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*Bufo marinus* (Linnaeus, 1758)

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# ***Bufo marinus* (Linnaeus, 1758)**



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**Scientific Name:** *Bufo marinus*

**Integrated Taxonomic Information System (ITIS):** [173489](#)

**Other scientific names appearing in the literature of this species:**

*Rana marina*, *Bufo gigas*.

**Common Name:** Marine toad, giant toad

**Distinguishing Features:**

Marine toads can be distinguished by the presence of immense, deeply pitted parotoid glands extending far down the sides of their bodies (Behler, 1979; Conant and Collins, 1991). They are usually brown or gray brown above, with occasional cream spots scattered across the back, sides and legs. The underside is creamy yellow sometimes flecked with black. The back and legs are covered with spiny warts (Ashton and Ashton, 1988).

Tadpoles are jet black above and silvery white with black spots below (Ashton and Ashton, 1988).

**Similar Species:**

The southern toad, *Bufo terrestris*, which can be distinguished by the presence of two ridges behind the eyes that end in bulbs in front of the parotoid glands. The oak toad, *Bufo quercicus*, which is much smaller and can be distinguished by the presence of an orange stripe that runs down the center of its back and small rounded parotoid glands (Ashlock and Ashlock, 1988).

**Biology:**

Marine toads are well adapted for living in urban areas and are quite common in suburban areas over their introduced range in Florida. They can frequently be seen hopping along sidewalks or resting near suburban canals (Wright and Wright, 1949; Krakauer, 1968; Ashton and Ashton, 1988). They are active mostly at night. During the day they hide under fallen trees, leaves, stones, debris, or any other objects in humid areas, or



Photo by Mark Tway

burrow into loose soil (Wright and Wright, 1949; Behler, 1979)

**Temperature Tolerance:** Marine toads are sensitive to cold temperatures. Intolerance of cold temperatures was apparently the reason at least three attempts to introduce this species in Florida failed (Krakauer, 1970).

**Reproduction and Fecundity:** Breeding occurs from early spring to autumn, usually during or immediately after rains (Conant and Collins, 1991). Typically eggs are laid in temporary pools or roadside ditches in two strings that float at the surface or are wrapped around submerged objects. Marine toads can lay eggs in waters of low to moderate salinity (Wright and Wright, 1949). Estimates for egg production by a female in a single breeding season vary from 10,000 to 32,000 (Oliver, 1949 and Storer, 1951 in Krakauer, 1968). Eggs hatch in approximately three days. Tadpoles metamorphose in 45-55 days (Wright and Wright, 1949; Krakauer, 1970; Ashton and Ashton, 1988).

**Trophic Interactions:** Marine toads are voracious omnivores and will consume most any food items available, including arthropods, molluscs, small vertebrates, plant matter and even dog food and cat food. Krakauer (1968) reported the main food items for specimens collected in along canals of southeastern Florida to be beetles, ants and earwigs. This author also found dragonflies, grasshoppers, butterflies, truebugs, crustaceans, gastropods, and plant matter within the stomachs of specimens collected. Three specimens examined had their stomachs full of undigested grass. Cabrera et al. (1996) reported mostly insects such as hymenopterans (bees, wasps, and ants), beetles, and true bugs as well as millipedes, centipedes, gastropods, isopods, and other insects such as homopterans and neuropterans from the stomachs of specimens in Costa Rica. These authors also reported one specimen with its stomach full of plastic. Lab specimens have been kept on diets consisting exclusively of young mice (Krakauer, 1968). Marine toads are notorious for their habit of eating leftover dog and cat food in suburban areas of Florida. They will also scavenge garbage and discarded vegetable matter such as lettuce leaves, carrot peels, avocados, etc. (Alexander, 1964).

### **Maximum Size:**

This species typically grows to a length of 152 mm, with a maximum recorded length of 238 mm for the species (Behler, 1979; Conant and Collins, 1991).

### **Distribution:**

This species naturally occurs from the Amazon basin in South America, through Central America to extreme southern Texas (Conant and Collins, 1991).

Marine toads are established in Stock Island and Key West, as well as throughout Dade and Broward counties, and in Tampa Bay, Hillsborough county, Florida (Ashton and Ashton, 1988; Conant and Collins, 1991).

### [Collection Records](#)

#### **Interest to Fisheries:**

#### **Current Status of this Species in the Gulf of Mexico Ecosystem:**

Marine toads have been described as "the most introduced amphibian in the world" (Behler, 1979; Carmichael and Williams, 1991). They have been introduced throughout the world as a control agent for insects that damage sugarcane (Riemer, 1959; Krakauer, 1968; King, 1970). The first attempt to introduce this species in Florida occurred in 1936. Specimens imported from Puerto Rico were released in Canal Point and Belle Glade, Palm Beach county. This attempt, as well as two subsequent attempts, failed (Riemer, 1959; Krakauer, 1968). Marine toads were finally introduced successfully through an accidental release by an importer at the Miami International Airport, Dade county, in 1955 (Krakauer, 1968; Ashton and Ashton, 1988). Other importers intentionally released specimens in 1963 at Pembroke Park, Broward county, and in 1964 at Kendall, Dade county. The Pembroke Park toads were from Colombia and the Kendall toads from Surinam (King and Krakauer, 1966). Quickly the marine toad population increased to the point of being declared a public nuisance. By 1965, a Dade county official suggested a bounty be placed on this species (Krakauer, 1968, 1970)

#### **Potential Impacts:**

The skin-gland secretions, especially the milky secretions from the parotoid, are highly toxic, and serve as a defense against predators. They may seriously sicken or even kill small animals that bite them. Dogs and cats have typically been reported as victims, however, native wild animals may also be affected. The toxic secretions may also irritate the skin or burn the eyes of human beings who carelessly handle marine toads (Wright and Wright, 1949; Krakauer, 1968, 1970; Behler, 1979; Carmichael and Williams, 1991; Conant and Collins, 1991). There have been reports from other countries where marine toads have been introduced, of competition and elimination of native amphibians (Rabor in Krakauer, 1968). Marine toads probably compete with native frogs and toads for trophic resources and breeding areas. More than likely they also impact native amphibians through direct predation, as they are voracious, and will feed on most any organism available.

#### **Recommendations:**

## References:

- Alexander, T. R. 1964. Observations On The Feeding Behavior Of *Bufo Marinus* (Linne). *Herpetologica* 20:255-259.
- Ashton, R.E., and P.S. Ashton. 1988. Handbook Of Reptiles And Amphibians Of Florida. Part Three The Amphibians. Windward Publishing, Inc.191 Pp.
- Behler, J.L. 1979. The Audubon Society Field Guide to North American Retiles and Amphibians. Alfred A. Knopf, Inc. New York. 743 pp.
- Cabrera, J., R. Barrantes, D. Rodriguez. 1996. Habitos alimentarios de *Bufo marinus* (Anura Bufonidae) en Costa Rica. *Revista de Biologia Tropical* 44(3)/45(1):702-703.
- Carmichael, P. and W. Williams. 1991. Florida's Fabulous Reptiles and Amphibians. World Publications. Tampa, FL. 120 pp.
- Conant, R., and J.T. Collins. 1991. Reptiles And Amphibians. Eastern/Central North America. Houghton Mifflin Company. Boston. 450 Pp.
- Duellman, W. E., and A. Schwartz. 1958. Amphibians and reptiles of southern Florida. *Bulletin of the Florida M.useum* 3:181-324.
- King, W. 1968. As a consequence many will die. *Florida Naturalist* 41(3):99-103, 120.
- King, W., and T. Krakauer. 1966. The exotic herpetofauna of southern Florida. *Quarterly Journal of Florida Academy Science* 29: 144-154.
- Krakauer, T. 1968. The ecology of the neotropical toad, *Bufo marinus*, in south Florida. *Herpetologica* 24:214-221.
- Krakauer, T. 1970. The invasion of the toads. *Florida Naturalist* January: 12-14.
- Neill, W.T. 1957. Historical Biogeography of present-day Florida. *Bulletin Florida State Museum* 2(7):176-220.
- Riemer, W.J. 1959. Giant toads of Florida. *Quarterly Journal of the Florida Academy of Sciences* 21(3):207-211.
- Smith, H. M. and A. J. Kohler. 1978. A survey of herpetological introductions in the United States and Canada. *Transactions of the Kansas Academy of Science* 80(1):1-24.
- Wilson, L. D., and L. Porrás. 1983. The ecological impact of

man on the south Florida herpetofauna. Museum of Natural History, University of Kansas, Lawrence. Special Publication No. 9. 171pp.

Wright, A.H., and A.A. Wright. 1949. Handbook of Frogs and Toads. Comstock Publishing Associates. Ithaca, NY. 640 pp.

**Other on-line references:**

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