

Member View

Nutrition Advisory Group

Browse: It's Green, Not Black and White

From the Nutrition Advisory Group Steering Committee

Browse remains a shady topic at many institutions as animal care providers struggle to balance practical challenges, limited science, and a passion to optimize animal nutrition and well-being through naturalistic diet items. To answer some of the most common questions, here are recommendations from the Nutrition Advisory Group (NAG):

Do all herbivores need browse in their diet?

Not all herbivores need browse in their diets. Almost all herbivores benefit from browse in their diets. Many species have evolved behavioral, morphological, and physiological adaptations to consume browse. Species that are more specialized for consuming browse may profit most from replacing hay and pellets with browse plants. Prioritize browser-specialist species when browse is limited.

Is there a “universal” safe browse list across zoos?

Unfortunately, there is no universal safe browse list. Significant scientific information exists for some plant species based on domestic herbivores, but there is limited data for many plants fed to exotic species. Animal species and individuals may respond differently depending on feeding behavior and plant chemistry. Few plant taxa are lethal but may possess physical defenses like thorns or accumulate toxins depending on the growth conditions. As a strategy, most browsing animals utilize a variety of plant



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taxa rather than consuming one or two taxa.

To minimize the risk of impactions, securely affix browse to feeders so that browsers can pluck leaves or chew wood. For animals that strip bark, monitor carefully and swap browse for alternate, less strippable plant species if needed. Consulting experts in horticulture and nutrition is a good step to help avoid dangerous mistakes—and having that individual identified is a part of your accreditation submission. Ultimately, each facility must make their own risk assessment based on their individual situations.

Is there a minimum amount of browse required for different animal species?

There is no set minimum amount of browse for herbivores, except for extreme specialists like giant pandas and koalas. Individuals and taxa exhibiting poor stool quality, difficulty maintaining body condition, dental issues, or undesirable behaviors (i.e. regurgitation/reingestion or feed aggression) may improve with more browse in their diet. Individual facility managers of these animals may determine a minimum amount for optimal care. These amounts are unlikely to be consistent across institutions or even individual animals due to the complexity of plant growth, animal diets, and physiologies. Practically, review

the amount of browse your institution can supply and distribute to animals to address individual targets or maximize provision for browse-adapted species.

How do you integrate browse into diets?

The browse portion should be considered relative to the total diet. For perspective, a 6 ft branch that has 50 leaves weighing 5 g each provides 250 g total. Leaves are ~70% water, yielding ~75 g of dry matter. Therefore, it takes a lot of browse to comprise a significant diet portion for a large herbivore. Regardless of its nutritional significance, the feeding behavior and fiber digestion from a small portion of browse can still provide significant benefits. If you do feed a significant amount of browse then nutrients and energy from browse should be balanced with the rest of the diet to meet nutrient recommendations.

Take into account the fact that nutrients in browse can vary considerably due to age, plant part eaten, soil, season, and environmental conditions. As with any diet change, monitoring the animal(s) is essential to ensuring on-going health.

How do you offer new browse plants?

1. Review the literature for any potential concerns or toxicities. Only offer browse approved by your institution's browse representative.
2. Offer a test portion of browse to a

healthy maintenance animal/group that is easily monitored. Observe the animal(s) for any negative impact.

Generally, the passage rate for medium to large herbivores is one-to-three days.

3. Gradually increase amounts, observing for negative responses. The digestive tract will need to adapt to the physical nature of the browse (e.g. toughness and fiber) as well as its chemical and microbial digestion. This may take several weeks.
4. Evaluate animal health using body weights, body condition scoring, fecal scoring, bloodwork, and/or behavior assessment. Diets need to be adjusted regularly depending on fluctuations of browse amounts and types, animal preferences, and season.

Ultimately, the answers to these browse questions are complex. Facilities should work towards a consistent, safe, and year round supply of as much browse as is reasonably possible to support their browsing herbivores' overall well-being. We may want the answers to be black and white, but browse is simply various shades of green. Don't hesitate to reach out to a nutrition professional with questions.

Nutrition Advisory Group Steering Committee

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Award

Arizona-Sonora Desert Museum Recognized as a 2024 Recipient of the Nation's Highest Museum and Library Honor



The Institute of Museum and Library Services (IMLS) announced Arizona-Sonora Desert Museum in Tucson, Ariz., as one of ten recipients of the 2024 National Medal for Museum and Library Service, the nation's highest honor given to museums and libraries that make significant and exceptional contributions to their communities.

Over the past 30 years, the award has celebrated institutions that are making a difference for individuals, families, and communities.

"IMLS is delighted to announce the ten recipients of the 2024 National Medal for Museum and Library Service," said IMLS Acting Director, Cyndee Landrum. "These institutions and