avoidance

Spatial distancing and maintenance of distance to avoid proximity with another monkey.

10. Replacement

Spatial supplantation of another monkey.

11. Pushing

Pushing another monkey with the arms.

12. Displacement

Movement to avoid an approaching monkey.

13. Submission

Cessation of activity, withdrawal, or cautious approach with attention focused on the other monkey. This may involve a covering or crouching posture.

14. Fighting

Conflict between two or more monkeys involving biting, struggling and vigorous vocalization; may involve pursuit.

15. Chasing

Locomotor pursuit of one monkey by another.

16. Fleeing

Locomotor avoidance of a pursuing animal.

17. Mounting

The male stands behind the female with his ventral pelvic region contacting the female's perineal region. Both of the male's feet are on the cage floor, both hands grasp the female's sides or back, the male makes several rapid pelvic thrusts. The female is in a semi-crouched position with both feet planted on the cage floor, she is bent at the waist and her hands usually rest on the cage floor.

C. Infant Care

1. Nursing

Ventral:ventral contact; infant's mouth is in proximity to mother's mammary glands.

2. Carrying

Can be either ventral:ventral or ventral:dorsal. The infant clings to the parental fur and is not supported by the parent.

3. Transferring

Active or passive movement of the infant from one parent to another.

4. Infant grooming

Combing, licking, or picking of the infant's fur or skin by a parent.

5. Pick-up

Allowing the infant to crawl onto the parent's back from the cage surface or parent uses its hands or arms to push the infant into a carrying position.

RECOMMENDATIONS

The taxonomy described in this report should be used to quantitatively analyze behavior and investigate its relationship to owl monkey colony management and breeding procedures. This taxonomy should facilitate consistent and understandable communications regarding owl monkey behavior.

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1. KAUFMAN, C. and L.A. ROSEMBLUM. A behavioral taxonomy for Macaca nemistrina and Macaca radiata: Based on longitudinal observation of family groups in the laboratory. *Primate* 7:205-258, 1966
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