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Herbivory in the Green Frog (*Rana hexadactyla*)

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The Indian green frog (*Rana hexadactyla*) is a large (snout-vent length to 132.2 mm) ranid, distributed along both coasts of the Indian subcontinent, its distribution including India, Sri Lanka and Bangladesh. The species utilises deep permanent pools along the low-lying coastal plains, few records of the species being over 100 km from the coast. The trophic ecology of the species was studied at a seasonal locality in the vicinity of Madras, in the south Indian state of Tamil Nadu, between 1989 and 1990.

Instances of herbivory among metamorphosed anurans are few, and include a bufonid (*Bufo marinus*), a siren (*Siren lacertina*) and a hylid (*Hyla truncata*). None, except *S. lacertina* are specialised folivores, and herbivory amongst poikilothermous vertebrates is thought to be rare for several reasons, including the low nutrient content of plant matter relative to animal food, that may result in slow growth; a low assimilation efficiency; in addition herbivorous poikilotherms require a high body temperature to process enough food; and a specialised trophic apparatus.

Rana hexadactyla shows an entirely folivorous larval stage, which is followed by a largely insectivorous early post-metamorphic stage, when the species sit-and-waits for a variety of small invertebrates. A distinct dietary shift is noticeable from a body size of 30.0 mm, when plant matter is ingested, and may comprise 44.0% its diet, by volume. Frogs over 42.2 mm are almost entirely herbivorous, aquatic macrophytes constituting 70.5% of the diet. The variation in the percentage of plant matter in stomach samples between months is not statistically significant, although females appear to select large, and presumably more nutritious, food items, including insect larvae, fish, and even frogs and their larvae, prior to the breeding seasons.

To overcome limitations connected with a diet of plants, *Rana hexadactyla* is suspected to have a high dietary efficiency, by processing digesta very slowly, relative to its sympatrics at the study site, a primarily insectivorous (and presumably fast-growing) early post-metamorphic size-class and a specialised trophic apparatus, comprising cylindrical-conical dentition and a more voluminous gastrointestinal tract.