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Eye on the Environment

## **Not Quite A Carrot And A Stick: A Grizzly's Motivation For Food**

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Puzzling through biological connections is a practice I think makes the discipline so interesting. Following one piece of thread helps glimpse how the entire tapestry is woven together. Contemplating the formative relationship between bears and human foods can prove to be a long thread that leads to a bear's diet, energy budget, and availability of an easy meal.

In the Seeley & Swan Valleys bears and people can share a lot of the same space. There is a lot of information related to the importance of keeping bears out of anthropogenic foods like garbage, domestic animal foods or bird feeders. An examination of a bear's dietary strategy may shed some light on the why securing human based bear attractants is important.

As an enigmatic species, bears are a large carnivorous mammal whose diet is dominated by fruits, insects, forbs, and grasses. In northwest Montana, meat composes roughly only 10% of a bear's diet; this percentage is particularly interesting, considering bears must put on 200-300 pounds of fat reserves to live off

of during the winter denning months. For females, levels of fat reserves will metabolically determine the number of cubs that can be born in the den and nursed over the next two years.

With some thought, a bear's foraging strategy makes sense. Tasked with significant energy needs, the animal has evolved to use many different plant, insect, and animal food sources to increase the opportunity to find food on the landscape.

The resultant protein balance is like an investment portfolio of differing foods a bear can use to best facilitate both body maintenance and energy storage. A mixed diet of protein and vegetation can give bears high calorie diets with the appropriate partitioning of protein for maintenance of lean muscle mass and carbohydrates for fat buildup.

The energy expenditure vs. energy intake budget of a successful grizzly bear must be far into the black. This must not be an easy undertaking for a bear. A grizzly will range across large tracks of habitat that hold both mountains and valleys. Digging for mountaintop caches of white bark pine seeds, army cutworms, or thinning berries from huckleberry bushes is not light work.

Meeting the needs of a 300-800 lb. body while storing enough energy for the winter based on a diet bite-sized morsels seems a difficult task. Research has indicated grizzly bears are able to gain 3 to 6 pounds a day in the height of their foraging season. To maintain body size this means a grizzly may eat up to 90

lbs. of food a day depending on the size, age, and metabolism of the bear.

The low amount of protein in a bear's diet can be especially important. Dominant protein sources for grizzlies in northwest Montana are white bark pine seeds, army cutworm larvae, and animal matter. While grizzly bears are predators, they are mostly scavengers picking up easy meals from already dead animals or excavating caches of white bark pines seeds or Army cutworm moth larvae.

Just how much can grizzlies eat? Army cut worm moths found in high elevation mountain talus slopes can be a major bear food. Bears dig into the rocks to find caches of moth larvae. As many as 20 bears have been observed on McDonald Peak in the Mission Mountains digging for these larvae.

Studies of the same foraging strategy in Glacier Park estimate grizzlies eat around 40,000 moths a day at the rate of 1,700 moths an hour. The researchers observed the bears digging around 200 dig sites a day on the mountain side foraging for the moth species.

For perspective, moth larvae are estimated to have an energy value of 7 kilocalories(kcals) per gram – similar to mule deer estimated at 7.32 kcals per gram. Glacier Park research estimates that bears were consuming 20,000 kcals per day. That is the kcal equivalent of 33 Big Macs. At this feeding rate, a grizzly bear can consume half of its annual energy budget in just 30 days of feeding.

Dense food sources are very beneficial to bears; they provide high energy yield to very low investment. Berries and certain forbs can provide high density food availability to bears. Patches of cow parsnip, clover, horsetail or fruit

bearing shrubs such as choke cherry or huckleberry are high value bear foods. By counting seeds found in bear scat, researchers have estimated that grizzlies can consume 100,000 huckleberries a day.

Examining human-bear conflict over 8 years in the Yellowstone Ecosystem, years with high incidence of bears damaging property and obtaining human based foods were inversely correlated with low abundance of naturally occurring bear foods. Bears can learn to use anthropogenic foods as easy substitute to naturally occurring foods.

“ It's a recipe for disaster when you have all the bears needing to use low areas,” Region 2 MT FWP grizzly bear management specialist Jamie Jonkel said in the most recent edition of the Flathead Beacon. Jonkel is referring to the wet early-summer holding snow in the mountains and delaying the availability of higher elevation bear foods.

Garbage cans, bird seed, and other attractants require relatively little energy expended by a bear, but can contain high rewards in terms of calories gained. The animal can learn to identify these things as an easy meal and return again and again to not just the original human attractant, but similar attractants on other properties. From a bear's perspective, an easy meal makes sense; it is a leg up in the weight gaining race before the winter months.

I am motivated by food; there are too many times, I find myself day-dreaming about what is next on the menu. My excitement over breakfast fades as I look forward to what I packed for lunch. My interest in dinner bounds when I find the lunch box I packed is finally empty. An hour after dinner, I am opening the

fridge thinking about dessert or a late night snack. Perhaps my affinity for food adds perspective to why I may find bears so interesting and can appreciate the challenges behind keeping human attractants secure from bears.

For more perspective on other facets of a bear's world in Northwest Montana, Swan Valley Bear Resources is hosting the 3<sup>rd</sup> annual Swan Valley Bear Fair at the Hungry Bear Steak House on Saturday, August 7<sup>th</sup>, from 11am-3 pm.

Biologists, managers and other specialists in bear conservation will be on hand to help curious folks dig into "the grizzly" details. The event promises to be fun and informative for the whole family with kid's activities and presentations by Counter Assault and Tim Manley and Jamie Jonkel, MT FWP grizzly bear management specialists. Free beer and bratwursts will also be provided for all attendees.

Regardless of whether you too are motivated by food, curious about living in bear country, would like firsthand answers to your bear questions, or would like to spend an enjoyable day in the Swan Valley, I would encourage you to come check out the bear fair.