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SALAMANDERS AND NEWTS

Iberian Ribbed Newt

Pleurodeles waltl

Pleurodeles waltl is the largest newt in Europe: a sturdy, flat-headed and almost entirely aquatic species of 15-20 cm with a row of orange warts along the sides, from which the sharp ribs can protrude as a defence. It is hardy, tolerates cold and breeds readily in captivity, but does not thrive in warm water.

Family: Salamandridae Former name: *Salamandra fenestrata; Salamandra funebris; Salamandra major*

Mild skin toxins

KEY FACTS

THE ANIMAL

Adult size	**15-20 cm** total length incl. tail
Weight	**10-85 g**
Lifespan	**10-20 years**
Active	**At dusk and at night**
Lifestyle	**Aquatic**
Habitat	**Wetland**
Skin toxins	**Mild** Wash your hands after contact and keep your fingers away from your eyes and mouth
Difficulty	**Beginner**

CARE

Min. enclosure	**100 × 50 × 50 cm** L × W × H for 5 adults
Temperature, day	**18-21 °C**
Temperature, night	**18-21 °C**
Humidity	**60-80%**
Water	**Aquaterrarium** depth 15-20 cm
Water temperature	**18-21 °C**
UVB	**Optional**
Diet	**Insects, complete diet and worms/snails**
Kept	**In pairs or in groups**

BREEDING

Reproduction	**Egg-laying**
Development	**Larvae in water**
Egg-laying site	**In water**
Eggs per season	**100-1,000**
Clutches per year	**1-2**
Hatching	**7-21 days** at 20 °C
Larval period	**90-120 days** from hatching to metamorphosis
Larval diet	**Other larvae and small aquatic invertebrates (daphnia, mosquito larvae)**
Parental care	**None**

PROTECTION AND PAPERWORK

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

About the species

Pleurodeles waltl is a large, plump newt with a flat, spade-shaped head, where the small eyes are directed slightly upwards. The body is flat, so the species can slip in under stones, and the tail is laterally compressed and about as long as the body measured from snout to vent. The skin is granular. The colour ranges from dark to pale grey with darker, brownish spots, and the belly is lighter, often cream, with the same spot pattern. Along each flank runs a row of 8-10 rust-orange warts. Captive-

bred animals are typically 15-20 cm, while wild animals can reach up to 30 cm. Adults weigh 10-85 g. A leucistic, almost white colour form exists in captivity. Males are slimmer and usually smaller than females, and in the breeding season they develop black nuptial pads on the forelimbs.

The warts are defensive structures. If the animal cannot escape a predator, the sharp ribs push out through the stretched skin at the warts. At the same time, glands on the neck, back, sides and tail release a milky-white, sticky, toxic secretion, which coats the ribs. The poison-coated ribs act like spikes, injecting the poison through the thin skin of the predator's mouth. The animal itself takes almost no harm: the ribs are covered with collagen, the skin releases antimicrobial substances, and the wounds heal quickly without infection. The mechanism is harmless to humans, and in captivity the ribs rarely protrude. The poison comes from the animal's own glands, not from its food. The effect of the secretion on human skin and mucous membranes has not been described, so wash your hands after handling, keep it away from eyes and mouth, and handle the animals as little as possible.

The species was described in 1830 and has previously been placed in the genus *Salamandra*. *P. waltl* is a widely used laboratory animal in research on regeneration, because it can regrow lost limbs, heart tissue, the lens of the eye and parts of the spinal cord, and it is bred in large numbers for research. In captivity the animals can live almost 20 years.

Read more: Buying animals: captive-bred, wild-caught and transport

Distribution and habitat

Pleurodeles waltl occurs naturally in the central and southern Iberian Peninsula and in northern Morocco. The species is numerous in Morocco, southern Spain (Andalusia and Extremadura) and southern Portugal, while populations are declining in northern and central Portugal and eastern Spain. The species is threatened above all by the disappearance of waterholes.

> **Native range:** Spain, Portugal and Morocco.

HABITAT

P. waltl lives in areas with hot, dry summers and periodic droughts. The species is almost entirely aquatic and lives in still or slow-moving water: ponds, lagoon basins, impoundments, irrigation canals, cisterns and old village wells. It prefers cool, calm and deep water. Here it eats insects, aquatic molluscs, worms, tadpoles, small fish and carrion.

If the water dries up, the animals seek damp shelter under stones, in crevices or under vegetation. In winter the species meets temperatures around freezing and tolerates it. In the wild it breeds twice a year: in spring and again in the heat of summer.

Read more: Rearing tadpoles

Care

THE ENCLOSURE

Pleurodeles waltl is almost entirely aquatic and is kept in an aquarium, not in an ordinary terrarium. For a group of five adults, 100 × 50 × 50 cm is a minimum, and more space is better. Fewer animals can make do with a smaller aquarium, but adults of this size need at least 80 cm in length.

Plant the aquarium heavily with live aquatic plants, and add roots, stones and hides that the animals can crawl under. Provide a small floating land area or a flat stone that rises above the surface. Choose a substrate that cannot be swallowed with the food: coarse gravel or stones, or leave the bottom bare. Provide shade in part of the aquarium.

The lid must fit tightly, because the animals can walk on land. A filter with a gentle, diffuse flow keeps the water clean, because the species prefers still water. Avoid strong currents and open filter intakes that can trap the young. Keep animals of roughly the same size together, because the large ones eat the small ones.

TEMPERATURE

The water should be 18-21 °C all year round and preferably not above 21 °C. Some animals become stressed by heat, so the tank should stand cool and out of direct sun. Heating is unnecessary, and in summer a fan over the water surface or a cool room can keep the temperature down. A night-time drop is not necessary, and the water can stay at the same temperature around the clock.

The species tolerates cold far better than heat: in the wild it meets temperatures around freezing. Before the breeding season, a colder period with less light and a shorter day is a good idea (see breeding). The temperature and length of the cold period have not been established. Eggs and larvae should be kept at about 20 °C (see breeding).

HUMIDITY AND MISTING

P. waltl is almost entirely aquatic, so the humidity above the water matters little. 60-80 % is plenty, and a tight lid keeps the air humid. The floating land area must be kept wet. Misting is not necessary.

Evaporated water is topped up with water of the same temperature, so the water level and temperature are kept stable.

Read more: Humidity, misting and ventilation

WATER AND WATER QUALITY

Outside the breeding season the water is kept 15-20 cm deep. For the breeding season it can be raised. The water must be still and clean with pH 6.9-7.2, ammonia below 0.01 ppm, nitrite below 0.05 ppm and nitrate below 100 ppm.

Use tap water from which chlorine and chloramine have been removed with a water conditioner. Change part of the water every week, and more often if the test shows ammonia or nitrite. Remove food remains immediately. Amphibians absorb substances through the skin, so never let soap, cleaning products, hand cream or insecticides get into the water.

LIGHTING AND UVB

UVB is not necessary for *P. waltl*, but can be used. Shade and plant cover are more important than strong light, and part of the aquarium must always be in shade.

The amount of light and the day length are reduced for a period in winter and increased in spring, because this helps trigger the breeding season.

Read more: Lighting and UVB

FEEDING

P. waltl is a greedy omnivore that takes most things it can swallow. Good foods are chopped earthworms, shrimp pellets, salamander or axolotl pellets, turtle pellets, snails, house crickets and other feeder insects, and bloodworms. Feeder fish are not recommended as a regular food, because they often carry diseases.

Adults are fed a couple of times a week with as much as they eat in a few minutes. Leftovers are removed immediately. Give varied food, and avoid giving only one kind. Young animals that are growing are fed more often.

Read more: Feeder animals: keeping and breeding

BEHAVIOUR AND HANDLING

P. waltl spends almost its whole life in the water and likes to lie hidden under stones and plants. The species is best kept in a group of at least five animals. Adults eat larvae and young, so the young are moved.

Handling should be infrequent. Use wet hands or a net, and wash your hands afterwards. The ribs rarely protrude in captivity, but an animal that does this is stressed and needs to be left in peace. The species is easy to keep and a good choice for beginners.

Breeding

SEXUAL MATURITY AND SEXING

Males are slimmer and usually smaller than females and in the breeding season develop black, horny nuptial pads on the front legs. Females have a clearly round belly, especially when full of eggs.

The age at sexual maturity is not known with certainty. Make sure the group contains both males and females and that the animals have reached full size before they breed.

MATING

Breeding is easy to start. In winter a colder period is given with less light and shorter days, and the animals can also be kept dark during that period. Mating and egg laying are triggered by rising water level, more light, longer days and rising temperature. Many animals only need the water level to be raised to breed.

Mating proceeds in two phases. First the male grasps the female from below with his arms around her forelimbs, and this can last from a few minutes to hours. Then he lets go, but holds on with one arm and positions himself in front of her, and he turns around and deposits a spermatophore, which the female picks up with her cloaca after a half turn. The aquarium must therefore have enough room. The female can store live sperm in the cloaca for up to five months. In the wild the species breeds twice a year.

EGGS AND LARVAE

The female lays 100-1000 eggs in a season, depending on size and age, scattered among aquatic plants. The adults do not normally eat the eggs, but eat larvae and young. Move the eggs to a separate tub, or move the adults. The eggs hatch after 1-3 weeks, often after only a week. Early signs of bad eggs are that they turn white and opaque or become mouldy. They are removed immediately, so the fungus does not spread to good eggs.

Keep eggs and larvae at about 20 °C. At around 8 °C the eggs suffer cold stress, and at high temperatures around 30 °C female larvae are converted into males and get skeletal defects in the hind limbs. The water in the larval tub must be still and very clean: change part of the water every day. The larvae live on the yolk for the first few days and then need small, live foods several times a day: newly hatched artemia, daphnia, microworms, bloodworms and fine tubifex. When the larvae are eating, small hops can be seen. Allow 4-8 litres of water per larva as they approach metamorphosis, and sort by size, because the large larvae eat the small ones.

METAMORPHOSIS

The larval period of *P. waltl* is not known with certainty; expect 3-4 months from hatching to metamorphosis, as in related newts. The signs of metamorphosis are changing colour, smaller gills and the larvae gulping air from the surface.

Provide an easily accessible land area so that the newly metamorphosed animals can climb out, and close the container tightly, because the young climb. Most salamanders stop eating during metamorphosis, so wait calmly. Unlike many other newts, *P. waltl* can remain partly in the water as a juvenile.

REARING THE YOUNG

The newly metamorphosed young are kept in a shallow aquarium with an easily accessible land area and a tight lid. Feed them small pieces of earthworm, bloodworms, blackworms and small insects, and keep them sorted by size so they do not eat each other. The water is changed often, and the substrate is kept clean.

Surplus young must not be released into the wild, because the animals can carry diseases and affect local populations. Give them to other keepers instead.

Health and common mistakes

P. waltl is hardy, and most problems are caused by faults in husbandry:

- Heat. Water above 21 °C stresses the animals. Heat during the larval period causes skeletal defects in the hind limbs.
- Poor water quality. Ammonia and nitrite cause skin problems and illness. Test the water, and change it regularly.
- Swallowed substrate. Small gravel can stay in the stomach and cause blockage.
- Mould on the eggs. Remove dead eggs immediately.
- Cannibalism. Adults eat larvae and young, and large larvae eat small ones.

Infectious diseases: the chytrid fungi *Batrachochytrium dendrobatidis* (Bd) and *B. salamandrivorans* (Bsal) attack the skin of amphibians. Bsal is deadly to many salamanders. In *P. waltl* susceptibility varies greatly from animal to animal and depends on which breeding line the animals come from. New animals are quarantined for several weeks, and they are tested with a skin swab. Nets and equipment are disinfected, and equipment is not shared between aquariums. The fungus spreads via water and contact.

See a vet with amphibian expertise if an animal stops eating, has white or red spots on the skin, swells up, swims abnormally or lies at the surface.

Read more: Quarantine and hygiene

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.