

LESSER ANTILLEAN IGUANA



Scientific name – *Iguana delicatissima*



Credit: James Morgan

Background

Once widespread throughout the Lesser Antillean chain of islands in the Eastern Caribbean, this large lizard is now thought to be confined to just half a dozen islands and a couple of offshore islets. Iguana populations on all the islands in its current range have declined considerably in recent times, and on many it is considered in critical danger of extinction.

A combination of man-made problems threatens the survival of the Lesser Antillean iguana. These include habitat loss and fragmentation, hunting, interbreeding with a closely related introduced species and introduced predators and competitors.

Captive breeding trials began in 1992, when a pair of wild-caught iguanas came to Jersey Zoo from the island of Dominica. Two years later a further 3 pairs were sent to Memphis Zoo and San Diego Zoo's special endangered species breeding centre. This kind of iguana has proven notoriously difficult to breed in captivity, but Durrell Wildlife's reptile experts have got it right - the only ones so far! To date our pair of iguanas has produced 9 offspring - a singleton in 1997 and an extraordinarily successful 8 in 2000!

Species classification

Iguana delicatissima belongs to the lizard family known as the Iguanidae, of which there are 8 sub-groups or genera. The *Iguana* genus contains just two species – *I. delicatissima* and *I. iguana*, the green iguana, which is a commonly kept pet. The feature that most easily distinguishes these two species is the large, round scale, which the green iguana has below each ear hole but the Lesser Antillean (LA) iguana does not. The *Cyclura* group of iguanas are also found in the West Indies, further north than *Iguana*, in the Bahamas and Greater Antilles. Some of the iguana species in this group are much larger; an example is the rhinoceros iguana *Cyclura cornuta*, which is also kept at the Zoo. As a group the West Indian iguanas are probably the most endangered lizards in the world.

Description

The colouration of adult LA iguanas varies to a certain extent between different islands, but they tend to be mainly grey, sometimes with green speckling, particularly on the belly. They have large pale, cream-coloured scales on the head and a swelling at the back of the lower jaw. These swollen jowls turn pink in reproductively active males, who also develop a slight blue colour in the scales around each eye. Males also have femoral pores – a line of distinctive white scales along each inner thigh that exude a waxy pheromone-laden secretion during the breeding season. Tall spiny scales form a crest along the backbone, which extends from behind the head to the base of the tail, and their long toes are tipped with strong, sharp claws. There is a large flap of skin under the iguana's throat, which is known as a dewlap and is used in displays of aggression and courtship. The sexes look alike, except that males are bigger, heavier bodied and their dewlaps and jaw swellings are more pronounced. The body of a fully-grown male iguana is usually about 40cm (16in) long, with an 80cm (32in) tail, and a female is about two-thirds this size. Weights are very variable, but on average they are about 3½kg (7¾lb) for an adult male and 2½kg (5½lb) for an adult female with eggs.

Distribution and habitat

Within recent times, the Lesser Antillean Iguana is known to have lived on 14 islands and islets in the Eastern Caribbean, throughout the northern part of Lesser Antillean chain (from Anguilla to Martinique). It is now considered extinct on many of these, including Antigua, St Kitts, Nevis and Marie-Galante. The iguana's current range is thought to consist of the following islands: Anguilla, St Maarten, St Barthelemy, St Eustatius, Guadeloupe (Basse Terre), La Désirade, La Petite Terre, Les Saintes, Dominica and Martinique. The islet of La Petite Terre sustains the only stable population of iguanas, as they are not currently threatened with extinction. Dominica, where the iguanas have been most extensively studied, is believed to support the largest single population, due to the availability of coastal habitat. On other islands, populations have been reduced to extremely low numbers for a variety of reasons.

The LA iguana is found in coastal regions up to about 300m above sea level, where they live in dry scrub, dry woodland, mangrove, dry forest and rainforest. In the absence of introduced predators, such as dogs, the iguana can live in very dry, degraded habitats. It is also thought to be a 'hurricane-adapted species' - hatchlings and juveniles live amongst bushes and low trees in thick scrub vegetation and as they grow they climb higher and into larger trees. During research in Dominica, iguanas were rarely seen on the ground, although there is evidence that they may use burrows other than for nesting. Population structure varies with habitat, for example, on the dry islet of La Désirade the iguanas are easily located as they live in dense colonies, but in the lush habitat of Dominica they are more dispersed and harder to find.

Feeding habits

This iguana is the only naturally occurring herbivorous lizard on its native islands, where it feeds on a wide variety of plants. As such it is an important seed disperser in coastal forest, especially as some of its food plants contain toxic chemicals that make them inedible to birds and mammals. There is a seasonal change in diet from mostly leaves in the dry season to more fruit and flowers in the wet season. When favourite trees are fruiting, many lizards are attracted by the feast and feed together, usually in the morning. When this happens with adults only a single dominant male is present, whereas in a group of youngsters both sexes feed communally. There are also occasional reports that iguanas eat carrion and eggs.

In the Zoo, the iguanas are fed once a day and most of their diet (around 90%) consists of leafy greens such as lime leaves, watercress, sweet potato leaves and dandelion, and flowers, such as hibiscus and nasturtium. Branches cut from bushes in our Organic Farm also provide the iguanas with the chance to forage – they spend hours picking off leaves as they would in the wild. They are also given fruit (e.g. apple, mango and papaya) once or twice a week in winter, and occasionally in summer. The iguanas drink water that is sprayed on leaves and branches in their enclosure; this is something they have been observed to do in the wild following a rain shower. Although they are housed indoors, the iguanas are exposed to special artificial lighting that provides the same conditions as natural sunlight. This is essential, as it enables their bodies to make vitamin D, which in turn lets them utilise dietary calcium.

Breeding

Male iguanas are highly territorial in the breeding season, and defend their territory using signals such as head bobbing and rolling. In the wild, breeding coincides with the wet season, as this is a time of new plant growth and the flowering and fruiting of many species, which gives hatchlings access to a plentiful food source. Gravid females (containing eggs) migrate from their home range to find a suitable nest site. Such a site is on well-drained soil or sandy ground that has prolonged exposure to sunlight. The female digs a burrow about a metre long with an egg-laying chamber at the end that is large enough for her to turn around in. Clutch size varies from 8-22 and the number of eggs is thought to be in proportion to a female's size.

Conservation status

The World Conservation Union (IUCN) currently classifies the Lesser Antilles iguana as *Vulnerable* on the Red Data List. This means that it faces a high risk of extinction in the wild in the medium-term future. However, populations on many of the islands within the iguana's range are facing a more desperate situation. Those on Dominica and La Désirade are indeed vulnerable, but all the others are either endangered or critically endangered. Since 1977 the species has been listed under Appendix II of CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora), which affords it protection against unregulated international trade. The iguana is also legally protected from hunting throughout its range, but these regulations have proved difficult to enforce.

The severe decline in iguana numbers has been caused by a combination of problems. The most devastating of these has been habitat loss and fragmentation caused by human activities such as housing, farming and tourism. Introduced predators that kill and eat either adult or baby iguanas e.g. humans, dogs, cats, monkeys, rats and mongooses have also had a significant role, as have introduced grazing competitors like goats and sheep.

The most recent blow to *Iguana delicatissima* has been the introduction, by humans, of its close relative *Iguana iguana* onto some of its native islands. The more adaptable and robust green iguana lives naturally on the most southerly islands of the Lesser Antilles (from Grenada to St Lucia) and have been shown to out-compete *I. delicatissima* and move into areas where it has disappeared. The two species are also able to interbreed and larger, more aggressive green iguana males mate with LA iguana females, so that on some islands there are no pure-bred LA iguanas left. Dominica, La Désirade and La Petite Terre are the only islands where just *Iguana delicatissima* is thought to live.

In the Zoo

Our pair of iguanas came to the Zoo from Dominica in 1992 as immature animals and the reptile staff set about getting them to reproduce. The difficulty with breeding reptiles is that you may get 99.9% of the conditions right, but that elusive 0.1% is often the difference between success and failure. In the case of the Lesser Antillean iguana one problem, meeting the female's exact nutritional requirements, was solved in 1997 and a baby iguana was the result. However, the female did not seem to be a proficient egg-layer – instead of using any of the nesting opportunities available to her, she insisted on dropping her eggs from a great height. It was just lucky that while she was laying 1997's precious clutch, a passing member of staff (luckily not a 'butter fingers') was able to catch some of the eggs.

A tense couple of years followed the initial success of producing the world's first captive-bred Lesser Antillean iguana. It seemed this was not to be repeated, despite the provision of a nest site that proved irresistible to the female. A gynaecological problem was found to be the culprit and soon after a successful operation the pair were seen mating. In July 2000, during what was a 12-hour process, the female laid and buried 8 perfect eggs in her custom-made nest site (a heated dustbin filled with sand and soil). The eggs were carefully transferred to an incubator and after 95 nail-biting days (the last hatching had taken only 73 days) the first bright green hatchling began to break through its shell and 3 days later all 8 had emerged.

During the first few days of life the egg yolk that they retain in their stomachs nourishes the babies. Then they were transferred to a special enclosure to live together in lush vegetation, where they are growing fast on a diet of leaves, fruit and flowers from the Zoo's organic farm. Research is underway on the group's behaviour – the first time such a study has been possible. In a couple of years the young iguanas will lose their striking green colour and become grey with cream heads, like their parents.

The 2000 perfect hatching result was the breakthrough the captive breeding programme had been waiting for. So little is known about the iguana's behaviour in the wild, that Durrell Wildlife's breeding success has led to a better understanding of their behaviour and the environment they need to reproduce. The triumphant reptile staff members are now planning to repeat their success, which hopefully means that the San Diego and Memphis zoos, and any others that keep the species in the future, will be able to use this knowledge to help save this endangered iguana. When the 9 young Jersey-bred iguanas are old enough, some of them will be moved to these institutions and maybe others, to take part in their breeding efforts.

The future

Along with captive work, the results of studies of the iguana's habits on the islands of Dominica and Anguilla are helping towards the formulation of an Action Plan – a strategy that will hopefully ensure survival of the species. Urgent conservation measures that need to be taken to protect the iguana and its habitat include the protection of areas as National parks and the use of education programmes to increase public awareness of the lizard's plight. Further fieldwork and research on captive iguanas is also of utmost importance, to gather more information on their biology and to develop husbandry expertise. It is then proposed that captive breeding techniques be put into practice *in situ* on native islands, so that captive-bred iguanas may one day be successfully reintroduced into areas where they have either become extinct, or too depleted to recover.

However, the problem of young iguanas being eaten by introduced predators remains very serious, and until these animals can be controlled, the wild iguanas need a helping hand. A wild population management method sometimes known as 'head-starting' may therefore be introduced soon. This technique, which involves the collection of eggs from wild nests so that they can be reared in the safety of a special facility, has proved successful for other endangered species, such as the Mauritius kestrel. Once the young iguanas are large enough not to fall victim to predators, they can be released back into their natural habitat.

March 2001