



Euproctus asper (Duges, 1852) Pyrenean Brook Newt

INTRODUCTION

Euproctus asper is the largest of the Brook Salamanders, measuring 4-6 inches (10-16cm) as adults. The rough skin of the dorsum is light or dark gray, to brown with yellowish spots. The ventral side consists of a wide, jagged yellow or orange stripe, often with small black blotches. Some individuals may possess a solid or discontinuous yellow or orange stripe down the dorsum and top of tail. Alpine



populations are typically darker in coloration. The darker color indicates the presence of higher concentrations of melanophores, which protect the salamander from powerful UV radiation,

as well as aid in the absorption of heat. The tail is laterally compressed (when aquatic), and typically the same length of the body from snout to vent. Females can be distinguished from males by their elongated, pointed cloacal opening (males are rounded) (van der Meijden, 2002). Males can live up to 20 years, and females up to 26 years.

SUBSPECIES

Euproctus asper asper (Duges, 1852)

Euproctus asper castelmouliensis (Woltersdorff, 1925).

Although formerly recognized as two subspecies, many do not distinguish between the two, and both are sometimes considered one species.

DISTRIBUTION & HABITAT

Euproctus asper is found throughout the French and Spanish Pyrenees Mountains, with concentrations in the eastern and central sections.



E. asper are distributed across a wide altitudinal range, including elevations of 575 - 9500 feet (175 - 2900 meters), with population concentrations around the 6560 feet (2000 meter) area (Hofrichter, 2000). Populations tend to reside in areas that remain frost-free for 4 to 5 months out of the year. During snowy winters, *E. asper* will hibernate buried under ground. During their active period (spring and

summer), adult *E. asper* can be found in cold, running streams and brooks (usually around 41°F to 59°F, or 5°C to 15°C) (van der Meijden, 2002).

Cave dwelling populations are adapted to feeding only on the scarce invertebrate species present in their dark homes, and can survive for several months with very little food, or no food at all (Hofrichter, 2000). Although not unique to cave-dwelling individuals, the approach to hunting in complete darkness changes from that of daytime or low lighting.

BREEDING

Breeding takes place in spring and summer, usually between April and August, in aboveground areas. The exact time and duration varies for different populations, and may begin as early as winter in some cave-dwelling populations (Hofrichter, 2000). Males become territorial and aggressive during the breeding season, and will mark their territories with chemical secretions. Territorial males will ward off competing males by means of beating the ground with the tail, and sometimes biting (Hofrichter, 2000).

E. asper are unique in that their eggs are fertilized by direct cloacal contact. To signal the female, the male will raise his tail in an almost-vertical position (van der Meijden, 2002).

Amplexus consists of the male gripping the female by wrapping his tail around her cloacal region in such a way that his cloaca is in direct contact with hers. During amplexus, the male transfers spermatophores directly to the female's cloaca. Amplexus may last for several hours, and can sometimes appear to be a jumbled knot of newts (as in the photo above).



The female produces 20-60 eggs, and attaches them individually under rocks or other debris in cool, moving streams or brooks (van der Meijden, 2002). Eggs are approximately 3.5-5mm in diameter, excluding the gelatinous outer protection (van der Meijden, 2002). Upon hatching, larvae are approximately 13mm, with reduced gills, rounded tail, and streamlined bodies (typical stream-type larvae). Metamorphosis generally begins 14 months after hatching (generally the following summer), when the larvae are 50-60mm in length (van der Meijden, 2002). Higher elevation populations may remain in the larval stage for two years, beginning metamorphosis two summers after hatching, and measuring 95mm (van der Meijden, 2002). Complete metamorphosis can take a month or two at average summer temperatures of 50°F-55°F (10°C-13°C),

and neotenic individuals have been discovered in the Valle de Aran (van der Meijden, 2002).

The young morphs are inconspicuously dark gray to black, with or without a yellow-orange dorsal stripe and yellow spots. Sexual maturity is reached at approximately 2-3.5 years for males, and up to 6 years for females (depending on the elevation).

FEEDING HABITS

E. asper are opportunistic feeders, as well as hunters. They accept an array of food items, including aquatic and terrestrial insects, insect larvae, aquatic crustaceans, snails, slugs, mussels, and amphibian eggs and larvae (including their own) (Hofrichter, 2000).

Cave dwelling populations are adapted to feeding only on the scarce invertebrate species present in their dark homes, and can survive for several months with very little food, or no food at all (Hofrichter, 2000). Although not unique to cave-dwelling individuals, the approach to hunting in complete darkness differs from that of daytime or low lighting. When in complete darkness, *E. asper* will abandon the "straight and rapid" lunging approach, and opt for a slow, persistent chase across much longer distances (Hofrichter, 2000). To capture food, cave dwelling *Euproctus* rely on smell and motion detection through vibrations in a similar manner as other cave dwelling species, such as the olm, although the sense is less developed in *Euproctus*. Aboveground *Euproctus*

populations rely mainly on motion detection by sight, and typically will not pursue their prey over long distances (Hofrichter, 2000).

Despite the less-than-abundant food supply in most caves, cave dwelling species have some advantages over their ground dwelling counterparts; there are no predators in the caves, the temperatures are relatively stable (no extremes), and the risk of dehydration is virtually absent.

THREATS

E. asper is a declining species in some regions due to the introduction of brown trout into their immediate ecosystem, and increased pollution from mass tourism (van der Meijden, 2002). Other factors aiding in the decline of some populations include loss of habitat caused by the damming of breeding brooks and streams, road construction, fatalities from autos, and automobile pollution (van der Meijden, 2002). Populations still thrive where the more inaccessible areas where pollution, construction, and foreign game fish have not been introduced.

MISC. NOTES

Through mitochondrial DNA sequences, the genus *Euproctus* has been shown to be closely related to the genus *Triturus*. The three recognized *Euproctus* species, *E. asper*, *E. montanus*, and *E. platycephalus*, split from the common ancestor some 9 million years ago, when the Pyrenees Mountains separated from the islands of Corsica and Sardinia (Hofrichter, 2000).

Credits

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