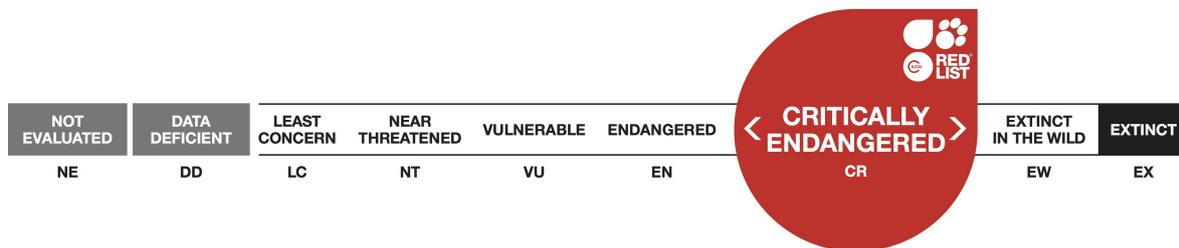




## *Iguana delicatissima*, Lesser Antillean Iguana

Assessment by: van den Burg, M., Breuil, M. & Knapp, C.



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## Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Reptilia	Squamata	Iguanidae

**Taxon Name:** *Iguana delicatissima* Laurenti, 1768

### Common Name(s):

- English: Lesser Antillean Iguana, West Indian Iguana
- French: Iguane des Petites Antilles

## Assessment Information

**Red List Category & Criteria:** Critically Endangered A3ce [ver 3.1](#)

**Year Published:** 2018

**Date Assessed:** March 3, 2018

### Justification:

Based on historic range data and an estimated index of abundance, the total population has experienced declines of  $\geq 75\%$ . Although extirpation from some islands occurred in the early to mid-20th century, the remaining population has continued to decline within the last three generations (33–42 years). In recent years, on-going decline and extirpation of the Lesser Antillean Iguana has been primarily caused by inter- and intra-island dispersal of the invasive alien Common Green Iguana and subsequent hybridization. Common Green Iguanas are much more vigorous reproductively compared to native Lesser Antillean Iguanas, and hybridization and displacement is rapid post-introduction. Since the last assessment (2010), Common Green Iguanas have been observed among three additional pure populations (St. Eustatius, La Désirade, Ramiers), including the site of a recent native iguana reintroduction detailed in the previous regional action plan. These dispersals have not been mitigated and there is no likelihood of containing these threats without more proactive management. The current AOO of the species is estimated at less than 1,000 km<sup>2</sup>, the existing subpopulations are fragmented among isolated locations, and the large majority of the current range exists on one island (Dominica).

Population numbers for all islands is not available for multiple past generations, however their former area of occupancy can be estimated from published observations and an estimate of abundance based on habitat availability and quality. To project future population reductions, an annual rate of decline in AOO was calculated from the islands invaded by Common Green Iguana, from the known date of invasion to the present, and the remaining area occupied by pure subpopulations. Rates were applied to similarly-sized islands and assuming the worst-case scenario of invasion of remaining pure populations within the next few years. It is strongly felt the risk of invasion and extirpation of the remaining pure populations is imminent in the wake of increased post-hurricane shipping among islands in both species' range, and the lack of biosecurity to mitigate this threat. The recent increase in illegal poaching is also a significant threat to the species' persistence.

Under these projection parameters, within one generation, five of the remaining pure populations plus

four of the currently invaded/hybridized locations will be extirpated. Only 13% of the species' current AOO is predicted to remain three generations from now.

This is a genuine change from the most recent assessment due to increasing occurrence and rate of hybridization and island extirpations.

### **Previously Published Red List Assessments**

2010 – Endangered (EN)

<http://dx.doi.org/10.2305/IUCN.UK.2010-4.RLTS.T10800A3217854.en>

1996 – Vulnerable (VU)

1994 – Vulnerable (V)

## **Geographic Range**

### **Range Description:**

Historically, this species is believed to have existed throughout the northern Lesser Antilles, from Anguilla to Martinique. Its range included (mostly only main islands listed): Anguilla; Saint-Martin/Sint Maarten (French West Indies and Netherlands Antilles); St.-Barthélemy, including Île Fourchue and its two small satellites (Îlet au Vent and Petite Islette), Îlet Frégate, and Îlet Chevreau (or Bonhomme); St. Eustatius (Caribbean Netherlands, excluding Saba and Bonaire); St. Kitts and Nevis; Antigua and Barbuda; Guadeloupe, including the islands of Grande-Terre, Basse-Terre, Îles de la Petite Terre (comprising Terre de Bas and Terre de Haut), La Désirade, Les Îles des Saintes (comprising Terre-de-Bas, Terre-de-Haut, Îlet à Cabrit, Grand Îlet, and La Coche), and Marie-Galante; Dominica; and Martinique, including Îlet Chancel and Îlet à Ramiers (introduced in 2006). This historic range represented a terrestrial extent of occurrence (excluding large areas of ocean between islands and therefore not applicable for use to assess the species against criterion B1) of approximately 4,450 km<sup>2</sup>.

The Lesser Antillean Iguana has since been extirpated from Antigua, Barbuda, St. Kitts, Nevis, Saint-Martin/Sint Maarten (French and Dutch parts), Marie-Galante, Les Îles des Saintes, and Grande-Terre (Knapp *et al.* 2014). Iguanas were also extirpated from Îlet Frégate and Îlet Chevreau in Saint-Barthélemy, but 14 individuals were reintroduced from Saint Barthélemy to Îlet Frégate in 2011.

Today, the extent of occurrence is estimated at 774 km<sup>2</sup> for islands that have only pure Lesser Antillean Iguana populations (8 locations, AOO = 620 km<sup>2</sup>), plus 2,111 km<sup>2</sup> for islands that now have pure iguanas, Common Green Iguanas, and hybrid iguanas (6 locations, AOO = 363 km<sup>2</sup>). On islands invaded by Common Green Iguanas, the area occupied by the remaining pure subpopulations has been reduced by 70% over the last three generations. Dominica represents the largest area remaining with only pure native iguanas, occupying almost 600 km<sup>2</sup>. Critical nesting habitat for a majority of this island's individuals is along the coast.

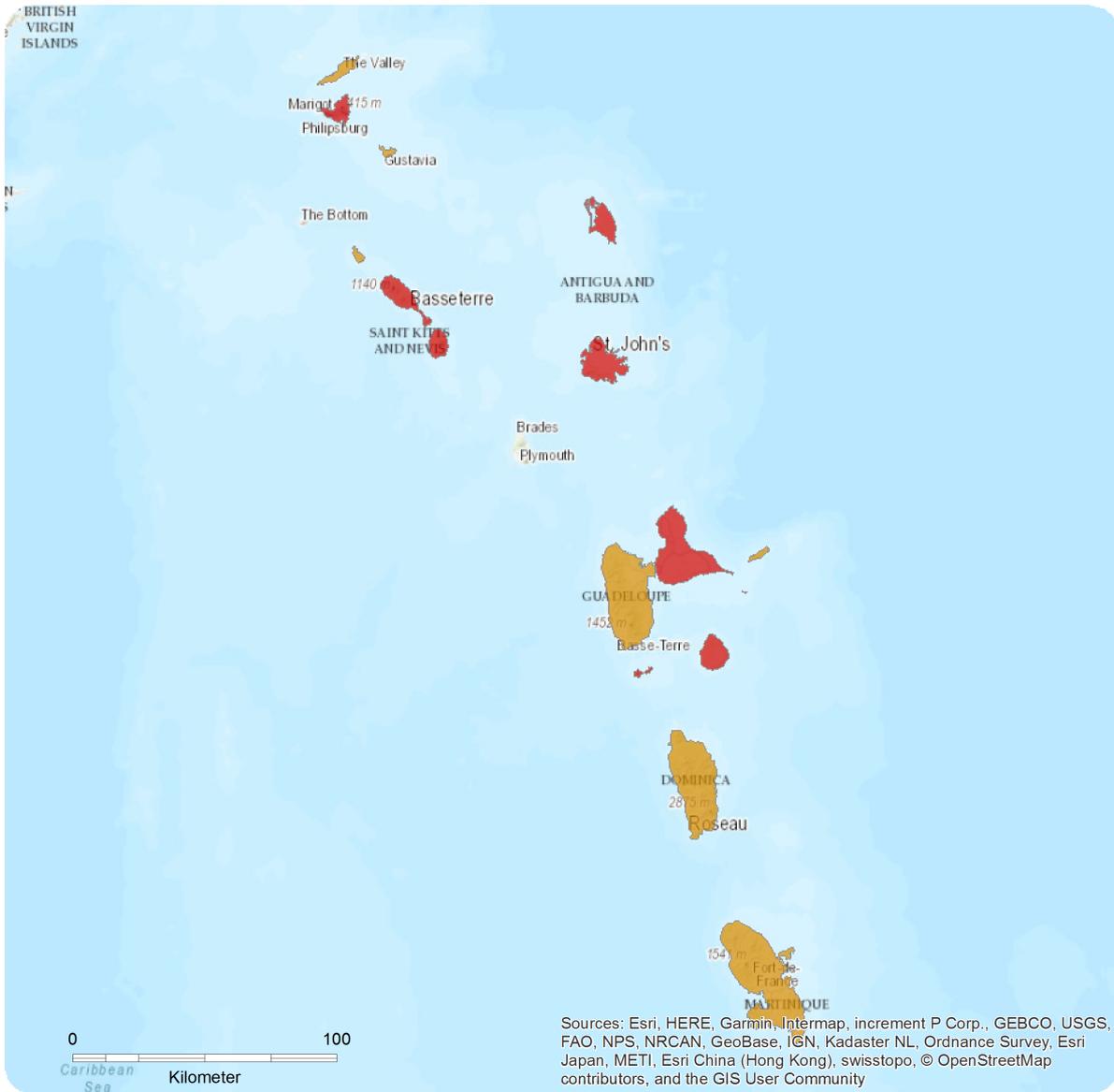
### **Country Occurrence:**

**Native:** Anguilla; Bonaire, Sint Eustatius and Saba (Sint Eustatius); Dominica; Guadeloupe; Martinique; Saint Barthélemy

**Regionally extinct:** Antigua and Barbuda; Saint Kitts and Nevis; Saint Martin (French part); Sint Maarten (Dutch part)

# Distribution Map

*Iguana delicatissima*

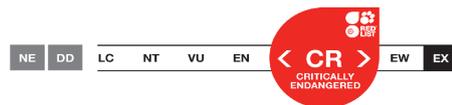


**Range**

- Extant (resident)
- Extinct

Compiled by:

IUCN



The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.



## Population

Formal surveys using transect techniques have been conducted for Les Îles de la Petite Terre (Guadeloupe) and by mark-recapture for Îlet Chancel (Martinique) as well as parts of Petite Terre and La Désirade. Rough population estimates for the remaining islands are based on limited surveys designed predominantly to locate iguanas for morphometric and genetic data collection. These population estimates are based subjectively on comparisons of observed density of iguanas and the extent of their range within each island. The population from Dominica is also estimated using site-specific mark-recapture data from 2007–2009 (Knapp and Perez-Heydrich 2012). Qualitatively, Dominica is believed to support the largest population (10,000–15,000 adults) due to the extent of available coastal habitat and known distribution, while Les Îles de la Petite Terre support the highest population density.

In Guadeloupe, populations have been extirpated since 2001 from Grande-Terre (Breuil *et al.* 2007), and Terre-de-Haut and Terre-de-Bas (Les Saintes) where the non-native Common Green Iguana (*Iguana iguana*) is now numerous. Individuals are still present in small numbers on Basse-Terre though their persistence is likely to be short-lived since Common Green Iguanas and hybrids are now also present (Breuil *et al.* 2007, Vuillaume *et al.* 2015). Large concentrations of Lesser Antillean Iguanas persist on La Désirade, however, at least one adult Common Green Iguana was reported, discovered, and removed a few weeks after sighting. Unfortunately, hybridization events have been suspected since 2013 based on a photograph of a suspicious hatchling (M. Breuil pers. comm 2018). Further survey work on this island is needed. Lesser Antillean Iguanas are also extirpated from Marie-Galante. The first estimation of the population on Les Îles de la Petite Terre (4,000–6,000 adults) was conducted in 1992–1993, three years after Hurricane Hugo (Breuil 1994a, Breuil *et al.* 1994). A second estimate was conducted by Lorvelec *et al.* (2007), but the results are questionable because of sampling methodology (Breuil and Ibéné 2008). Nonetheless, there seems little doubt that the two small islands are home to several thousand individuals (M. Breuil pers. comm. 2009).

The population of Chancel in Martinique has been monitored since 1993. In 1994, the population was estimated at approximately 250 adults (Breuil 1994b). More recent estimates using mark-recapture suggest a population size between 650 (Ourly 2006) to 950 adults (Legouez 2007). More recent population estimates conducted by the government agency, Office National de la Chasse et de la Faune Sauvage, describe approximately 1,000 adult iguanas for three successive years, suggesting that this 80 hectare island may be approaching carrying capacity. The increase is likely due to a decrease in hunting, an increase in tree cover from ~20% in 1947 to ~50% today, improvement and protection of the two historical nesting sites (Breuil 2000a,b; Legouez 2007), and creation of new nesting sites. Elsewhere in Martinique, nine adults were reintroduced to a small island, Îlet Ramiers, in 2006 (Ourly 2006) and in 2008 a nest was found with hatched eggs. Unfortunately, a Common Green Iguana was observed in November 2013, it was not removed, and there are now hybrids reported on this protected island (M. Breuil pers. comm. 2015). A few subpopulations of Lesser Antillean Iguanas persist on the main island of Martinique around Montagne Pelée and are protected. However, Common Green Iguanas are also present and becoming more abundant, increasing the likelihood of hybridization in this remnant population (Breuil 2011).

The current status of populations in Saint Barthélemy is unclear. On the main island, Lesser Antillean Iguanas are found in a few areas, some that support high densities. Unfortunately, the island was severely impacted by Hurricane Irma and resulting storm surge in September 2017. Mortality due to

hurricanes has been reported for *I. delicatissima* (Knapp and Valeri 2008). Moreover, Common Green Iguanas and hybrid individuals are also now known (Breuil 2013, Vuillaume *et al.* 2015). Surveys in the early 2000s found a few lone individuals on Île Fourchue and its two small satellite islands (Îlet au Vent and Petite Islette) (Breuil 2001). In 2011, 14 individuals (five males and nine females) were introduced to augment the Île Fourchue population. By 2016, at least 30 iguanas and two breeding areas were identified. On Îlet Frégate, at least four of the reintroduced iguanas are still present and three nesting sites with at least 10 open nests were found by the Agence Territoriale de l'Environnement in 2016. These data suggest the populations were improving before Hurricane Irma's impact. *Iguana delicatissima* was present on Îlet Chevreau in 1973 (Lazell) but it is now extirpated probably due to vegetation degradation by non-native goats.

The population on St. Eustatius was estimated between 275–640 individuals (Fogarty *et al.* 2004), although a subsequent assessment suggested the population to be smaller (Debrot *et al.* 2013). A new population assessment is ongoing with 403 individuals tagged to date (van den Burg *et al.* in press). Unfortunately, in 2016 several adult Common Green Iguanas and hybrids were discovered and captured, and in March 2017 another four Common Green Iguanas arrived as boat stowaways from St Martin. Of these, three individuals are still at large.

On Anguilla, the iguana population was estimated around 300 in 1998 (Gerber 1998). During a recent assessment, however, only 15 individuals were found in a single location on the northeast side of the island. Continued survey efforts 2016–2017 have led to additional sightings and an additional four individuals being captured. In 2016, after genetic analysis, 14 animals were translocated by the Anguilla National Trust to an offshore cay (Prickly Pear East) for long-term monitoring and to ensure the conservation and survival of these animals (Williams *et al.* 2015). The impact of Hurricane Irma on this reintroduced population still needs to be assessed.

Elsewhere in the Lesser Antilles, the species is now believed extirpated from (north to south): Saint-Martin/Sint Maarten (both sides), Îlet Chevreau (Saint-Barthélemy), St Kitts, Nevis, Antigua, Barbuda, Grande-Terre, Les Îles des Saintes, and Marie-Galante.

**Current Population Trend:** Decreasing

## **Habitat and Ecology (see Appendix for additional information)**

The Lesser Antillean Iguana occupies islands of the northern Lesser Antilles from sea level to approximately 550 m (on Dominica, Knapp *et al.* 2016) and to 700 m (on Martinique, Angin *et al.* 2015). The species exists in xeric scrub, dry scrub woodland, littoral woodland, river forests, and mangrove, as well as lower and mid-altitude portions of transitional rainforest. The present condition of these habitats varies from island to island. Iguanas are able to survive in extremely xeric degraded habitats (less than 1,000 mm annual rainfall) to mesic forests (3,000–4,000 mm annual rainfall) in the absence of introduced predators or competitors.

Both hatchlings and juveniles live predominantly among bushes and low trees, usually in thick vegetation offering protection, basking sites, and a wide range of food. With age they climb higher and inhabit larger trees.

The species is a generalist herbivore, feeding primarily in the morning, with a diet that includes leaves,

flowers, and fruits of a wide range of shrubs and trees. Seasonal variation in feeding ecology exists, with folivory during the dry season shifting to folivory and frugivory during the wet season. Feeding is selective with fresh leaf growth, flower buds, flowers, and ripe fruits preferred. Seed dispersal by iguanas may be significant for a number of coastal forest plant species, especially those with large or unpalatable fruits, which are not dispersed by small birds or bats. Differences in feeding ecology between populations reflect local variation in plant species composition (either natural or as a result of introduced browsers). Like its congener the Common Green Iguana, the species has been observed to be opportunistically carnivorous (Lazell 1973).

Sexual maturity is reached at approximately two to three years, although breeding in young males is likely delayed due to their inability to achieve dominance and defend a suitable territory. Longevity studies have yet to be conducted, but recent data from Chancel suggest that individuals could reach 25 years in the wild. Generation length is estimated to be 11–14 years (C. Knapp pers. comm. 2009). Nest sites occur in sandy but also in clayish, well-drained soils exposed to prolonged sunlight (Breuil 2002). Clutch size, which may vary geographically, ranges from 4–30.

Clutch size is variable and reported from 20–30 eggs on Martinique (Bouton 1640), 13–25 on Guadeloupe (Du Tertre 1667), and 4–26 on Dominica (Knapp *et al.* 2016). A female studied from Chancel, Martinique, oviposited 16 eggs with a mass ranging from 19.5–22.5 g (Legouez 2007). Anecdotal evidence suggests an incubation period of approximately three months.

Reproductive activity for Lesser Antillean Iguanas inhabiting arid environments (for example, Petite-Terre and La Désirade) is synchronized among females and one clutch is generally laid from June to mid-August. On St. Eustatius, a similar reproductive season is likely, as hatchlings are seen from October–November (M. van den Burg pers. obs. 2015, 2016). In more mesic environments (such as Dominica and Chancel), the reproductive season is not synchronized with females laying eggs starting in February (Dominica) or March (Chancel) and continuing through August (Chancel) and September (Dominica), with the main laying period in July and August depending on local climate. Day *et al.* (2000) suggested that iguanas from Dominica may double-clutch in a year although Knapp *et al.* (2016) found no evidence of multiple clutches on Dominica from 2007–2010.

**Systems:** Terrestrial

## Use and Trade

Historically, hunting occurred throughout the range of the species since the time of the Amerindians (Bochaton *et al.* 2016). Hunting is now illegal throughout the species' range. On St. Eustatius, hunting was a significant problem until recently and has likely ceased since the iguana population has crashed and the investment of finding them is too high. Hunting also remains locally prevalent in parts of Dominica, where certain populations experienced rapid unsustainable exploitation (A. James pers. comm. 2009). In addition, since food supplies were reduced or destroyed after the 2017 hurricanes, locals and international aid workers are now looking for other sources of food, and the intensity of iguana poaching has increased intensively, particularly on Dominica (J. Brisbane pers. comm. 2017). Recent observations (2018) of iguana populations at well-studied locations along the Dominican coast are showing a greater than 10-fold reduction in iguana numbers.

## Threats (see Appendix for additional information)

Displacement through competition and hybridization with Common Green Iguanas appears to be the dominant factor in the disappearance of this species from islands throughout the Guadeloupe Archipelago (Breuil *et al.* 1994a). Hybridization between Iguana species has been confirmed through both molecular and morphometric analyses from Basse-Terre (Guadeloupe), Les Îles des Saintes (Day and Thorpe 1996), St. Eustatius (van den Burg *et al.* in press) and elsewhere throughout their range (Breuil 2000c, 2002, 2013; Breuil *et al.* 2007; Vuillaume *et al.* 2015). Post-invasion displacement is rapid and population extirpations have been recorded from several islands in the French West Indies (Breuil *et al.* 2007, Breuil 2013). The threat is time-sensitive on Saint-Barthélemy (Vuillaume *et al.* 2015) and St. Eustatius (van den Burg *et al.* in press) due to the recent arrival of Common Green Iguanas and subsequent hybridization on the island. Presently, only Dominica, Les Îles de la Petite Terre, Prickly Pear East, Îlet Fourchue, Îlet Frégate, Îlet Chancel, and potentially La Désirade remain free of Common Green Iguanas. La Désirade may have recently become compromised and requires further survey work. Common Green Iguanas are much more vigorous reproductively compared to native Lesser Antillean Iguanas, with 2–3 times the number of eggs laid. Hybrids also appear to show equal fecundity vigour. Hybridization is therefore rapid after invasion by a single or handful of Common Green Iguanas, and aggressive displacement of this species should be considered a major threat to all remaining populations, especially given the recent and on-going occurrence of new Common Green Iguana invasions (for example, St. Eustatius in 2016). It is important to note that nowhere globally have Common Green Iguanas been eradicated or controlled after their invasion, such that currently there is no effective method to reverse their impact once started.

During the 2017 hurricane season, two major hurricanes (Irma and Maria) struck the Lesser Antilles including several islands where Lesser Antillean Iguanas persist. The impact on these populations still needs to be assessed, however, post-hurricane recovery efforts are now also threatening iguana populations. Given the major destruction caused by these hurricanes, the frequency and magnitude of transportation between islands has greatly increased in order to deliver necessary food and supplies among islands. Therefore, the likelihood of unintended *I. iguana* translocation from islands with high non-native iguana populations and invasion to islands with remnant pure populations are increasing dramatically as well, particularly as biosecurity patrolling is likely to have been affected and is currently less strict. These concerns apply most strongly to Dominica which is the last stronghold of this species and was severely affected by Hurricane Maria. The steep and lushly vegetated terrain of Dominica would allow Common Green Iguanas to quickly become out of control if they escaped to this island. In addition, since food supplies have been reduced or destroyed after the hurricanes, locals and international aid workers are now looking for other sources of food, and the intensity of iguana poaching has increased intensively on Dominica (J. Brisbane pers. comm. 2017). Recent observations (2018) of iguana populations at well-studied locations along the Dominican coast are showing a greater than 10-fold reduction in iguana numbers.

Habitat loss and fragmentation were historically most extensive on the least mountainous islands, which have been systematically cleared for agriculture. On these islands, the species has either become extinct (for example, St. Kitts and Nevis) or remains only in tiny remnant populations (for example, St. Eustatius). As tourism has superseded agriculture in importance, coastal development has further reduced the remaining habitat and significantly affected already limited communal nesting sites.

Road casualties occur regularly along coastal roads, which bisect iguana habitat in Dominica, Basse-Terre and La Désirade (Guadeloupe), and St. Barthélemy. In Dominica, casualties peak late in the dry season when numerous gravid females are killed while migrating to coastal nest sites and early in the wet season when hatchlings disperse inland from nests (Knapp *et al.* 2016). On La Désirade, there has been an increase in the number of off-road vehicles and a corresponding increase in deaths.

The species is impacted by a range of invasive alien predators. For example, feral and pet cats are believed to be significant predators of juvenile iguanas on Anguilla, while predation by cats and dogs is a problem on Dominica and St. Eustatius. On St. Barthélemy, feral predators are few but adult iguanas are known to be killed by guard dogs that run free within fenced properties where iguanas feed. Hatchlings and juveniles are preyed on by Small Indian Mongoose (*Urva javanica* [*Herpestes auropunctatus*]) and the species is either extinct or highly threatened on all islands where mongoose occurs. However, it is unclear how significant the impact of mongoose or cats are in these locations since Common Green Iguanas are also very common on mongoose-inhabited islands. Finally, Northern Raccoon (*Procyon lotor*) may pose a problem on La Désirade, Martinique, and other parts of Guadeloupe.

Free-ranging and feral browsing competitors are present among almost all iguana populations, with the notable exceptions of Îles de la Petite Terre and most of Dominica. Goat and sheep populations are particularly large and of most concern on Anguilla, La Désirade, and St. Eustatius. The original vegetation on the three islets of Saint-Barthélemy (Fourchue, Chevreau, Frégate) was destroyed by goats, which lead to a shift in plant species composition and habitat structure (Breuil 2002). After the goats were withdrawn from Frégate and Fourchue, the natural vegetation recovered, which became suitable as iguana habitat, and enabled the translocation of 28 iguanas to the islands in 2011 by the Natural Reserve of Saint-Barthélemy and M. Breuil (unpublished data).

Additional anthropogenic threats to the iguana population on St. Eustatius include drowning/starvation in old cisterns and entanglement in harmonica-wire fencing (Debrot and Boman 2014, van den Burg *et al.* in press). Despite these threats, iguanas inhabiting villages on Dominica have been found to share similar densities, demographics, body condition, and characteristic growth rates of populations in non-disturbed areas (Knapp and Perez-Heydrich 2012). These data suggest that if factors such as degraded nest sites and predation by invasive alien mammals are mitigated, then moderately disturbed, human-occupied areas can be managed as corridors or buffer zones for *I. delicatissima* in an increasingly fragmented landscape.

## **Conservation Actions (see Appendix for additional information)**

The species is legally protected from hunting throughout much of its range, but enforcement of these regulations is extremely difficult and therefore limited. In Dominica, the species is not formally listed as protected and there is a need to amend the Forestry and Wildlife Act to include provisions for the iguana. The species is listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

The species is found in several nationally protected areas including the four national parks in Dominica, Les Îles de la Petite Terre (Guadeloupe), the Quill and the Boven in St. Eustatius (although nearly absent, van den Burg 2016), and Îlet Chancel and the Réserve Biologique Domaniale de la Montagne Pelée (Martinique). A number of satellite islets around Anguilla, Antigua, Guadeloupe, Martinique, St. Martin, and St. Barthélemy offer significant potential to be established as protected areas but some are already

inhabited by Common Green Iguanas.

In 2007, the French government commissioned an action plan to propose conservation measures in a concerted effort to protect this species (Legouez 2007, Maillard and Breuil 2007, Breuil *et al.* 2007). Since 2007, extensive fieldwork has been conducted in Guadeloupe and Martinique. For 2011–2015, a French Action Plan was approved and funded. Though aspects of this species biology were elucidated under this plan, little action was taken to limit the movement of Common Green Iguanas or remove them from sensitive areas. Many proposed translocation projects were suspended, for various reasons. In 2017, a new action plan was initiated for the Guadeloupe archipelago, Martinique, and Saint-Martin.

Research on the population biology and ecology of iguanas throughout the Lesser Antilles is ongoing, but further survey work is required in many parts of the range described below. On St. Martin, the last pure *delicatissima* was observed in 1996 and the most recent survey in 2000 also found no Lesser Antillean Iguana present (Breuil 2002). The Dutch side (Sint Maarten) has not been surveyed recently, although it is known that Common Green Iguana are very abundant on both sides. Genetic analyses of samples collected on the Dutch side (2015) showed only alleles unique to *I. iguana* (van den Burg *et al.* in press). Two islets offshore from St. Martin (Tintamarre and Pinel) were surveyed in 1996 without observation of Lesser Antillean Iguanas, but are currently unsuitable for translocation because of the presence of Common Green Iguana (M. Breuil unpublished data). There are recent reports that Lesser Antillean Iguanas may have recolonized Barbuda following a hurricane, but this needs confirmation. The east coast of Dominica and several offshore islets on the east coast also are under-surveyed. On Anguilla, recent sightings of this species suggest a range farther to the interior than previously expected. Future conservation efforts will need to include these new areas to assess the size and health of the remaining population, as well as the status of Common Green Iguanas which have also been found here. Additionally, high densities of Common Green Iguanas are now found in numerous areas, and has prompted discussion on how to control their expansion over the entire island (Williams *et al.* 2015).

Education and public outreach efforts are necessary throughout the range. In Dominica, there is a critical need to develop an identification guide to assist officials in distinguishing Lesser Antillean Iguana from Common Green Iguana in order to ensure against introduction. In the French West Indies, leaflets, posters, films, articles in newspapers, and goodies have been developed to promote the protection of *Iguana delicatissima*. Similar materials have been recently developed on St. Eustatius, as well as an educational program that includes a booklet with information to help distinguish between both Iguana species, which will be shared with Dominica. Locals in St. Eustatius can join a field program to assist in finding non-native iguanas. On both Dominica and St. Eustatius, bumper stickers have been distributed to raise awareness regarding the high number of iguanas hit by vehicles (Knapp *et al.* 2016).

Captive Lesser Antillean Iguana originating from Dominica are currently maintained at the Jersey Wildlife Preservation Trust and Chester Zoo (UK) and Tiergarten Schonbrunn (Austria). In addition to one animal from Dominica, the Rotterdam Zoo (Netherlands) will receive four individuals from St. Eustatius in 2018. Reproduction has occurred but with variable success (M. Goetz pers. comm. 2009). As the Dominican population is presently healthy, these individuals and their future offspring should remain in captivity in order to gather husbandry expertise, as well as growth and reproductive data that can be applied to future in situ captive conservation efforts. Captive-raised iguanas could be used for reintroduction to suitable offshore islands and other protected areas, or for augmenting depleted populations. Reintroductions should originate with iguanas from the same geographic region whenever

possible (as was the translocation to Ramiers, Frégate, and Fourchue). In addition, translocation of the last remaining pure Lesser Antillean Iguanas from Basse-Terre to areas/islets free of Common Green Iguanas should be high priority.

## Credits

**Assessor(s):** van den Burg, M., Breuil, M. & Knapp, C.

**Reviewer(s):** Grant, T.D. & Bowles, P.

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## External Resources

For [Images and External Links to Additional Information](#), please see the [Red List website](#).

# Appendix

## Habitats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Habitat	Season	Suitability	Major Importance?
1. Forest -> 1.5. Forest - Subtropical/Tropical Dry	Resident	Suitable	Yes
1. Forest -> 1.6. Forest - Subtropical/Tropical Moist Lowland	Resident	Suitable	-
1. Forest -> 1.7. Forest - Subtropical/Tropical Mangrove Vegetation Above High Tide Level	-	Suitable	-
3. Shrubland -> 3.5. Shrubland - Subtropical/Tropical Dry	Resident	Suitable	Yes
3. Shrubland -> 3.6. Shrubland - Subtropical/Tropical Moist	Resident	Suitable	Yes
4. Grassland -> 4.5. Grassland - Subtropical/Tropical Dry	-	Suitable	-
12. Marine Intertidal -> 12.2. Marine Intertidal - Sandy Shoreline and/or Beaches, Sand Bars, Spits, Etc	Breeding	Suitable	Yes
14. Artificial/Terrestrial -> 14.4. Artificial/Terrestrial - Rural Gardens	Resident	Marginal	-
14. Artificial/Terrestrial -> 14.6. Artificial/Terrestrial - Subtropical/Tropical Heavily Degraded Former Forest	Resident	Marginal	-

## Threats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Threat	Timing	Scope	Severity	Impact Score
1. Residential & commercial development -> 1.1. Housing & urban areas	Ongoing	Whole (>90%)	Slow, significant declines	Medium impact: 7
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
1. Residential & commercial development -> 1.3. Tourism & recreation areas	Ongoing	Whole (>90%)	Slow, significant declines	Medium impact: 7
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.2. Small-holder farming	Ongoing	Majority (50-90%)	Negligible declines	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.3. Agro-industry farming	Past, unlikely to return	Majority (50-90%)	Slow, significant declines	Past impact
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		

2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.1. Nomadic grazing	Ongoing	Majority (50-90%)	Slow, significant declines	Medium impact: 6
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.2. Competition		
4. Transportation & service corridors -> 4.1. Roads & railroads	Ongoing	Whole (>90%)	Causing/could cause fluctuations	Medium impact: 7
	Stresses:	2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success		
5. Biological resource use -> 5.1. Hunting & trapping terrestrial animals -> 5.1.1. Intentional use (species is the target)	Ongoing	Whole (>90%)	Slow, significant declines	Medium impact: 7
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.2. Named species (Herpestes javanicus)	Ongoing	Majority (50-90%)	Slow, significant declines	Medium impact: 6
	Stresses:	2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success		
8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.2. Named species (Capra aegagrus)	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.2. Competition		
8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.2. Named species (Didelphis marsupialis)	Ongoing	Minority (50%)	Unknown	Unknown
	Stresses:	2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success		
8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.2. Named species (Procyon lotor)	Ongoing	Minority (50%)	Unknown	Unknown
	Stresses:	2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success		
8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.2. Named species (Sus scrofa)	Ongoing	Minority (50%)	Unknown	Unknown
	Stresses:	2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success		
8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.2. Named species (Sus domesticus)	Ongoing	Minority (50%)	Unknown	Unknown

	Stresses:	2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success
8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.2. Named species (Iguana iguana)	Ongoing	Whole (>90%) Rapid declines High impact: 8
	Stresses:	2. Species Stresses -> 2.3. Indirect species effects -> 2.3.1. Hybridisation
8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.2. Named species (Felis catus)	Ongoing	Whole (>90%) Slow, significant declines Medium impact: 7
	Stresses:	2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success
8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.2. Named species (Canis familiaris)	Ongoing	Whole (>90%) Slow, significant declines Medium impact: 7
	Stresses:	2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success

## Conservation Actions in Place

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

<b>Conservation Actions in Place</b>
In-Place Research, Monitoring and Planning
Action Recovery plan: Yes
In-Place Land/Water Protection and Management
Conservation sites identified: Yes, over part of range
Occur in at least one PA: Yes
Percentage of population protected by PAs (0-100): 0
Invasive species control or prevention: No
In-Place Species Management
Successfully reintroduced or introduced benignly: Yes
Subject to ex-situ conservation: No
In-Place Education
Subject to recent education and awareness programmes: Yes
Included in international legislation: Yes
Subject to any international management/trade controls: Yes

## Conservation Actions Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Conservation Actions Needed
1. Land/water protection -> 1.1. Site/area protection
2. Land/water management -> 2.2. Invasive/problematic species control
2. Land/water management -> 2.3. Habitat & natural process restoration
3. Species management -> 3.3. Species re-introduction -> 3.3.1. Reintroduction
4. Education & awareness -> 4.1. Formal education
4. Education & awareness -> 4.2. Training
4. Education & awareness -> 4.3. Awareness & communications
5. Law & policy -> 5.1. Legislation -> 5.1.2. National level
5. Law & policy -> 5.2. Policies and regulations
5. Law & policy -> 5.4. Compliance and enforcement -> 5.4.2. National level

## Research Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Research Needed
1. Research -> 1.2. Population size, distribution & trends
1. Research -> 1.3. Life history & ecology
2. Conservation Planning -> 2.1. Species Action/Recovery Plan
2. Conservation Planning -> 2.2. Area-based Management Plan
3. Monitoring -> 3.1. Population trends

## Additional Data Fields

Distribution
Estimated area of occupancy (AOO) (km <sup>2</sup> ): 984
Continuing decline in area of occupancy (AOO): Yes
Extreme fluctuations in area of occupancy (AOO): No
Estimated extent of occurrence (EOO) (km <sup>2</sup> ): 35000
Continuing decline in extent of occurrence (EOO): Yes
Number of Locations: 14
Continuing decline in number of locations: Yes

<b>Distribution</b>
Extreme fluctuations in the number of locations: No
Lower elevation limit (m): 0
Upper elevation limit (m): 700
<b>Population</b>
Number of mature individuals: 13000-20000
Continuing decline of mature individuals: Yes
Extreme fluctuations: No
Population severely fragmented: Yes
No. of subpopulations: 15
Continuing decline in subpopulations: Yes
Extreme fluctuations in subpopulations: No
All individuals in one subpopulation: No
<b>Habitats and Ecology</b>
Continuing decline in area, extent and/or quality of habitat: Yes
Generation Length (years): 11-14
Movement patterns: Not a Migrant

## The IUCN Red List Partnership



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