

Table I Daily Husbandry Routine for Kermode Bears from Early Spring to Late Fall

TIME	WILD BEHAVIOR	ENCLOSURE/ENRICHMENT REQUIREMENTS
Sunrise	Bear wakes - stretches	<ul style="list-style-type: none"> - Bears need constant indoor/outdoor access except for enclosure maintenance and enrichment. - Bears often rise long before caregivers arrive for work.
"	Bear checks status of companion animals i.e. cubs, mate, companions	<ul style="list-style-type: none"> - Bears must live in appropriate social groups befitting their age, sex, and reproductive status, it is generally recognized that one male to two or more females results in the most peaceable group.
"	Bear cleans in water or substrate	<ul style="list-style-type: none"> - Bears must have access to pools, woodchips, soil, growing grasses, substrates in significant amounts to accommodate personal hygiene.
"	Bear drinks	<ul style="list-style-type: none"> - Bears must have access to clean potable water.
Early A.M.	Bear begins morning search for food	<ul style="list-style-type: none"> - This is a critical time for a bear since his food search often begins before the caregiver arrives in the morning, a hungry bear in a food-deficient enclosure may express anticipatory or entrenched stereotypies, thus food must be available either in feeder devices, via an early caregiver shift available at sunrise or via automated feeders. - Automated feeders can cause behavioral issues if used throughout the day as a substitute for a variety of enrichment events, however when used exclusively in the early morning to provide food to hungry bears the method can prevent the onset of stereotypies.
Early-Mid A.M.	Bear's search for food continues	<ul style="list-style-type: none"> - Caregivers must have the ability to recall and shift the bear into another area using either personal relationship or operant conditioning to accommodate morning maintenance. - While the caregiver is cleaning and enriching exhibit areas, the bear must be kept stimulated for the entire duration that he is confined in the back areas with food enrichment until he can be released into the exhibit area. - This can be a good time to do operant conditioning provided to bear has had a chance to eat to at least partially satiate himself. - It is imperative that the bear use a quantitative method to assess satiation such as the bear leaving food, since a bear that eats all of his food does not indicate satiation, it could indicate hunger. - The objective of the A.M. feed is to satiate the bear, thus enrichment offered should be interesting but not so challenging as to be frustrating, the challenge of food extraction in enrichment events can be increased in the afternoon when the bear is interested in the activity and less concerned about satiation.
Mid A.M. - Early Afternoon	Bears choose and prepare a daybed site, and take a nap	<ul style="list-style-type: none"> - Bears will take an early afternoon nap for which each bear requires a choice of private daybed sites, nesting material (straw, woodchips, excelsior [wood wool] etc.), ability to adjust body temperature (shade, sun), undisturbed down time (no training sessions or required public appearances).
Mid Afternoon	Bears rise to continue food search	<ul style="list-style-type: none"> - Caregivers lock bear into enriched back area to place enrichment into main outdoor enclosures. - Caregivers can do operant conditioning or relationship building sessions with bear
Afternoon - early	Bears continue food search	<ul style="list-style-type: none"> - At this time enrichment can offer greater mental challenge, novel items, foodless enrichment, and scent enrichment.

evening		<ul style="list-style-type: none"> - Enrichment that offers group activity such as wobble trees work well at this time since satiated bears are i/ less likely to take personal ownership of event, ii/ more likely to tolerate group efforts to solve problem, and iii/ be disinclined to exhibit aggressive behavior. - Jungle gyms that allow hanging items or climbing opportunities provide bears with exercise if enrichment is used to entice bears into activity.
Early evening	Bears continue food search but begin to search out site for bedding down for the night	<ul style="list-style-type: none"> - Caregivers can either bring bears into enriched back area to accommodate the enrichment of the exhibit enclosure, or they can throw enrichment items over fencing or send it down threw delivery pipes. - The enclosure must provide enough bedding and private areas for each bear to comfortably bed down for the evening.
Night	Bears rest. On occasion bears become nocturnal usually to forage unhindered by either con-specifics or predatory species	<ul style="list-style-type: none"> - Bears should be monitored to assess if any group members habitually become nocturnal feeders, as this can indicate that this bear is not competing well with more dominant members of the group.

Table II Seasonal Husbandry Routine for Kermode Bears

SEASON		
FALL Hyperphagia	WILD BEHAVIOR	<p>The Kermode bear will be a voracious eater at this time of year as his objective is to gain fat reserves to see him through the upcoming winter denning period and his walking metabolic depression in the ensuing early spring. Berries, fruits, nuts, and meat proteins (ex. salmon) make up the majority of his fall diet. As winter nears, the bear alternates his time between feeding grounds and inspecting possible winter denning sites, eventually choosing one site to either build or renovate.</p>
	ENCLOSURE/ENRICHMENT REQUIREMENTS	<p>The bear's diet must be increased according to his appetite not according to an artificial weight gain goal set for him by managers which could leave him calorie deficient and unable to manage properly through the upcoming winter. A bear that is not yet in metabolic depression and has had food resources decreased artificially can starve and die. Metabolic depression is complicated and not wholly understood, thus the bear knows best how many calories are required to survive an upcoming winter. Wild bears have been observed to walk off of feeding grounds when they are ready to den even when there are still berries and other food resources left suggesting that food availability is not the only critical criteria signalling denning fitness. Bears will need a great deal of enrichment which includes scatter feeds, puzzle feeders, lunch boxes and bags, rotting logs with bugs, and fresh browse such as willow. A choice of winter denning sites and bedding material should be available early on so the bears can move from one to the other and assess suitability.</p>
WINTER Denning	WILD BEHAVIOR	<p>American black bears hibernate for the winter months, even those bears that live in warmer climates such as Florida. The duration of the denning period depends on numerous criteria including biophysical parameters, age and sex.</p>
	ENCLOSURE/ENRICHMENT REQUIREMENTS	<p>A bear in metabolic depression experiences a 20-50% decrease in metabolism, reduction in heart rate from 40 b.p.m. to 8-10 b.p.m., a decrease in oxygen consumption up to 50%, and a slightly depressed body temperature to 86-95°F. A captive bear that is not given the opportunity to den becomes slow moving, often short tempered and unable to successfully take part in operant conditioning or other husbandry procedures. A bear requires a cool, dark, quiet, private place to den up with a large quantity of bedding material. It is imperative to set up a food and water depot near the bear's chosen denning site since managers will not know if a particular bear was able to effectively compete with other bears for food resources and if he carries the necessary fat reserves for denning. Since bears will actually get up from denning for preferred foods and enrichment items, all treats and enrichment are to stop during denning to allow the bear undisturbed hibernation. The best food to leave at a food depot is pelleted omnivore chow. Generally, it is not a preferred food and bears do not tend to rise to eat it unless they are nutritionally or fat deficient.</p>
SPRING Walking Hibernation	WILD BEHAVIOR	<p>The bear gets up in the early spring when the weather warms up slightly and the ice and snow are melting. At this time there is no new growth available to them, thus they root around to find overwintered berries, nuts, and the carcasses of animals that died during the winter. Foods are still scarce and their food intake is not high. Bear go through metabolic depression for the next several days to several weeks in a 'walking hibernation'. Thus the bear is still relying on fat reserves.</p>

	ENCLOSURE/ENRICHMENT REQUIREMENTS	The bear must not come out of his denning period bone thin. He must be carrying fat reserves to get him through his walking hibernatory period. The bear's diet presentation must mimic the appearance of foods in the wild and the caloric intake must be slowly increased up to the summer and then dramatically increased the following fall. The bear will need a great deal of enrichment throughout the day to occupy his time, and will require bedding materials.
SUMMER	WILD BEHAVIOR	The bear spends the late spring to early summer occupied with reproduction. When breeding season wanes the bear begins to follow the appearance of food resources such as fish spawning, larval phases of insect, and berry production.
	ENCLOSURE/ENRICHMENT REQUIREMENTS	The bear's diet presentation must mimic the appearance of foods in the wild and the caloric intake must be fully restored to summer capacity. The bear will need a great deal of enrichment throughout the day to occupy his time, and will require bedding materials.