

*Rhinella marina*  [简体中文](#) [正體中文](#)

**System:** Freshwater\_terrestrial

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Amphibia	Anura	Bufonidae

**Common name** bufo toad (English), Suriname toad (English), giant American toad (English), macao (English, Dominican Republic), bullfrog (English), maco pempen (English, Dominican Republic), marine Toad (English), Maco toro (English, Dominican Republic), kwapp (English, Caribbean), crapaud (English, Caribbean), giant toad (English), cane toad (English), Aga-Kröte (German)

**Synonym** *Bufo marinus* , Schneider 1799  
*Bufo strumosus* , Court 1858  
*Bufo aqua* , Clark 1916  
*Bufo marinis [sic]* , Barbour 1916  
*Bufo marinus* , Mertens 1969  
*Bufo marinus marinus* , Mertens 1972  
*Chaunus marinus* , Frost et al. 2006

## Similar species

**Summary** Cane toads were introduced to many countries as biological control agents for various insect pests of sugarcane and other crops. The cane toads have proved to be pests themselves. They will feed on almost any terrestrial animal and compete with native amphibians for food and breeding habitats. Their toxic secretions are known to cause illness and death in domestic animals that come into contact with them, such as dogs and cats, and wildlife, such as snakes and lizards. Human fatalities have been recorded following ingestion of the eggs or adults.



[view this species on IUCN Red List](#)

## Species Description

Cane toads are heavily built with short legs. They can sometimes grow up to 30cm long, with 20cm not uncommon for females and average of 12-15cm in many regions. Males are slightly smaller. Fingers lack webbing, but the toes are heavily webbed. Adults have a rough, warty skin, coloured tan, brown or dark brown, dull green or black. The tympanum is distinct, about one half to two thirds the size of the eye. Venom glands are aggregated together to form large and distinctive parotoid glands, found above each shoulder. These glands are able to ooze venom. (Gautherot, 2000)

## Lifecycle Stages

Cane toad eggs hatch within 24 to 72 hours of laying into tiny, shiny black tadpoles. Tadpoles metamorphose after two to seven weeks (Alford et al. 1995), becoming very small (10-12mm) terrestrial juveniles. These small juveniles experience very high mortality, and unlike adults or larger juveniles they tend to be diurnal. It has been estimated that less 0.5 percent of cane toads toad eggs survive to maturity. It takes a year for the toads to reach maturity, when they will be about 75mm long. Cane toads survival in the wild is unknown, but unlikely to be more than 5 years. Animals kept in captivity are estimated to live 10-40 years (Honolulu Zoo).

## Uses

Bufotenine toxin produced by the cane toad is used as an aphrodisiac and hair-restorer in Japan. In mainland China it is used to lower the heart rate of patients undergoing cardiac surgery (Musgrave, 1996). The toxin is used by South American Indians on hunting arrows. The toxin is sometimes used as a narcotic by some people (Lever, 2001).

Cane toads were used for pregnancy testing in humans. A woman's urine was injected subcutaneously into the lymph glands of a male toad, resulting in spermatazoa becoming present in the toad's urine if the woman was pregnant (Berra, 1998 in Lever, 2001).

## Habitat Description

Cane toads' original habitat, before their dispersal by humans, was seasonal Amazonian savanna, with small fresh water lakes. Cane toads are found in rain forests, both in their native range and introduced range, such as in Hawai'i and New Guinea, though not at high densities (Fred Kraus pers.comm). However, they can now be found in many places, such as man-made ponds, gardens, drain pipes, debris, under cement piles and beneath houses. Cane toads will usually stay on dry land and reproduce in any shallow water near its surroundings. Toads and tadpoles are able to tolerate very high levels of salinity. Tadpoles have been observed in water, metres from the open ocean.

## Reproduction

Cane toads breed between the months of April and September in the Northern Hemisphere and they can be heard calling their mates, beginning in late March. In the Southern Hemisphere, in Australia, it has been noticed that the male cane toad calls in any month of the year, peaking during the wet season. Every year the female cane toad produces two clutches of about 8,000 to 35,000 eggs. The eggs are externally fertilised by the male's sperm. The eggs can be found floating on the surface of water in a jelly-like string or wrapped around vegetation and other debris in the water. The age and size of the female will determine how many eggs the toad will produce (Honolulu Zoo).

## Nutrition

Cane toads eat "almost any terrestrial animal", although they are more likely to consume animals active at ground level during the night. The major diet items are insects, including grass-hoppers, caterpillars and ants, together with millipedes and land snails (Hinkley, 1962 in SPREP, 2000).

The cane toad is opportunistic in its feeding habits and will consume almost anything that it is able to catch (Zug and Zug, 1979 in Lever, 2001). Terrestrial arthropods make up the bulk of the diet, but snails, crabs, small vertebrates (mammals, birds, lizards and frogs), pet food and human faeces may also be consumed (Lever, 2001). Cane toads will gorge themselves if food is in abundance. Unusual items that cane toads have been observed eating include rotting garbage, a coral snake (*Micrurus circinalis*), fledgling birds and a lit cigarette butt (Lever, 2001).

## General Impacts

Cane toads will eat “almost any terrestrial animal”, although they are more likely to consume those active at ground level during the night (Hinkley 1962). Covacevich and Archer, (1975) in their paper on the effects of the cane toad on indigenous vertebrates in Australia, state that snakes, such as the carpet python, the black headed python, death adder and some other snakes have been found dead with the cane toad in their mouths or guts. Studies in Australia where the range of the cane toad is ever expanding have shown that the cane toad plays an important role in structuring native anuran communities (Crossland, 2000) via direct and indirect mechanisms and is thus a threat to the survival of native Australian fauna ( Catling,P.C et al.2003).

Toads have been implicated in the decline of populations of monitor lizards in Guam (Jackson 1962, Dryden 1965). Pernetta and Watling (1978) consider that the toads do not interact with native frogs because they use different habitats; the frogs are either along stream banks or in the foliage of dense forest. Villadolid (1956) found rats and mice in stomachs of toads in the Philippine Islands. Hinkley concluded that this toad is “economically neutral” because it consumes both “harmful” and “beneficial” invertebrates.

Secretions from the parotoid glands are produced when the toad is provoked or localised pressure is applied, such as a predator grasping the toad in its mouth (NRM, 2001). The toxic secretions are known to cause illness and death in both domestic and wild animals that come into contact with toads, such as dogs, cats, snakes and lizards. The toxin causes extreme pain if rubbed into the eyes (NRM, 2001). Human fatalities have been reported, but are probably confined to people who deliberately concentrate the toxin and then ingest it. Overall, the major impacts are on predatory species that attempt to eat toads and then die; in particular, species that normally specialise amphibians, such as Mertens water monitor in northern Australia.

## Management Info

**Preventative measures:** The main controls on the spread of cane toads in southern Australia are quarantine checks and public awareness and response. One publicity campaign on the north coast of New South Wales resulted in 100 people collecting more than 900 cane toads.

**Physical:** Cane toads can be excluded from garden ponds and dams by a 50cm high barrier, such as a thick hedge or a wire mesh fence. Toads may be killed humanely by putting them inside a plastic bag or container and placing them in a freezer (Brandt and Mazzotti, 1990).

**Biological:** In 1994, the CSIRO Division of Wildlife and Ecology (Australia) was assessing the pathogenicity and specificity of viruses against cane toads. Scientists at the CSIRO Animal Health Laboratory in Victoria have been searching for biological controls of cane toads and in 2001 they began investigating gene technology as a mechanism of control. Environment Australia have launched a project for the development of a cane toad biological control. The aim is to develop a self disseminating viral vector to disrupt the development of the toad. Scientists at the University of Adelaide (Australia) have isolated a sex pheromone in a native Australian frog; they hope that a similar pheromone will be found in cane toads that could be used to disrupt the breeding cycle. These are long term solutions.

Scientists at Sydney University have identified a parasitic worm that attacks the cane toads' lungs, stunting their growth and, in most cases, killing them. They believe the parasite has the potential to reduce toad populations dramatically.

## Pathway

Cane toads have been found on Norfolk IslandsCane toads have been transported in Australia by large freight trucks or 'road trains' (Sydney Morning Herald, 2002).Cane toads have been introduced to many locations around the world as a biological control agent for crop pests (NRM, 2001).

**Principal source:** Lever, C. 2001. The Cane Toad: the history and ecology of a successful colonist. Westbury Publishing, West Yorkshire. 230pp.

Gautherot, J., 2000. *Bufo marinus*. 2001 James Cook University.

**Compiler:** IUCN SSC Invasive Species Specialist Group

Updates with support from the Overseas Territories Environmental Programme (OTEP) project XOT603, a joint project with the Cayman Islands Government - Department of Environment

**Review:**

**Publication date:** 2010-05-26

## ALIEN RANGE

<b>[2]</b> AMERICAN SAMOA	<b>[1]</b> ANGUILLA
<b>[1]</b> ANTIGUA AND BARBUDA	<b>[1]</b> ARUBA
<b>[15]</b> AUSTRALIA	<b>[1]</b> BARBADOS
<b>[2]</b> BERMUDA	<b>[2]</b> BRITISH INDIAN OCEAN TERRITORY
<b>[1]</b> CAROLINE ISLANDS	<b>[1]</b> CAYMAN ISLANDS
<b>[1]</b> COOK ISLANDS	<b>[1]</b> CUBA
<b>[1]</b> DOMINICA	<b>[1]</b> DOMINICAN REPUBLIC
<b>[1]</b> EGYPT	<b>[8]</b> FIJI
<b>[1]</b> FRENCH POLYNESIA	<b>[1]</b> GRENADA
<b>[3]</b> GUADELOUPE	<b>[2]</b> GUAM
<b>[1]</b> HAITI	<b>[1]</b> HISPANIOLA
<b>[1]</b> JAMAICA	<b>[6]</b> JAPAN
<b>[1]</b> KIRIBATI	<b>[1]</b> MARSHALL ISLANDS
<b>[1]</b> MARTINIQUE	<b>[1]</b> MAURITIUS
<b>[6]</b> MICRONESIA, FEDERATED STATES OF	<b>[1]</b> MONTSERRAT
<b>[6]</b> NORTHERN MARIANA ISLANDS	<b>[9]</b> PALAU
<b>[17]</b> PAPUA NEW GUINEA	<b>[19]</b> PHILIPPINES
<b>[1]</b> PUERTO RICO	<b>[2]</b> SAINT KITTS AND NEVIS
<b>[1]</b> SAINT LUCIA	<b>[3]</b> SAINT VINCENT AND THE GRENADINES
<b>[7]</b> SOLOMON ISLANDS	<b>[1]</b> SPAIN
<b>[1]</b> TAIWAN	<b>[1]</b> THAILAND
<b>[3]</b> TUVALU	<b>[12]</b> UNITED STATES
<b>[1]</b> UNITED STATES MINOR OUTLYING ISLANDS	<b>[2]</b> VIRGIN ISLANDS, BRITISH
<b>[2]</b> VIRGIN ISLANDS, U.S.	

**Red List assessed species 45: CR = 18; EN = 15; VU = 5; NT = 4; LC = 3;**

<a href="#">Babina okinavana</a> <b>EN</b>	<a href="#">Carettochelys insculpta</a> <b>VU</b>
<a href="#">Cherax cuspidatus</a> <b>LC</b>	<a href="#">Chlamydosaurus kingii</a> <b>LC</b>
<a href="#">Dasyurus spartacus</a> <b>NT</b>	<a href="#">Euastacus balanesis</a> <b>EN</b>
<a href="#">Euastacus bindal</a> <b>CR</b>	<a href="#">Euastacus clarkae</a> <b>CR</b>
<a href="#">Euastacus dalagarbe</a> <b>CR</b>	<a href="#">Euastacus eungella</a> <b>CR</b>
<a href="#">Euastacus fleckeri</a> <b>EN</b>	<a href="#">Euastacus gamilaroi</a> <b>CR</b>
<a href="#">Euastacus girurmulayn</a> <b>CR</b>	<a href="#">Euastacus gumar</a> <b>EN</b>
<a href="#">Euastacus guruhgi</a> <b>CR</b>	<a href="#">Euastacus guwinus</a> <b>CR</b>
<a href="#">Euastacus hirsutus</a> <b>EN</b>	<a href="#">Euastacus hystrius</a> <b>EN</b>
<a href="#">Euastacus jagabar</a> <b>CR</b>	<a href="#">Euastacus jagara</a> <b>CR</b>
<a href="#">Euastacus maccai</a> <b>EN</b>	<a href="#">Euastacus maidae</a> <b>CR</b>
<a href="#">Euastacus mirangudjin</a> <b>CR</b>	<a href="#">Euastacus monteithorum</a> <b>CR</b>
<a href="#">Euastacus pilosus</a> <b>EN</b>	<a href="#">Euastacus polysetosus</a> <b>EN</b>
<a href="#">Euastacus robertsi</a> <b>CR</b>	<a href="#">Euastacus setosus</a> <b>CR</b>
<a href="#">Euastacus simplex</a> <b>VU</b>	<a href="#">Euastacus spinichelatus</a> <b>EN</b>
<a href="#">Euastacus sulcatus</a> <b>VU</b>	<a href="#">Euastacus suttoni</a> <b>VU</b>
<a href="#">Euastacus urospinosus</a> <b>EN</b>	<a href="#">Euastacus valentulus</a> <b>LC</b>

[Euastacus yigara](#) CR  
[Odorrana utsunomiyaorum](#) EN  
[Platymantis vitianus](#) EN  
[Pseudantechinus mimulus](#) EN  
[Taudactylus eungellensis](#) CR  
[Tenuibranchiurus glypticus](#) EN

[Eumeces longirostris](#) CR  
[Phascogale pirata](#) VU  
[Pseudantechinus bilarni](#) NT  
[Strophurus taenicauda](#) NT  
[Taudactylus liemi](#) NT

## BIBLIOGRAPHY

41 references found for *Rhinella marina*

### Management information

Atkinson, I. A. E. and Atkinson, T. J. 2000. Land vertebrates as invasive species on islands served by the South Pacific Regional Environment Programme. In: *Invasive Species in the Pacific: A Technical Review and Draft Regional Strategy*. South Pacific Regional Environment Programme, Samoa: 19-84.

**Summary:** This report reviews available information on the adverse effects of 14 alien vertebrates considered to be significant invasive species on islands of the South Pacific and Hawaii, supplementing the authors' experience with that of other workers.

Bomford, M., 2003. *Risk Assessment for the Import and Keeping of Exotic Vertebrates in Australia*. Bureau of Rural Sciences, Canberra.

**Summary:** Available from: <http://www.feral.org.au/wp-content/uploads/2010/03/PC12803.pdf> [Accessed August 19 2010]

Brandt, Laura A., Mazzotti, Frank J. 1990. Marine toads (*Bufo marinus*), University of Florida - Cooperative Extension Service, Institute of Food and Agricultural Sciences.

**Summary:** A small amount of information plus line drawings.

Available from: <http://edis.ifas.ufl.edu/pdf/files/UW/UW04600.pdf> [Accessed 15 July, 2003].

Centre for Environment, Fisheries & Aquaculture Science (CEFAS), 2008. *Decision support tools-Identifying potentially invasive non-native marine and freshwater species: fish, invertebrates, amphibians*.

**Summary:** The electronic tool kits made available on the Cefas page for free download are Crown Copyright (2007-2008). As such, these are freeware and may be freely distributed provided this notice is retained. No warranty, expressed or implied, is made and users should satisfy themselves as to the applicability of the results in any given circumstance. Toolkits available include 1) FISK- Freshwater Fish Invasiveness Scoring Kit (English and Spanish language version); 2) MFISK- Marine Fish Invasiveness Scoring Kit; 3) MI-ISK- Marine invertebrate Invasiveness Scoring Kit; 4) FI-ISK- Freshwater Invertebrate Invasiveness Scoring Kit and AmphISK- Amphibian Invasiveness Scoring Kit. These tool kits were developed by Cefas, with new VisualBasic and computational programming by Lorenzo Vilizzi, David Cooper, Andy South and Gordon H. Copp, based on VisualBasic code in the original Weed Risk Assessment (WRA) tool kit of P.C. Pheloung, P.A. Williams & S.R. Halloy (1999).

The decision support tools are available from:

<http://cefas.defra.gov.uk/our-science/ecosystems-and-biodiversity/non-native-species/decision-support-tools.aspx> [Accessed 13 October 2011]

The guidance document is available from [http://www.cefas.co.uk/media/118009/fisk\\_guide\\_v2.pdf](http://www.cefas.co.uk/media/118009/fisk_guide_v2.pdf) [Accessed 13 January 2009].

CSIROOnline, 2001. Commonwealth Scientific and Industrial Research Organisation.

**Summary:** Good information on cane toad control in Australia.

Doody, J.S., Green, B., Sims, R., Rhind, D., West, P., and Steer, D. 2006. Indirect impacts of invasive cane toads (*Bufo marinus*) on nest predation in pig-nosed turtles (*Carettochelys insculpta*). *Wildlife Research* 33, 349-354.

Eldredge, L. G. 2000. Non-indigenous freshwater fishes, amphibians, and crustaceans of the Pacific and Hawaiian islands. In *Invasive Species in the Pacific: A Technical Review and Draft Regional Strategy*. South Pacific Regional Environment Programme, Samoa: 173-190

**Summary:** Discusses the most invasive freshwater fish in the Pacific region and also includes a checklist of introduced fish to the Pacific.

Hyatt, Alex and Humphrey, John. 1995. Biological Control of the Cane Toad in Australia. FROGLOG Number 15. CSIRO Australian Animal Health Laboratory.

**Summary:** Has information on efforts to use biological control on cane toads in Australia.

IUCN 2010. *IUCN Red List of Threatened Species. Version 2010.4*.

**Summary:** The IUCN Red List of Threatened Species provides taxonomic, conservation status and distribution information on taxa that have been globally evaluated using the IUCN Red List Categories and Criteria. This system is designed to determine the relative risk of extinction, and the main purpose of the IUCN Red List is to catalogue and highlight those taxa that are facing a higher risk of global extinction (i.e. those listed as Critically Endangered, Endangered and Vulnerable). The IUCN Red List also includes information on taxa that are categorized as Extinct or Extinct in the Wild; on taxa that cannot be evaluated because of insufficient information (i.e. are Data Deficient); and on taxa that are either close to meeting the threatened thresholds or that would be threatened were it not for an ongoing taxon-specific conservation programme (i.e. are Near Threatened).

Available from: <http://www.iucnredlist.org/> [Accessed 25 May 2011]

IUCN/SSC Invasive Species Specialist Group (ISSG), 2010. *A Compilation of Information Sources for Conservation Managers*.

**Summary:** This compilation of information sources can be sorted on keywords for example: Baits & Lures, Non Target Species, Eradication, Monitoring, Risk Assessment, Weeds, Herbicides etc. This compilation is at present in Excel format, this will be web-enabled as a searchable database shortly. This version of the database has been developed by the IUCN SSC ISSG as part of an Overseas Territories Environmental Programme funded project XOT603 in partnership with the Cayman Islands Government - Department of Environment. The compilation is a work under progress, the ISSG will manage, maintain and enhance the database with current and newly published information, reports, journal articles etc.

Lever, C. 2001. The Cane Toad: the history and ecology of a successful colonist. Westbury Publishing, West Yorkshire. 230pp.

**Summary:** An extremely comprehensive text on all aspects of cane toad ecology and history. Has very detailed coverage of all the locations where cane toads have been introduced. An excellent resource for further information.



Massam M, Kirkpatrick W and Page A., 2010. Assessment and prioritisation of risk for forty introduced animal species. Invasive Animals Cooperative Research Centre, Canberra.

**Summary:** This report documents work contributing to a project commissioned by the Invasive Animals Cooperative Research Centre to validate and refine risk assessment models used in decisions to import and manage introduced vertebrate species. The intent of the project was to: a) increase predictive accuracy, scientific validation and adoption of risk assessment models for the import and keeping of exotic vertebrates, and b) reduce the risk of new vertebrate pests establishing introduced populations in Australia.

Available from: [http://www.feral.org.au/wp-content/uploads/2010/08/DAFWA\\_RA\\_060510.pdf](http://www.feral.org.au/wp-content/uploads/2010/08/DAFWA_RA_060510.pdf) [Accessed 16 March 2011]

Narayan, E.; Christi, K.; Morley, C.; Trevenen, P., 2008. Sexual dimorphism in the cane toad *Bufo marinus*: a quantitative comparison of visual inspection methods for sexing individuals. The Herpetological Journal, Volume 18, Number 1, January 2008, pp. 63-65(3)

**Summary:** A study was conducted to determine whether simple morphological characteristics could be used to rapidly determine the sex of cane toads. We found that four characteristics reliably allowed rapid assessment of sex: skin texture on the dorsal surface, skin colour on the dorsal surface, the presence of a creamy-coloured stripe along the dorsal margin and the presence of vocal sac openings. These criteria were tested by an assessment of use by both experienced and novice operators and were shown to be reliable for sexing cane toads that were large enough to assess morphological characteristics reliably (individuals with a snout-vent length exceeding 50 mm). Of the four techniques, the presence of vocal sac openings proved to be the most reliable. Such techniques may be used for a number of purposes, and are particularly useful during conservation projects that attempt to eradicate or reduce the effects of this invasive alien species on local ecosystems.

Natural Resources and Water (NRW), 2006. Fact sheet: Cane toad *Bufo marinus* Queensland Government Dept. of Natural Resources and Water

Pacific Invasives Initiative (PII), 2006. Viwa Island Restoration Project

**Summary:** Available from: <http://www.issg.org/cii/PII/demo/viwa.html> [Accessed 12 March 2010]

Page, Amanda; Win Kirkpatrick and Marion Massam, July 2008. Cane Toad (*Bufo marinus*) risk assessments for Australia, Department of Agriculture and Food Western Australia.

**Summary:** Models for assessing the risk that exotic vertebrates could establish in Australia have been developed for mammals, birds (Bomford 2003; Bomford 2006, 2008), reptiles and amphibians (Bomford 2006, 2008; Bomford *et al.* 2005). These Risk Assessment models have been further explored by Western Australia Department of Agriculture & Food (DAFWA) to confirm that they reasonably predict public safety, establishment and pest risks across a full range of exotic species and risk levels. Mammals and birds were assessed for the pest risk they pose if introduced to Australia, by calculating Vertebrate Pests Committee (VPC) Threat Categories. These categories incorporate risk of establishing populations in the wild, risk of causing public harm, and risk of becoming a pest (eg causing agricultural damage, competing with native fauna, etc). The 7-factor Australian Bird and Mammal Model was used for these assessments.

Phillips, B. L., Brown, G. P., Webb, J. K., Shine, R., 2006. Invasion and the evolution of speed in toads. Short communications. Nature Vol 439|16 February 2006

**Summary:** Available from: <http://www.nature.com/nature/journal/v439/n7078/pdf/439803a.pdf> [Accessed 13 February 2008]

Varnham, K. 2006. Non-native species in UK Overseas Territories: a review. JNCC Report 372. Peterborough: United Kingdom.

**Summary:** This database compiles information on alien species from British Overseas Territories.

Available from: <http://www.jncc.gov.uk/page-3660> [Accessed 10 November 2009]

Wilson, Colin, Wildlife Management Officer, Department of Infrastructure, Planning and Environment, Parks & Wildlife Service, Northern Territory, Australia.

**Summary:** Compiler of original GISD profile of *Chromolaena odorata*.

## General information

Aguirre, W. and Poss, S. G., 1999. *Bufo marinus*. Non-Indigenous species in the Gulf of Mexico Ecosystem.

**Summary:** Some useful general information on the species.

Breuil, M. 2002. Histoire naturelle des Amphibiens et des Reptiles terrestres de l'archipel Guadeloupéen. In Patrimoines Naturels, MNHN, Paris.

**Summary:** Ce livre propose une synthèse sur les amphibiens et reptiles terrestres de l'archipel Guadeloupéen. Six espèces d'anoures, 5 de tortues, 21 de lézards dont 4 teintes et 7 de serpents sont détaillés.

Breuil, M. & Ibáñez, B. 2004. Les Hylides invasifs dans les Antilles françaises et le peuplement batrachologique naturel. Bull. Soc. Herpetol. Fr, 10 p.

**Summary:** Synthèse des introductions d'hylides (rainettes) dans les Antilles françaises. Trois espèces exotiques et envahissantes sont inventoriées.

CONABIO. 2008. Sistema de información sobre especies invasoras en México. Especies invasoras - Anfibios. Comisión Nacional para el Conocimiento y Uso de la Biodiversidad. Fecha de acceso.

**Summary:** English:

The species list sheet for the Mexican information system on invasive species currently provides information related to Scientific names, family, group and common names, as well as habitat, status of invasion in Mexico, pathways of introduction and links to other specialised websites. Some of the higher risk species already have a direct link to the alert page. It is important to notice that these lists are constantly being updated, please refer to the main page (<http://www.conabio.gob.mx/invasoras/index.php/Portada>), under the section Novedades for information on updates.

Invasive species - amphibians is available from: [http://www.conabio.gob.mx/invasoras/index.php/Especies\\_invasoras\\_-\\_Anfibios](http://www.conabio.gob.mx/invasoras/index.php/Especies_invasoras_-_Anfibios) [Accessed 30 July 2008]

**Spanish:**

La lista de especies del Sistema de información sobre especies invasoras de México cuenta actualmente con información acerca de nombre científico, familia, grupo y nombre común, así como como hábitat, estado de la invasión en México, rutas de introducción y ligas a otros sitios especializados. Algunas de las especies de mayor riesgo ya tienen una liga directa a la página de alertas. Es importante resaltar que estas listas se encuentran en constante proceso de actualización, por favor consulte la portada (<http://www.conabio.gob.mx/invasoras/index.php/Portada>), en la sección novedades, para conocer los cambios.

Especies invasoras - Anfibios is available from: [http://www.conabio.gob.mx/invasoras/index.php/Especies\\_invasoras\\_-\\_Anfibios](http://www.conabio.gob.mx/invasoras/index.php/Especies_invasoras_-_Anfibios) [Accessed 30 July 2008]

Eldredge, L.G., 1994 Introductions of commercially significant aquatic organisms to the Pacific Islands. South Pacific Commission, Noumea, New Caledonia.

Florida Gardener, 2002. *Bufo marinus* - Giant Toad, Cane Toad, Marine Toad. Copyright 1999-2002 FloridaGardener.com.

**Summary:** A good overview of information about cane toads in Florida.

Available from: <http://www.floridagardener.com/critters/BufoMarinus.htm> [Accessed 10 February 2003].

Frank Solís, Roberto Ibáñez, Geoffrey Hammerson, Blair Hedges, Arvin Diesmos, Masafumi Matsui, Jean-Marc Hero, Stephen Richards, Luis Coloma, Santiago Ron, Enrique La Marca, Jerry Hardy, Robert Powell, Federico Bolaños, Gerardo Chaves, Paulino Ponce 2009. *Rhinella marina* (Linnaeus, 1758). The IUCN Red List of Threatened Species 2009: <https://doi.org/10.2305/IUCN.UK.2009-2.RLTS.T41065A10382424.en>

**Summary:** Available from: <http://www.iucnredlist.org/details/41065/0> [Accessed November 28 2012]

Grant, G. S. 1996. Prey of introduced *Bufo marinus* in American Samoa. Herpetological Review 27: 67-79.

Hilgris, Ryan. 2000. *Bufo marinus*. The Animal Diversity Web, University of Michigan.

**Summary:** Has a moderate amount of general information.

Available from: [http://animaldiversity.ummz.umich.edu/accounts/bufo/b.\\_marinus.html](http://animaldiversity.ummz.umich.edu/accounts/bufo/b._marinus.html) [Accessed 10 February 2003].

Hinkley, A. D. 1962. Diet of the giant toad, *Bufo marinus* (L.), in Fiji. Herpetologica 18: 253-259.

ITIS (Integrated Taxonomic Information System), 2004. Online Database *Bufo marinus*

**Summary:** An online database that provides taxonomic information, common names, synonyms and geographical jurisdiction of a species. In addition links are provided to retrieve biological records and collection information from the Global Biodiversity Information Facility (GBIF) Data Portal and bioscience articles from BioOne journals.

Available from: [http://www.itis.gov/servlet/SingleRpt/SingleRpt?search\\_topic=TSN&search\\_value=173489](http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=173489) [Accessed 13 February 2008]

IUCN, Conservation International, and NatureServe. 2006. *Global Amphibian Assessment*. Downloaded on 4 May 2006.

**Summary:** The Global Amphibian Assessment (GAA) is the first-ever comprehensive assessment of the conservation status of the world's 5,918 known species of frogs, toads, salamanders, and caecilians. This website presents results of the assessments, including IUCN Red List threat category, range map, ecology information, and other data for every amphibian species.

Available from: <http://www.globalamphibians.org/> [Accessed 5 November 2006].

Jackson, W. B. 1962. Area of study. In Storer, T. I. (ed.) Pacific Island rat ecology. Bernice P. Bishop Museum Bulletin 225: 14-20.

Lever, R. J. A. W. 1945. The giant toad in the Solomon Islands. Fiji Agricultural Journal 16: 1.

Lorvelec, O., Pascal, M., Pavis, C., Feldmann, P. 2007. Amphibians and reptiles of the French West Indies : Inventory, threats and conservation. Applied Herpetology 4, 131-161

**Summary:** Cet article fait le point des connaissances sur les amphibiens et les reptiles indigènes et introduits des Antilles françaises. Les impacts des espèces introduites sur la faune indigène sont discutés. Le cas de la conservation des populations d'*Iguana delicatissima* sur l'île de Petite-Terre est présenté.

Muséum national d'Histoire naturelle [Ed]. 2003-2006. *Bufo marinus* Inventaire national du Patrimoine naturel.

**Summary:** Base de données en ligne sur le patrimoine naturel français.

Available from: [http://inpn.mnhn.fr/isb/servlet/ISBServlet?action=Especie&typeAction=10&pageReturn=ficheEspecieDescription.jsp&numero\\_taxon=350746](http://inpn.mnhn.fr/isb/servlet/ISBServlet?action=Especie&typeAction=10&pageReturn=ficheEspecieDescription.jsp&numero_taxon=350746) [Accessed 26 March 2008]

NatureServe, 1995. *Bufo marinus*. NatureServe Explorer.

**Summary:** Database containing some useful information and a large number of references.

Available from: <http://www.invasivespecies.gov/profiles/canetoad.shtml> [Accessed 10 February 2003]

Pernetta, J. C. and Watling, D. 1978. The introduced and native terrestrial vertebrates of Fiji. Pacific Science 32: 223-244.

Somma, Louis A. 2002. *Bufo marinus* (Linnaeus, 1758) USGS - Nonindigenous Aquatic Species.

**Summary:** Distribution information with an extremely extensive reference list.

Available from: <http://nas.er.usgs.gov/queries/FactSheet.asp?speciesID=48> [Accessed 10 February 2008].

Sullivan, John., undated. Cane Toad.

**Summary:** Has some good photos.

Available from: <http://www.wildherps.com/species/B.marinus.html> [Accessed 10 February 2003]



# GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Rhinella marina*

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[Sydney Morning Herald, June 17 2002. Bush Tucker.](#)

**Summary:** An interesting article on the effect that the cane toad is having on the indigenous Aboriginal population of Australia's Arnhem Land.

Available from: <http://www.smh.com.au/articles/2002/06/16/1023864379000.html> [Accessed 10 February 2003].

Villadolid, D. V. 1956. A study of Cotabato rats and their control. *Araneta Journal of Agriculture* 3: 1-45.