

THE FROGS THAT FLY

Roy W. Rings B. U. 336

Deep in the Amazon rain forest don't be surprised to see a greenish blur sailing through the air. It is probably a "flying frog" fleeing from a bird that wants it for lunch.

There are several species of living amphibians and reptiles that include those that can parachute and a few that can glide. The gliders are all reptilian and the parachuters that we are discussing are all frogs. As a group they are known as "flying frogs" even though they certainly do not fly and they vary widely in their ability to parachute. The "flying frogs" are basically tree frogs that have evolved large feet and extensive webbing between their toes. In some species there are also lateral fringes of skin on the limbs which expand the flight capability. This unique form of amphibian locomotion also required the evolution of special behavioral patterns to increase in-flight stability. Its features include keeping the body rigid and flat, the limbs outstretched and the toes widely spread to serve as parachutes and rudders. This enables them to move from one branch of a tree to another in foraging or to leave the canopy entirely when escaping from an arboreal predator.

One of these, the Fringe-limbed Tree Frog, *Hyla miliaria*, is a large, canopy-dwelling, tree frog with webbed feet and fringes of skin on the legs. It occurs in the neotropical rain forests from Nicaragua to Colombia. Another is the Amazon Leaf Frog, *Agalychnis craspedopus*, which may be found in the dense woodlands of Colombia, Ecuador and Peru. The advent of the rainy season in northwestern South America induces breeding and oviposition in these leaf frogs. Some eggs are laid on foliage above forest pools but some are laid in the roofs of tree-holes. When the eggs have completed their incubation period the tiny tadpoles wriggle from the confines of the eggshells and drop into surface ponds or tree holes. Some tree frogs even find the water-holding bromeliads in the canopy a suitable nursery for their offspring.

Several species of these fascinating flying frogs have appeared on postage stamps of tropical countries in Central America, Africa and Asia. For example, the Costa Rican Flying Tree Frog, *Agalychnis spurrelli*, is shown on a stamp from Ecuador, Scott No. 1299. Wallace's Flying Frog, *Rhacophorus nigropalmatus*, is probably the most dramatic looking frog in the African region and is distinguished from other flying frogs by its large size and the black coloration of the foot webbing. The species may be found at ground level when it descends to mate and construct its bubble nest. It appears on a stamp from the Malagasy Republic, Scott No. 1367.

The Emerald Green Tree Frog, *Rhacophorus smaragdinus*, is illustrated on a Cambodian stamp, Scott No. 1276. Another frog of this same species is shown on a Republic of China stamp, Scott 2645. Finally a stamp from the Philippines, Scott 2612a, pictures a Gliding Tree Frog, *Rhacophorus pardalis*.

I suspect that any day one of the enterprising natives, in flying frog territory, will be setting up shop and advertising "Be the first in your block to own a flying frog on a string".



Figure 1. A 1999 stamp from the Philippine Islands features a Gliding Tree Frog.