

# Sugar Gliders

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## Natural History

Sugar gliders (*Petaurus breviceps*) are small, nocturnal, marsupials native to Australia, New Guinea, Tasmania, and a few islands and regions around Indonesia. They are complex and unique animals, with very specific dietary requirements. We don't fully understand the diet of wild sugar gliders, but we know that they are omnivorous and consume a variety of foods including gums, saps, nectar, pollen, animal proteins, seeds, eggs, fungi, and native fruits. The "sugar" in sugar glider is named as such due to their consumption of sugary foods such as sap and nectar. They are considered "Least Concern" by the IUCN. Sugar gliders possess the ability to glide short distances, thanks to a gliding membrane extending from their forearms to their hind legs. While their appearance is similar to the North American flying squirrel, these species are not related.

## Characteristics and Behavior

Cute and charismatic, sugar gliders are popular in the pet trade. However, they have very complicated care needs and are not usually a "cuddly" pet. Sugar gliders require a large amount of space and enrichment to be happy. They are social to the point that singular gliders may mutilate themselves from stress. Wild gliders live in groups of about 5-12 individuals. While some sugar gliders will tame down and enjoy human companionship, it takes patience and effort. They often enjoy curling up in your pocket or other dark spaces.

Wild sugar gliders have a very complex diet, which can be difficult to replicate in captivity. They are also arboreal, and need plenty of space to climb, with plenty of options for enrichment. Gliders kept alone need daily interaction from their human companions, ideally at night when they are active. Given their complicated care needs, sugar gliders should not be considered beginner pets.

## Lifespan

8-13 years.

## Adult Size

80-160g with males larger than females.

## Housing

Sugar gliders need space, particularly vertical space as they are naturally arboreal (tree dwelling). At a minimum, 1-2 gliders can be kept in a 36"x24"x40" (LxWxH) enclosure, but larger is better. If more than 2 gliders are kept, a larger enclosure is a must to give each animal their own space. Space between bars should be no more than ¼ inch to prevent escape. Secure areas such as sleeping pouches and nest boxes should be provided, with at least 1 per glider. Additionally, branches, bird toys, solid wheels, shelves, swings, and other toys should be provided for enrichment and security. Nest boxes should be placed near the top of the cage, as this is where gliders are most comfortable. Sugar gliders also enjoy chewing on wood, so natural branches can be provided as long as they are baked to destroy any pathogens. Paper towels, hay, or aspen can be used at the bottom of the cage for substrate but avoid cedar or pine as these can irritate a glider's respiratory system. Cages should be set up in an area that is draft-free and won't disturb their daytime rest. Covering cages during the day can help minimize disturbances.

## Feeding

Wild sugar glider diets are diverse and complex, even varying seasonally and by habitat. We are still learning about their dietary compositions in the wild and do not have a fool-proof method for feeding captive gliders. Currently, there is no consensus or study on which diet is best suited for captive gliders. Dietary variety is extremely important for preventing malnutrition in this species. The subject of what to feed a sugar glider is controversial, but generally includes a combination of commercial pellets, insects, acacia gum, pollen, nectar, other proteins, fresh fruits and veggies, and homemade glider food. Food dishes should be placed up high in the enclosure and gliders should be fed at night.

During the summer, 40-60% of a glider's diet are insects and arachnids, but during winter they mainly consume gum, sap, honeydew, and manna (a sweet secretion given off by plants in response to insect damage). Saps and gums are also consumed year round. Vitamin and mineral deficiencies have been associated with diets high in insects and fruits.

The daily energy requirements for an adult sugar glider are estimated at 18-35kcal/day, but growing or reproductively active gliders will have higher requirements. Their protein requirements are low-moderate, around 20-30%, and can be met with a combination of commercial/homemade diets, arthropods, and pollen. Pollen is an important protein

source for wild gliders. A large portion of a wild glider's diet (nectar, sap, gums) are very low in protein. Calcium requirements are estimated around 0.5-1%, with phosphorus at 0.2-0.5%.

There are numerous popular diet options, but it is important to remember that none have been proven optimal for sugar gliders:

1. A proposed diet for captive gliders according to Dierenfeld, E. S. (2009) includes a mixture of 1 parts dry/semi-moist commercial diet to 2 parts mixed fruits and veggies ( $\frac{3}{4}$  fruit,  $\frac{1}{4}$  veggies). Protein should be <500mg per day, and fresh produce should be approximately 25-30% of body weight daily.
2. 50% homemade diet (High Protein Wombaroo, Leadbeaters, Bourbon's Modified Leadbeaters, Australian Captive Diet) and 50% commercial diet (insectivore kibble, sugar glider kibble, dry dog food)
3. 75% commercial insectivore or sugar glider diet and 25% fruits and vegetables with vitamin and mineral supplements.
4. High Protein Wombaroo (HPW) diet with fruits and vegetables (pre-made HPW powder is also available online):

**Ingredients:**

- 2 Cups Warm Water
- 1.5 Cups Honey
- 3 Scrambled Eggs
- 1/4 Cup High Protein Wombaroo Powder (Increase to 1/2 cup for pregnant/lactating females.)--this product can be found online
- 1 Tablespoon Bee Pollen

**Recipe:**

1. Cook eggs and set aside (stovetop or microwave is acceptable)
2. In a large bowl, mix water and honey. Stir honey until dissolved. Add in the HPW powder and mix well
3. Combine ingredients; add egg, bee pollen, and slowly add HPW liquid, blending thoroughly
4. Pour into a freezer safe bowl with an airtight lid. It should freeze to ice cream consistency.

**Nightly Feeding(per glider):**

- 1.5 Teaspoon of Original HPW

- 1 Tablespoon of mixed Fruit
- 1 Tablespoon of mixed Vegetables

There are numerous other glider diets out there, none of which have been assessed. Always consult with your veterinarian about your sugar glider's diet to ensure they are not deficient in important nutrients.

Acceptable produce for a glider includes melon, jicama, papaya, strawberries, bell peppers, squash, carrots, sweet potatoes, figs, cabbage, cucumbers, artichokes, beans, citrus, turnips and turnip greens, endive, okra, parsley, radish, bananas, celery, green beans, bok choy, oranges, snap peas, mangoes, blueberries, peaches, and kiwi. Avoid grapes, onions, garlic, pits, and seeds.

For enrichment and variety, other foods should be supplemented occasionally including commercial glider food (i.e. Mazuri, Exotic Nutrition) or insectivore food, earthworms, nectar, pollen, acacia gum, crickets, roaches, mealworms, and other insects. Avoid wax worms as these are very fatty. All insects should be gutloaded (fed a nutritious meal prior to feeding to your pet) and dusted with a calcium carbonate powder (no phosphorus) and a multivitamin powder with vitamin A. These are available in the reptile section of your local pet store, or online as glider specific supplements. Be careful not to overfeed fruits and other sugary foods! Gliders are prone to obesity and dental disease and will actively choose sugary foods over healthier foods. Small amounts (no more than 5% of your glider's diet) of treats including flavored yogurt, no sugar-added dried fruit, and applesauce can be offered occasionally. Cat food, seeds, nuts, and cheese are not recommended for gliders.

It is important to maintain a Ca:P ratio of 2:1 in sugar gliders. Calcium and phosphorus work as opposites in the body, which is why supplements or foods high in phosphorus should be avoided. Sugar gliders are very prone to metabolic bone disease from improper calcium absorption, which can lead to decreased bone density, seizures, and fractures. While most fruits and veggies are ok in moderation, an effort should be made to not overdo produce that has a lower Ca:P ratio (i.e. higher phosphorus). This includes, banana, squash, peaches, carrots, pumpkin, sweet potato, cantaloupe, apples, pears, and blueberries. Conversely, raspberries, blackberries, papaya, figs, flower blossoms, citrus, turnip greens, parsley, and endive all have higher Ca:P ratios that are more ideal for regular consumption.

## Water

Fresh water should always be available. Filtered water or bottled water is recommended.

## Sexing

Both male and female sugar gliders have a cloaca, which is a common opening for the reproductive, urinary, and gastrointestinal tracts. Male sugar gliders have a very apparent scrotum (often called a “pom”), along with a scent gland on top of their head that looks like a bald spot. Like other marsupials, females have a pouch for carrying young.

## Handling

Sugar gliders are best handled at night when they are naturally awake and active. They should be handled gently and consistently from a young age to acclimate them to people. Sugar gliders may climb on your head or into pockets/sleeves. They can bite when threatened, but tend to vocalize first. Desensitization to handling should be done gradually, and a glider should not be forced into interaction. If a glider needs to be handled in an emergency, garden gloves may be necessary to protect your hands from bites. Bonding sacks can help your glider become accustomed to your scent.

## Grooming

Sugar gliders will need their nails trimmed 1-2x per month. Bathing sugar gliders is not recommended. Some owners install a sand paper insert on their glider’s wheel to help file their nails.

## Enrichment

Bored sugar gliders may pull out their hair or even mutilate themselves, so providing mental and physical stimulation is imperative. Keeping sugar gliders in pairs or groups allows important social interaction. Gliders that are kept alone need 1-2 hours of human interaction per day. Gliders should also be provided with pouches, climbing opportunities, toys (bird toys are great options), hides, and a varied diet. Rather than feeding food in a bowl, set up foraging opportunities. Holes can be drilled in branches and filled with acacia gum or nectar. This is an excellent source of enrichment as wild gliders use their elongated incisors to chip away at bark to reach saps and other foods. Eucalyptus branches containing sap are also available for purchase online. Live insects can be hidden in containers full of shredded paper or aspen. Hide fruits and veggies on top of platforms or hides. A wheel is also excellent stimulation for a glider, but ensure

that it is solid on the running surface. Be sure to rotate toys for your sugar glider so they don't get bored.

## Zoonosis

There are no known cases of sugar gliders transmitting diseases to humans, but it is always a good idea to wash your hands after handling animals.

## Health

Sugar gliders are prone to a variety of diseases including cancer, malnutrition, nutritional-secondary hyperparathyroidism (metabolic bone disease), dental disease, and stress related mutilation/hair loss. Sugar gliders should be examined by your veterinarian every 6-12 months. A thorough diet and husbandry review is essential for ensuring your sugar glider's health.

Sources and further reading:

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