

Tree Kangaroo Husbandry Manual

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(November 1990)

5 Nutrition

Browse

Bulky, high fiber foods (i.e. browse) are an important part of the tree kangaroo diet. There is a definite correlation between the feeding of browse and the condition of the animals feces. When insufficient amounts are fed, the feces are soft to pasty.

Elm (Ulmes), willow (Salix), Escallonia, maple, except for red (Acer), alder (Alnus), Ficus, and various species of Bamboo are the types of browse fed at Woodland Park Zoological Gardens (WPZG). Bamboo leaves dry out quickly and as a result, it is not a favorite browse item since the tree kangaroos seem reluctant to eat browse that is not fresh. Browse is offered twice a day in order to maintain freshness and to provide the animals with activity as well as an adequate supply throughout the day. The leaves are consumed first, then the bark is striped. The buds and tips are also eaten.

At WPZG the manner in which the browse is presented is also important. When the browse was tossed on the ground in a pile, only 50% was consumed. When “planted” in the sand, about 65-75% was eaten, compared to 90-100% consumption rate when the browse was stuck up in the branches of the trees. Alfalfa is occasionally fed as a substitute for browse, but has a high caloric count and can lead to an unhealthy weight gain which can possibly impede reproduction.

Bev Drake (1984) reported that the natural diet contains 75-80% foliage. The remainder of the diet consisted of wild fruits, flowers, nuts, insects, bark and sap. Bird eggs and young birds were also eaten.

During a twenty month field study of Lumholtz’s tree kangaroos, Elizabeth Proctor-Grey (1984) observed animals consuming 90% of mature leaves, 6-8% of new growth and 3-4% of flowers. Animals were seen feeding for periods of 15-20 minutes every 4 hours.

High-Fiber Apple Biscuit

Several zoos have reported using a high-fiber apple biscuit which was developed as a diet for leaf-eater primates. See comments in the “Survey Results” diet information section (NZP-CRC).

Color

George (1982) reported that “Certain elements of the normal tree kangaroo diet may be necessary for the maintenance of the rich red and yellow coat colors of D. matschiei and D. goodfellowi.” George mentions museum skins from wild caught animals had a much deeper and brighter yellow color than any captive specimen he had seen. He also reported the return of deep red and bright yellow pelage in a pair of D. goodfellowi “... after a period on diets which contained regular quantities of fresh maize.”

In personal correspondence, Collins reported the need for tea leaves in the tree kangaroo diet on a regular basis to maintain color. It was reported that the tannin in the tea leaves seems to replace this dietary element usually obtained in the natural diet of primarily vegetation.

Vitamin Supplementation

According to Collins (1982 personal correspondence) there is evidence of tree kangaroos requiring the addition of Selenium and Vitamin E in their diet:

“2 ppm Selenium and 55 International Units per pound of Vitamin E are added at NZP’s request to Purina Omelene. I have heard of various zoos losing tree kangaroos from what was diagnosed as white muscle disease.”

Whitehead (1981) also refers to the need for Vitamin E supplementation.

Retching Behavior

Retching and some remastication and swallowing has been observed in all four adult Matschie’s tree kangaroos at WPZG; Whitehead (1981) also refers to this behavior at Twycross. On one occasion the WPZG male, Koko, was observed to actually vomit after eating an item not in his usual diet.

Examples of Tree Kangaroo Diets Fed at Some Institutions

Woodland Park Zoological Gardens

Each animal has its own diet card and the amounts fed vary according to their weight and reproductive state. Approximate amounts per animal are as follows. All items are uncooked.

AM diet:

1.5	stalks celery
50 gms.	*Yam (up to 60 gms. Fed to some animals)
50 gms.	Kale
1/3 cup	Custom herbivore pellets with selenium
1/2 Tbsp.	Loose tea leaves (sprinkled over dampened pellets).

PM Diet

40 gms.	Apple
80 gms.	Carrot
60 gms.	Celery
115 gms.	Kale
20 gms.	*Corn on the cob

Ad lib access to mineralized salt block and bowls of water which are secured in the trees.

* Favorite items are hand fed to condition animals to come down to lower levels of the exhibit. This allows keepers to observe animals closely twice each day and is less stressful for the animals should the need arise to capture and restrain them.

This diet was originally based on the diet fed at Front Royal Conservation Center. Animals are fed in their own pans at separate stations in the exhibit. The feeding stations are spaced from 1.5 to 3.6 meters (5 to 12 feet) apart to prevent food-related aggression, and to insure that each animal gets its own food ration.

Front Royal Conservation Center (per animal).

Information provided by L. Collins, 1982.

AM Diet (approx. 8:00 am)

1.5 stalks of celery with leaves (hand fed)
Browse (willow, mulberry, maple (not red))

PM Diet (approx. 3:00 pm)

40 gms. Apple
10 gms. Corn on the cob (in season)
80 gms. Sweet potato
80 gms. Carrot
60 gms. Celery (with leaves)
1/3 cup Omolene (a sweet feed, with added selenium and vitamin E to prevent white muscle disease)
1/3 cup Oats
165 gms. Kale
1/2 tsp. Vionate multivitamin mix sprinkled over food

1 Tbsp. Loose tea leaves (Tuesday)

Twice weekly: (Added to diet in Oct. 1987).

1 hard boiled egg (Tuesday and Thursday)
Banana peels (Monday and Friday)

The above amounts are for an 'average' portion. Actual amounts vary with the condition of the individual animals. One slice whole wheat bread per day is fed to lactating females and to animals when weight gain is desirable. Overweight animals are fed an increased portion of kale while fattening components of their diet are decreased.

Sedwick County Zoo – Wichita, KS

(December 1985 for 1.1 animals – personal communication K. Redman / J. Steenberg)

AM Feeding

3/4 Head lettuce
Alfalfa leaves

PM Feeding

3/4 Head lettuce
1 Peeled banana
2 Carrots

1	Sweet potato
1/2	Apple
2	Ribs of celery (favorite food item)
	Hydroponic grass (favorite food item)
1/2 cup	Monkey chow
1/4 cup	Tea leaves (Tuesday and Friday)
	Vitamin supplement

Baiyer River Sanctuary (Papua New Guinea)

(January 1982 – correspondence from Roy D. MacKay, Superintendent)

“Our diets for the animals include a lot of local leaves and fruits as well as mulberry branches with bark, sweet potato leaves, sweet potato, carrots, rolled oats, and a little bread. It is important to give them a large amount of bulk i.e. leaves.”

Melbourne Zoological Gardens – Melbourne Australia

(Drake, 1984)

Small amounts of the following are given daily:

(some are seasonal items)

- | | |
|--------------------------|---------------------------|
| - Apple | - Sweet potato |
| - Carrot | - Beet root |
| - Banana (not peeled) | - Butternut pumpkin |
| - Tomato | - Oranges |
| - Pineapple | - Paw paw |
| - Dried Fruits (handful) | - Variety of stone fruits |

They are fed macropod pellets and roasted, shelled peanuts. Hard boiled eggs are offered every 3-4 days and are readily consumed.

Day old chicks: Frozen and then thawed to destroy some of the vitamin A, they are fed every 3-4 weeks; 7 chicks for 1.3 animals. The brains and stomach contents are relished; little flesh is consumed.

Medium sized branch of:

- Mirror leafed coprosma
- Golden Ash
- Liquid Amber
- Wattle (especially the flower)