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# Guide to keeping Sugar Gliders

## BIOLOGY

The sugar glider (*Petaurus breviceps*) is a small marsupial native to New Guinea and Australia, with at least seven recognised subspecies. They live mainly in open tropical or coastal forests, and are nocturnal, omnivorous and arboreal (tree-climbers), living in nests in leaf-lined tree holes with up to six other adults and young. They have a gliding membrane (patagium) which extends from the fifth digit of the forepaws to the ankles, allowing them to glide up to 50 metres. The first and second digits of the hind feet are partially fused. Females have a pouch containing four teats, in which she raises one or two young. They are quite vocal animals with a series of alarm calls and screams.

Their lifespan in the wild is 4-5 years (up to 9 recorded), but up to 12-14 years in captivity, provided that their diet and husbandry are optimum. Males tend to be slightly larger than females.

Their husbandry and dietary needs are quite specialised and careful research should be carried out before choosing to keep these animals as pets.

## HOUSING

They are extremely social animals, and so should not be kept on their own as they may become depressed and self-mutilate. They are best kept in pairs or small groups. If they are not well socialised or allowed sufficient territorial space, they may become aggressive. Males will fight if there is not enough distance between nest boxes, and if there is inadequate stimulation, they may become aggressive to humans. Castration may help, but they will still not become like a truly domesticated pet.

In the wild sugar gliders live in groups with one adult male, one adult female, last year's joeys and the current pouch joeys. In captivity, females generally have two litters a year after reaching sexual maturity at 8-12 months old (usually one or two joeys per litter after only a 16 day gestation period). The joeys should be removed as soon as they are seen to be eating solid food and spending most of their time out of the pouch (normally they stay within the pouch for 2 months).

Both sexes mark territory with secretions from scent glands. The female's glands are within the pouch. Male sugar gliders have a scent gland on the top of the head (often mistaken for a bald spot or hair loss due to rubbing on the cage), and on the chest. The penis is bifurcated (forked) and the large scrotum is located on the underside of the belly. Castration is commonly performed to allow gliders to live in groups with females without the possibility of breeding.

Enclosures should be a minimum of 2m wide x 2m long x 1.8m high – ideally as large as possible. Bird cages are generally not suitable. Wire openings should not be greater than 2x2cm. Galvanised wire should be avoided as there is a possibility of lead and zinc exposure over time which may be toxic. Tree branches should be provided for enrichment, and possibly an exercise wheel of 25cm in diameter, with solid tread rather than wire to avoid tail entrapment. A hollow log or nest box should be provided to mimic their wild habitat – this should be regularly cleaned and be large enough for the number of sugar gliders in the group. More than one box may need to be offered to avoid fighting, and these should be cleaned every 1-2 weeks. Branches, perches and shelves can be placed around the enclosure to allow natural climbing behaviour, and bird toys can be used to give further stimulation and avoid boredom. Ideally they need large activity areas with vertical 'trees' to allow adequate exercise, although this is often impractical in a home environment, particularly as they tend to scent mark and are more active at night.

Supplementary heating is often required as room temperatures are generally at the lower end of the tolerance zone of sugar gliders (ie. 18-24C). Their ideal temperature range is 24-27C. They can withstand temperatures of up to 31C, but any higher than this is likely to result in hyperthermia. Care should be taken to avoid the possibility of thermal burns. They can go into torpor if too cold and be extremely difficult to rouse.

## DIET

Marsupials have a lower basal metabolic rate than placental mammals, plus in captivity, energy requirements are lower than in the wild, making it easy to overfeed pet gliders. In addition, the diet is relatively specialised. As a result, obesity and also dental disease are common in pet sugar gliders. Metabolic bone disease with osteodystrophy is also common if an inappropriate diet is fed.

Sugar gliders are omnivorous. Their natural diet in the wet season (winter) is mainly the sap or gum of eucalypts and acacias, and nectar from the flowers of eucalypts, banksias, acacias and some types of native apple. They have also been seen to eat honeydew, secreted by sap-sucking insects. Outside of the wet season, they are primarily insectivorous, eating insects plus some arachnids and occasional small vertebrates.

Sugar gliders have specialised incisors to gouge tree bark, taking in acacia gum and sap from other trees. They also have an elongated fourth digit to extract insects from bark. They do not rely on nuts, grains, seeds or table fruit, and so these should be avoided in captivity.

In captivity, the diet should contain a variety of foods appropriate for insectivores – at least 50%. The remaining 50% should be sources of fruit sugars, preferably in the form of a sap or nectar. Gum Arabic (acacia) can be bought as a powder, mixed into a thick paste, and used to simulate natural gums – it can be put into holes on branches and on surfaces with other foods stuck to it for enrichment and to allow foraging. The diet should be offered fresh in the evenings.

Insects should be fed a calcium-rich insect diet (eg. Nutrogrub, VetArk) for a few days prior to feeding to the gliders, in order to 'gut-load' them.

No single diet or combination has been determined optimal for captive sugar gliders – the aim should be to mimic the 'wild' diet as far as possible. There are many recommended combination diets, and no one commercial diet appears adequate. Long-term nutritional studies have not yet been performed.

Two suggested sugar glider diets (taken from the BSAVA Manual of Exotic Pets, 5th Edition):

### Diet 1 (Johnson-Delaney and Ness, in press)

For one sugar glider fed in the evening:

- 15ml Leadbeater's mix (approx. 45-50% of diet)
- 150ml warm water
- 150ml honey
- 1 shelled, boiled egg
- 15g baby cereal (flakes, rice-based)
- 5g powdered avian vitamin/mineral supplement

Mix warm water and honey. In a separate container, blend egg until homogenised. Gradually add water/honey, then vitamin powder, then baby cereal, blending after each addition until smooth. Divide into 15ml portions (ice cube tray), freeze unused portions. Thaw and keep refrigerated until served.

- 15g insectivore/carnivore diet (approx. 45-50% of diet)
- Treat foods: various fruits (chopped), may add bee pollen, vitamin/mineral supplement, enriched diet-fed adult insects (2 adult crickets/serving). Total treat intake should be maximum 10% of daily intake.

### Diet 2 (Booth, 1999)

Offer a total of 15-20% of bodyweight daily. Select one diet (a or b) from each of the following groups (1,2 and 3) every day. Rotation between the diets is recommended but not necessary. Animals will benefit from a regular supply of vitamin/mineral-enriched insects.

- Group 1
  - a) Insects: 75% moths, crickets, beetles; 25% fly pupae, mealworms
  - b) Meat mix: commercial small carnivore or insectivore mix
- Group 2
  - a) Nectar mix: 337.5g fructose, 337.5g sucrose (brown sugar), 112.5g glucose made up to 2 litres with warm water; commercially available mixes have some vitamin/mineral additives and may be used.

b) Dry lorikeet mix: 900g rolled oats, 225g wheat germ, 225g brown sugar, 112.5g glucose, 112.5g raisins or sultanas

- Group 3

a) Fruit and vegetables: select from diced apple, nectarine, melon, grapes, raisins, sultanas, figs, tomato, sweet corn kernels, sweet potato, beans, shredded carrot, butternut squash

b) Greens; mixed sprouts, leaf/romaine lettuce, broccoli, parsley; with a vitamin/mineral supplement at the manufacturer's directions

### VETERINARY CARE

Most sugar gliders are not keen on being handled, and so, if presented at a veterinary surgery, may require gas anaesthesia to allow a full clinical examination or any diagnostic procedures. If the glider is not eating, is incoordinated or showing any other signs of illness, veterinary attention should be sought as soon as possible. There are currently no preventative vaccinations or parasite treatments recommended for sugar gliders, although regular veterinary checks are advised. Castration may be carried out to neuter males if appropriate.

Please contact the surgery if you have any queries on sugar glider care.