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FROGS

Edible Bullfrog

Pyxicephalus edulis

Pyxicephalus edulis is a stout, wide-mouthed burrowing frog from Africa's savannas and flooded grasslands: smaller than *Pyxicephalus adspersus*, but with the same appetite, the same tooth-like jaw projections and a bite that must be taken seriously. It spends most of its time buried, is robust and can be kept in a relatively small terrarium.

Family: Pyxicephalidae

KEY FACTS

THE ANIMAL

Adult size	**8-12 cm** snout-vent length
Lifespan	**10-15 years**
Active	**At dusk and at night**
Lifestyle	**Terrestrial and burrowing**
Habitat	**Savanna and wetland**
Skin toxins	**None known**
Difficulty	**Intermediate**

CARE

Min. enclosure	**60 × 45 × 30 cm** L × W × H for 1 adult
Temperature, day	**23-26 °C**
Temperature, night	**18-22 °C**
Humidity	**50-70%**
Water	**Water dish**
UVB	**Optional** Ferguson zone 1
Diet	**Insects, vertebrates and worms/snails**
Kept	**Singly**

BREEDING

Reproduction	**Egg-laying**
Development	**Tadpoles in water**
Egg-laying site	**In water**
Eggs per clutch	**3,000-4,000**
Hatching	**2-3 days** at 24-27 °C
Larval period	**14-35 days** from hatching to metamorphosis
Larval diet	**Algae/plants and complete diet**
Parental care	**Guards the eggs**

PROTECTION AND PAPERWORK

CITES	**Not listed**
IUCN	**Least Concern (LC)**

About the species

Pyxicephalus edulis is a large, heavily built frog with a broad head, short body and short legs. Adult males usually grow to 8-12 cm from snout to vent, females 8-11 cm, and a few large males reach 14 cm. Males are clearly heavier: a female typically weighs only about half as much as a male. The species is, however, far from as large as *Pyxicephalus adspersus*. The back is uniformly yellow-green to a dull olive green, in males most often greener and in females more olive brown. Females can have a pale stripe along the spine and pale lines on the short skin ridges and warts. The belly is white to cream, and the male has a dark yellow throat. The ridges on the back never run the whole way from head to rear body, and the skin is covered with low, rounded warts.

Newly metamorphosed young are easier to tell apart from adults: they have a bright green stripe down the middle of the back, golden-brown spots and black markings, and the lips and limbs have black crossbars. The eyes sit closer to the sides in the young and move towards the top of the head as the animal grows. In adults the eyes are very prominent. The forelegs have no webbing, while the hind legs are webbed.

The lower jaw has two tooth-like projections, which point upwards and hold on to prey. The species was described by Peters in 1854. It has often been confused with *P. adspersus* and other species in the genus, also in the trade, so the identification should be checked on purchase.

The skin has no known toxin. The real risk is the bite: large males can inflict deep, painful wounds, and the frog snaps at anything that moves, including fingers.

Distribution and habitat

Pyxicephalus edulis lives in a broad belt of savanna and grassland in Africa south of the Sahara. The species has been recorded in Mauritania, Mali, Burkina Faso, Benin, Nigeria, Chad and northern Cameroon in the north and in Angola, Zambia, Kenya, Tanzania, Malawi, Mozambique, Zimbabwe, Botswana and northern South Africa (Limpopo) in the south and east.

The range is not sharply delimited, because the species has been confused with *P. adspersus* and other species in the genus, and older records may belong to another species. The bullfrogs of the East African lowlands have been regarded since 2013 as a separate species, *Pyxicephalus angusticeps*.

> **Native range:** Mauritania, Mali, Burkina Faso, Benin, Nigeria, Chad, Cameroon, Angola, Zambia, Kenya, Tanzania, Malawi, Mozambique, Zimbabwe, Botswana and South Africa.

HABITAT

The species is found in flooded grassland, wet meadows and shallow ditches and swamps in open country. In northern Cameroon it prefers open, swampy areas, and it keeps to clay and sandy ground, where it can burrow. The landscape has a distinct rainy season and a long dry season.

Life follows the rain. The frog spends about ten months of the year buried in the ground in dormancy and emerges only when more than 70 mm of rain falls in a short time. The animals then gather in large numbers in temporary pools, roadside ditches and shallow holes with flooded vegetation, where the water is under 20 cm deep. The breeding season is short and intense. The rest of the year the frog lies below the surface and lives on its fat reserves.

Read more: Brumation and the seasons

Care

THE ENCLOSURE

Little is known about the care of *Pyxicephalus edulis*, and most of what is written about bullfrogs concerns the larger *Pyxicephalus adspersus*. The two species have the same lifestyle and the same requirements, and what is not known for *P. edulis* is borrowed from *P. adspersus*.

A single adult needs a terrarium of at least 60 × 45 × 30 cm. Floor area is more important than height, because the species does not climb and spends most of its time buried. The terrarium must be tight and have a firmly fitting lid, because the frog is strong and can push off loose lids. Juveniles can grow up in smaller plastic boxes and be moved to larger ones as they grow.

The substrate must be deep and loose, so that the animal can burrow in completely: 10-15 cm of moist coconut coir or unfertilised soil mixed with sphagnum. The substrate must be moist but not wet, and must not dry out completely. Avoid gravel and bark, which can be swallowed with the food and cause constipation. Lay cork, flat stones and a layer of leaf litter on top, so that the animal has cover, and sink a large, flat water dish into the substrate.

The frogs are solitary and territorial. They must be kept separately, including the males, because they fight hard and can kill each other. Only during a short breeding period are two animals together.

TEMPERATURE

By day the terrarium should hold 23-26 °C and at night 18-22 °C. The temperature should be steady and must not exceed 28 °C for any length of time: even a rise from 25 to 30 °C raises stress hormones, and the animals lose weight. There is therefore no need for a warm basking spot. If it becomes too hot, the frog burrows and stops eating.

Heat can come from a heat mat on the side of the terrarium or on one third of the floor, always controlled by a thermostat, so that there is a slightly cooler zone. No heat lamp close above the animal: it dries out the substrate and the air. Measure with a digital thermometer, and check both ends of the terrarium.

If it is too hot, too cold or too dry for long, the frog burrows and goes dormant in a cocoon of shed skin. This is natural, but undesirable in ordinary keeping, and dormancy should only be induced if you want to breed.

Read more: Heat and temperature

HUMIDITY AND MISTING

Humidity should be 50-70 %. It comes from the moist substrate and the water dish, and the terrarium is misted daily with water without chlorine, so that the substrate stays slightly moist. A digital hygrometer shows whether the level holds. Ventilation must be good enough that the air does not stand still, but without a through-draught. If the substrate is permanently soaked, the risk of skin infections increases, and if it is completely dry, the animal burrows and forms a cocoon.

Read more: Humidity, misting and ventilation

WATER AND WATER QUALITY

The frog must always have access to a large, flat dish in which the whole animal can lie and bathe. The dish must be easy to get into and out of, and the water must be shallow: only a few centimetres deep, so that the animal can rest with its nose above the water.

Amphibians continually release waste substances through the skin, and the water quickly becomes polluted. The dish must be emptied, rinsed and refilled with fresh water at least every second day and always when the frog has passed droppings in it. Use tap water treated against chlorine and chloramine, and clean the dish without soap. The water must be at the same temperature as the air in the terrarium.

LIGHTING AND UVB

The species is most active at dusk and at night and does not need strong light. It must, however, have a clear day and night rhythm with about 12 hours of light, either from a weak LED or from daylight in the room (not direct sun, which overheats the terrarium). UVB is optional, but a weak UVB tube (Ferguson zone 1) at one end supports calcium absorption and is an advantage in long-term keeping and for growing juveniles. Always give the animal the chance to seek shade in the substrate and in hides. Glass and plastic block UVB, so a window does not do the job.

Read more: Lighting and UVB Read more: Calcium, vitamins and supplements

FEEDING

Pyxicephalus edulis is a predator that eats almost anything it can overpower. In the wild the diet consists especially of beetles and grasshoppers, as well as termites, millipedes, ants and spiders. In the terrarium earthworms are a good staple, supplemented with crickets, locusts, cockroaches, silkworms and hornworms. Mealworms and waxworms are fatty and are only given as occasional food. For adults a thawed pinky mouse is offered at most once every second or third week.

A feeder animal must not be larger than the distance between the frog's eyes. Juveniles are fed daily, adults every second or third day. Overweight is the commonest problem, because the frog never stops eating by itself. Keep an eye on the animal's shape: the body should be firm and rounded, not bulging.

Dust the food with calcium and D3 twice a week and with a multivitamin every other week. Give the feeder animals nutritious food before they are passed on. Always use long tweezers, because the frog can mistake fingers for food.

Read more: Feeder animals: keeping and breeding

BEHAVIOUR AND HANDLING

The animal almost always lies buried with only the eyes and nostrils above the substrate, waiting for prey. It is most active at dusk and at night and comes out to hunt and swim. It is not an animal to handle: the skin absorbs substances easily, and the bite is hard. If the frog feels threatened, it can hiss and lunge with its mouth open.

Always keep the animals separately. If a frog must be moved, use a box or moist, clean nitrile gloves, take hold firmly and calmly around the body and do it quickly. The frog is heavy and clumsy and is easily injured if dropped. Always wash your hands after contact with the animal, the water and the substrate. The males call in the rainy season with a short, deep call.

Breeding

SEXUAL MATURITY AND SEXING

Sex is hard to tell in young animals. In adults the male is larger, heavier and usually greener on the back and has a dark yellow throat, while the female is smaller, more olive brown and may have a pale stripe down the back. Only the males call. Age and size at sexual maturity in captivity are not documented. Wait until the animals are fully grown and in good condition.

MATING

In the wild the species breeds explosively after the dry season, when more than 70 mm of rain falls in a short time. The males gather in shallow, flooded water around a dominant male, who lunges at any other male that comes too close: he attacks, bites and flings them away, and the fights can end with one of them dying. The females move freely between the males. Mating is simple, and the female begins to lay eggs shortly after the male has clasped her. The breeding season lies in the daytime hours and is brief.

Breeding in captivity is rare and difficult. The method is borrowed from *Pyxicephalus adspersus*: healthy, well-nourished animals are given a dry season of 3-4 months without misting and with little or no water, so that they go dormant. They are then woken with heavy misting and water poured onto the substrate, fed well for a few days and placed in a rain chamber with about 8 cm of water and places where they can climb out. Mating takes place while the animals stand on the bottom, so the water must not be deeper. Put only one male at a time with the female. Breeding requires that you have an outlet in advance for the many young.

EGGS AND TADPOLES

The female lays the eggs in the shallow water. The egg count is not documented for the species; the figure in the box is borrowed from *P. adspersus*, which lays up to 4,000 eggs, and the smaller *P. edulis* probably lays fewer. The male guards the tadpoles, and if the pool dries up too quickly, he digs a channel for them.

The tadpoles are omnivorous. Feed them generously with crushed fish food or prepared tadpole food, and keep the water clean and well oxygenated with frequent water changes.

Read more: Rearing tadpoles

METAMORPHOSIS

Hatching and larval periods are borrowed from *P. adspersus*: the eggs hatch after 2-3 days at 24-27 °C, and the tadpoles can metamorphose after as little as 2-5 weeks. When the forelegs break through, the water must be so shallow that the froglets can rest with their noses above the water, and there must be easy access to land. The newly metamorphosed froglets leave the water quickly and seek moist hides. Then move them to a land terrarium with a moist substrate.

REARING THE YOUNG

The froglets must be kept separately as soon as they have left the water, because they are cannibals and go for their own kind. Give them small boxes with a moist substrate and leaf litter as cover. Feed daily with small crickets and other small feeder animals, and dust the food with calcium. They grow quickly and are moved to larger boxes as they grow. The number of young from a single laying is the biggest practical problem in breeding the species.

Health and common mistakes

Pyxicephalus edulis is hardy, but there are some typical problems:

- Overweight from too frequent or too fatty feeding.
- Stress and weight loss at too high a temperature. Keep the temperature below 28 °C.
- Bone disease from too little calcium and D3. Dust the food, and consider UVB.
- Skin infections and bacterial diseases from dirty water or a dirty substrate.
- Constipation from swallowed substrate or prey that is too large.
- Dehydration from too low a humidity.
- Unwanted dormancy with a cocoon when the terrarium becomes too dry or cold. Raise humidity and temperature gradually.

Seek a vet with knowledge of amphibians if the frog loses weight, swells up, has red or wounded areas or stops eating without being dormant.

Always ask someone who knows

This guide is a good place to start, but it cannot replace experience. Animals differ, and much of what matters most is learned from people who have kept the species for years. Talk to a breeder, an experienced keeper or a vet who knows reptiles and amphibians before you get the animal - and again if anything looks wrong.