

FEEDING BEHAVIOR OF A HERD OF MASAI GIRAFFE (*GIRAFFA CAMELOPARDALIS TIPPELSKIRCHI*) AT THE SAN DIEGO ZOO

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ABSTRACT

The objective of this study was to determine the feeding behavior of a herd of 2.5 Masai giraffe (*Giraffa camelopardalis tippelskirchi*) (Table 1) and compare this to feeding behavior in other zoo and free-ranging giraffe. In May 2020, 16 h of observations (0500 through 2100) were divided into four time periods (early morning, late morning, early afternoon, evening) and the hours within the time periods were randomly assigned to one of four days of observation. Therefore, on each day, one observation was made in each time period. Instantaneous scan sampling was done every 5 min on each animal. The observer recorded the posture of each animal (standing, lying, bending, walking, and running) and its activity (sleeping, ruminating, eating, drinking, courting, nothing, and other miscellaneous activities). All observations were made from areas accessible to Zoo's guests. The Masai giraffe herd were housed in a 929 m² exhibit that included two yards and a barn. The giraffe were fed a diet (as-fed) consisting of 1.1% green beans, 1.3 % mixed leafy greens, 44.9% pellets (Mazuri® Wild Herbivore Diet Hi-Fiber) and 52.3% alfalfa hay supplemented with six 1.8-m pieces of Acacia spp. browse.

The giraffe herd spent 75% of their time standing, 16.6% of their time walking and 7.7% lying down (Table 2). Bending or running comprised only 0.6% of their time. The giraffe spent over a third (36.3%, range: 28.8 - 44.5%, 5.8 h) of their time eating hay, browse, herbivore pellets and produce (Table 3). Over half (57.8%, 3.4 h) of their time eating was spent consuming the Acacia browse and hay consumption comprised 34.4% of their time eating. The giraffe spent the least amount of time consuming pellets and produce. The giraffe did nothing for 31.9% of the time being observed and 13.6% (2.2 h) ruminating. Licking objects like poles or the barn made up 4.8% of the giraffes time. The remaining 13.4% of the giraffe's time was spent courting, drinking or miscellaneous other activities.

The amount of time the giraffe in this study spent feeding is slightly lower than that observed in desert giraffe in Namibia (6.1 to 7.1 h) (Fennessy, 2004) and greater than a previous study in zoo giraffe (3.0 – 4.4 h) (Kearney, 2005). Rumination time of the giraffe in the current study was greater than that observed in free-ranging desert giraffe (0.8 to 1.6 h) and less than other zoo giraffe (5.1 to 5.6 h). The previous study in zoo giraffe (Kearney, 2005) observed the giraffe for 48 h continuously, and may have observed a greater amount of time spent ruminating overnight than the current study and the study in desert giraffe that only did day-light observations. The giraffe in the current study spent 0.7 h licking objects (range: 0.3 to 1.8 h) and all 5 giraffe (100%) engaged in this activity. In a survey of AZA institutions 72.4% of giraffe and okapi licked non-food objects (Bashaw et al., 2001). The information gained from this study will provide a baseline of feeding and other behaviors to compare diet and management changes in the future.

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Table 1. Demographics of the herd of Masai giraffe (*Giraffa camelopardalis tippelskirchi*) observed at the San Diego Zoo.

Animal	Age	Body weight, kg
Adult male	17 years	1185
Adult female	18.5 years	760
Adult female	13 years	636
Subadult female	2.5 years	528
Juvenile male	5 months	230

Table 2. Posture and locomotion activity observed in a herd of Masai giraffe (*Giraffa camelopardalis tippelskirchi*).

Posture	Percent of time ¹		
	Average	Minimum	Maximum
Standing	75.0	69.1	83.1
Lying	7.7	0	17.3
Bending	0.1	0	0.5
Walking	16.6	9.4	24.1
Running	0.5	0	1.6

¹Observations from 0500 to 2100 (16 h).

Table 3. Feeding and other behaviors observed in a herd of Masai giraffe (*Giraffa camelopardalis tippelskirchi*).

Activity	Percent of time ¹		
	Mean	Minimum	Maximum
Eating (total of the following)	36.3	28.8	44.5
- Hay	12.5	9.4	17.3
- Browse	21.0	16.8	25.1
- Pellets and produce	2.8	1.6	4.2
Nothing	31.9	23.0	41.4
Ruminating	13.6	9.4	24.1
Miscellaneous ²	7.2	4.7	10.5
Licking	4.8	1.6	11.5
Courting	2.8	0	10.5
No observations ³	2.8	1.6	4.2
Drinking	0.4	0	1.0
Sleeping	0	0	0

¹Observations from 0500 to 2100 (16 h).

²Includes scratching, sneezing, trying to nurse, nursing, playing with feed or feeder, reaching for plants outside the exhibit and watching observer.

³No observations were done either because it was too dark or animal was in the barn and could not be seen.