

Phytotriades auratus (Golden Tree Frog)

Family: Hylidae (Tree Frogs)

Order: Anura (Frogs and Toads)

Class: Amphibia (Amphibians)



Fig. 1. Golden tree frog, *Phytotriades auratus*.

[<http://www.arkive.org/golden-tree-frog/phytotriades-auratus/>, downloaded 10 March 2015]

TRAITS. The taxonomic relationship between other tree frogs and the golden tree frog is not yet established; however, recent genetic and behavioural evidence allows it to be placed in a separate genus known as *Phytotriades* apart from its previous genus, *Phyllodytes*, which contains Brazilian species (Jowers et al., 2010). Its occupancy in the highest peaks of Trinidad (El Tucuche and El Cerro Del Aripo) gives rise to the other name of the El Tucuche golden frog (Frost, 2009). It ranges from small to medium size in snout-vent length (Gray, 2003). The males generally reach a size of 29 mm whereas the females grow up to 35 mm (Murphy, 1997). The dorsum (back) has a chocolate brown colour and two stripes that are iridescent and golden-yellow in colour (Fig. 1). The limbs are transparent-cream in colour (Gray, 2003) as well as enlarged circular disks on the tip of each digit that has a claw-like appearance in profile (Anon,

2015). Their eyes are $\frac{3}{4}$ the diameter of the eye-nostril distance (Murphy, 1997) and consist of a black pupil that is associated with fine golden irises (Gray, 2003). The head and body is compressed and allows them the ease of fitting deep into the bracts of the leaves of their microhabitat (Gray, 2003) (Fig. 2). They possess serrated teeth and sharp “fangs” that line their jaws. The lower and inner upper jaws both have tooth-like serrations. However, the inner upper jaw is able to fit between the fang-like projections of the lower jaws for complete closure of the mouth. These teeth-like serrations allow the frogs to be distinguished from all other Trinidad and Tobago frogs (Murphy, 1997).

DISTRIBUTION. *Phytotriades auratus* is a rare species that was thought to be endemic (belong exclusively) to the island of Trinidad, but in August 2014 it was also found in the Paria Peninsula of Venezuela (Rivas and De Freitas, 2015). It is distributed on mountains tops that are elevated more than 800m above sea level. Mountain ranges include El Cerro Del Aripo and El Tucuche in Trinidad with summits about 940m (Jowers et al., 2008), and Cerro Humo in Venezuela, summit 1250m (Rivas and De Freitas, 2015). Murphy (1997) suggested that the frog can also probably be located on the Morne Bleu Ridge in Trinidad.

HABITAT AND ACTIVITY. The golden tree frog inhabits mountains, where they reside in the giant epiphytic bromeliad, *Glomeropitcairnia erectiflora* that grows to 23-31m above ground level, and possibly other bromeliad species (Fig. 3). A vast amount of rainfall of approximately 5000mm per year is known to occur at these sites and the elfin woodland (site of bromeliad growth) is shrouded in a cloud cover that is cool and misty in the day as well as the night (Gray, 2003). The supply of perpetual moisture creates a highly humid environment around the exclusive microhabitat that is occupied by these tree frogs. Beard (1946) stated that in July, the temperature of the air was estimated at 24°C. He also reported that the bromeliads plants possessed a slightly acidic pH of 5.5 and a water content that was 22°C. However, these temperatures are subject to variations throughout the year. At similar heights on Mount Aripo in February, the temperatures may drop as low as 14.4°C at night (Beard, 1946). The microhabitat of *Phytotriades auratus* is classified as being a disturbed habitat because of the continuous collection of the bromeliad and the species only occupies $\leq 10 \text{ km}^2$ of the total forested area (Hardy, 2004).

FOOD AND FEEDING. The tadpoles of these frogs are speculated to be omnivores by Kenny (1969). He claimed that they feed on debris such as algae that grow on the surface of the bromeliad leaves, but also extend their feeding relationship to their siblings.

REPRODUCTION. This species breeds by larval development within the bromeliads. The water collects in the bracts of these leaves and the females lay their eggs in it (Frost, 1997). The eggs are laid in clutches surrounded by a jelly that adheres to the bromeliads. They are hatched and the larvae will go through metamorphosis within the pools of water to become adult frogs (wildscreen archive, 2015). They are a highly territorial species with the males having bigger fangs than the females. The males use their fangs in combat against one another (Weygolt, 1981).

JUVENILE BEHAVIOUR. The larvae are almost transparent and attach themselves to the bromeliad surfaces by their mouth-parts (Fig. 4). This allows them to dangle in a vertical and motionless position within the pool of water in the leaf bracts. Their tails are thin and almost finless so it cannot support this dangling motion for lengthy periods of time. This problem is solved by detaching themselves via the throwing back of their heads and the beating of their tails for a sufficient period that will allow them to gather enough air from the surface of the water before they return to the leaf for support. Most times there were adult frogs within the leaves that contained the tadpole which suggest to an extent that parental care is exhibited (Gray, 2003).

APPLIED ECOLOGY. The International Union for Conservation of Nature (IUCN) has labelled *Phytotriades auratus* as being critically endangered (Hardy, 2004). *Phytotriades auratus* has also been placed on the list of Environmentally Sensitive Species in 2013 by the Environmental Management Authority (EMA, 2015). This is so because of severe habitat constraints, the over collection of specimens (Hardy, 2004) and the fact that golden tree frog is not able to adapt to changes in its habitat (EMA, 2015).

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Posted online: 2015

Revised: 2016



Fig. 2. Golden tree frog hiding in bromeliad leaf.

[<https://www.facebook.com/127073127331388/photos/a.147360748635959.22592.127073127331388/127075630664471/?type=1&theater>, downloaded 12 March 2015]



Fig. 3. Golden tree frog in bromeliad (not *Glomeropitcairnia erectiflora*).

[<http://www.animalsanimals.com/results.asp?image=FRT+030MER002+01&itemw=4&itemf=0001&itemstep=1&itemx=2>, downloaded 10 March 2015]



Fig. 4. Tadpole of golden tree frog.

[<http://www.animalsanimals.com/results.asp?image=FRT+030MER001+01&itemw=4&itemf=0001&itemstep=1&itemx=1>, downloaded 10 March 2015]