St. Croix Ground Lizard
(*Ameiva polops*)

5-Year Review:
Summary and Evaluation

U.S. Fish and Wildlife Service
Southeast Region
Caribbean Ecological Services Field Office
Boquerón, Puerto Rico

5-YEAR REVIEW
St. Croix Ground Lizard / *Ameiva polops*

I. GENERAL INFORMATION

A. Methodology used to complete the review: This 5-year review for the St. Croix ground lizard (*Ameiva polops*) was prepared by a Service biologist in the Caribbean Ecological Services Field Office. It is based on reviewed literature and survey reports written by herpetologists. Public notice was given of this review in the *Federal Register* on September 21, 2007 (72 FR 54061), and a 60-day public comment period was opened. We did not receive any comments from the public.

This 5-year review summarizes new information regarding this species since it was listed and the recovery plan completed. In conducting this 5-year review, we relied on the best available information pertaining to historical and current distributions, life histories, habitats, and potential threats of this species. Specific sources included the final rule listing this species under the Endangered Species Act; the recovery plan; peer reviewed scientific publications/reports; and unpublished interim reports. This draft 5-year review was shared with several peer reviewers (Appendix A). Comments received were evaluated and incorporated as appropriate.

B. Reviewers

Lead Region: Kelly Bibb, Recovery Coordinator, Southeast Regional Office, Atlanta. (404) 679-7132.

Lead Field Office: Jan P. Zegarra, Caribbean Ecological Services Field Office, Boquerón, Puerto Rico. (787) 851-7297, extension 220.

C. Background

1. **Federal Register Notice citation announcing initiation of this review:** September 21, 2007; 72 FR 54061.

2. **Species Status:** Improving. In 2008, fifty-seven lizards were successfully translocated from Green Cay National Wildlife Refuge to Buck Island Reef National Monument (Buck Island Reef NM), an island protected and managed by the National Park Service. This was the second attempt to translocate lizards and the first of a series of translocations that are proposed to re-establish a self sustainable population of lizards on this protected island. Recent population estimates from Green Cay, Protestant Cay and Ruth Cay indicate that the populations appear healthy because of the observation of numerous juveniles, hatchlings and gravid females on nearly every site visit (Treglia and Fitzgerald 2010). However, low genetic diversity was observed within lizard populations, which is consistent with a history of rapid and drastic population reductions that led to the endangered status of *A. polops* (Hurtado et al. 2012).

3. **Recovery Achieved:** 2 (26-50%) of species recovery objectives achieved.

4. **Listing History**

   Original Listing
   FR notice: 42 FR 28543
   Date listed: June 3, 1977
   Entity listed: species
   Classification: endangered

   Revised Listing: Final Correction and Augmentation of Critical Habitat
   FR notice: 42 FR 47840
   Date listed: September 22, 1977

5. **Associated rulemakings:** Not applicable.

6. **Review History:** The final rule to include the St. Croix ground lizard in the United States List of Endangered and Threatened Wildlife and Plants was published on June 3, 1977 (42 FR 28543) together with the determination of critical habitat. A recovery plan for this species (hereafter the plan) was approved and signed on March 29, 1984 (USFWS 1984). The plan includes information on species description, taxonomy, former and present range and status, habitat description, food habits, behavioral activities, and protective actions. The plan mentions possible causes of decline such as the introduction and proliferation of the small Indian mongoose (*Herpestes auropunctatus*) and extensive habitat modification. Both the final rule and the recovery plan serve as reference point documents for this 5-year review.

   A previous 5-year review for the St. Croix ground lizard was conducted in November 1991 (56 FR 56882). In this review, the status of many species was simultaneously evaluated with no in-depth assessment of the five factors as they pertain to the individual species. The notice stated that the Service was seeking any new or additional information regarding the necessity of a change in the status of the species. The notice indicated that if significant data were available warranting a change in a species' classification, the Service would propose a rule to modify the species' status. No change in the reptile's classification was found to be appropriate.

   Recovery Data Call: 2013, 2012, 2011, 2010, 2009, 2008, 2007, 2006, 2005, 2004, 2003, 2002, 2001, 2000, 1999, and 1998.

7. **Species' Recovery Priority Number at start of review (48 FR 43098):** 2C. At the time of listing, the St. Croix ground lizard was recognized as a species with a high degree of threat and a high recovery potential. The conflict symbol "C" reflects the potential effects of land development on the species.

8. **Recovery Plan:**
   Name of plan: St. Croix Ground Lizard Recovery Plan.
   Date issued: March 29, 1984.

II. Review Analysis

A. Application of the 1996 Distinct Population Segment (DPS) policy

1. **Is the species under review listed as a DPS?** No.
2. **Is there relevant new information that would lead you to consider listing this species as a DPS in accordance with 1996 policy?** No.

B. Recovery Criteria

1. **Does the species have a final, approved recovery plan containing objective, measurable criteria?** The St. Croix ground lizard has a final approved recovery plan (USFWS 1984), but it is outdated. The plan provides criteria for reclassification from endangered to threatened, but not to delist the species. The plan states that the lack of suitable habitat, which can be maintained free of mongoose, limits recovery actions such that the species may never be recovered to a point where it could be considered for delisting.

2. **Adequacy of recovery criteria**

   a. **Do the recovery criteria reflect the best available (most up-to-date) information on the biology of the species and its habitat?** No. At the time the plan was approved, information regarding species' biology, distribution, habitat requirements and life history was limited.

   b. **Are all of the 5 listing factors that are relevant to the species addressed in the recovery criteria (and there is no new information to consider regarding existing or new threat)?** No.

3. **List the recovery criteria as they appear in the recovery plan, and discuss how each criterion has or has not been met, citing information.**
   The recovery plan establishes that the St. Croix ground lizard could be considered for reclassification from endangered to threatened when:

   1. The existing population at Green Cay is protected.
   2. The continued existence of the population on Protestant Cay is ensured.
   3. A self-sustaining population (500 or more individuals) is established on Buck Island by 1990.
   4. Adequate population dispersion is obtained.

Criterion 1 has been met. In 1977, Green Cay was designated as a USFWS National Wildlife Refuge primarily to protect the largest known population of this lizard (McNair 2003).

Criterion 2 has been initiated, but has not been effective. In 2003, USFWS Partners for Fish and Wildlife Program in association with Division of Fish and Wildlife of the U.S. Virgin Islands (USVI) government, entered into an agreement with the Hotel on the Cay owners to protect the St. Croix ground lizard (McNair and Coles 2003). This 36 year long-term contract will provide habitat enhancement measures for the benefit of the lizard, which include eliminating deleterious landscaping practices and minimizing human disturbance of habitat (McNair and Coles 2003). Although this agreement was signed, little has been done to benefit the lizard or its habitat. For example, a detrimental landscaping practice, such as removal of leaf litter at hotel landscape grounds, continues (M. Rivera, USFWS, 2008 personal observation). In addition, in December 2011, an adverse modification of critical habitat (alteration that diminishes the habitat's value for the recovery of the species) occurred on Protestant Cay and mitigation actions are currently under way. Geographic Consulting (2011a) developed a habitat restoration plan for the lizard on Protestant Cay, but there is no record of its implementation.

Criterion 3 has been initiated. First attempts to translocate the St. Croix ground lizard to Buck Island were initially successful (Philobosian and Rubial 1971), but the population apparently declined because of the cessation of mongoose trapping (Philobosian and Yntema 1976). The National Park Service conducted an island-wide eradication program in 2001 and regular follow-up trapping efforts conclude that the island remains mongoose and rat free to date. In 2007, a detailed capture and translocation implementation plan was written for the lizard (NPS 2008). Translocation of the St. Croix ground lizard from Green Cay to Buck Island began in April 2008 (Treglia and Fitzgerald 2008). Initial translocation results suggest that the introduced population of the St. Croix ground lizard to Buck Island is very likely to be self-sustaining (Treglia and Fitzgerald 2008).

Criterion 4 has been initiated. The natural dispersion of the St. Croix ground lizard is limited since the species is found only on isolated small islands. However, the translocation of individuals to create additional self-sustainable populations in protected areas has been implemented as a "human assisted" dispersion mechanism. Translocation efforts were initiated in the 1990s. Ten individuals from Protestant Cay and one individual from Green Cay were introduced successfully to Ruth Cay. As described above, 57 individuals from Green Cay were translocated to Buck Island in 2008. Long term monitoring efforts on Buck Island will provide information for criteria 4. Casual encounters of lizards in places outside of the original release site will provide evidence of significant range expansion (Treglia and Fitzgerald 2008). A more comprehensive population estimate for Buck Island is planned for 2013.

C. Updated Information and Current Species Status

1. Biology and Habitat

a. Species' abundance, population trends (*e.g.* increasing, decreasing, stable), demographic features (*e.g.* age structure, sex ratio, family size, birth rate, age at mortality, mortality rate, etc.), or demographic trends.

At the present time, between 600 and 2,000 individuals of the St. Croix ground lizard are estimated to occur on Green Cay, Protestant Cay, Ruth Cay and Buck Island Reef NM. Appendix B compiles counts of the St. Croix ground lizard from different surveys from 1967 to 2012. We modified this table from McNair (2003) and updated it to include later surveys conducted on the respective cays. Overall, Treglia and Fitzgerald (2010) population estimates for Ruth, Protestant, and Green Cays are higher than other previous estimates, probably because of differences in survey methods that enabled them to account better for low detectability. Treglia and Fitzgerald (2010) suggest that the populations of *A. polops* on Ruth, Protestant, and Green Cays were healthy during their studies as evidenced by repeated observations of many individuals of all size classes. However, it must be noted that various survey methods have been used in the past and these varying methods make it difficult to accurately compare estimates over time.

Green Cay contains the largest population known from all of the four locations where it is present. Mackay (2007) counts support the idea that the population is stable and there is no data that suggests it is declining. This population will continue to be a source for future translocation efforts. Treglia and Fitzgerald's (2010) primary work was on Green Cay during April-May 2008 for the translocation captures and during June 2009 for a mark-resight study. A population estimate from the southern end of the cay resulted in 312 adult lizards and 101 subadults. Although the estimate is considered to be biased low, it is clear that more than 400 individuals were using the southern portion of Green Cay during their surveys and it is known that the lizards also use the remainder of the cay (Treglia and Fitzgerald 2010).

The population of St. Croix ground lizards on Protestant Cay seemed to have declined in the past. In 1967, it appears the lizards were widely distributed on Protestant Cay when Philibosian and Rubial (1971) estimated the population at 200 lizards, one or two years before the hotel (Hotel on the Cay) was built in 1968-69 (McNair 2003). However, surveys conducted in the spring of 2002 and winter of 2002-2003 reported 30 and 36 lizards in the cay, respectively, suggesting a decline (McNair 2003; McNair and Coles 2003). Nevertheless, on May 2009, Treglia and Fitzgerald (2010a) conducted a lizard survey where they suggest there were hundreds of lizards present during their visits, considering the large area that they did not survey and the low detectability of the lizards. More recent area surveys conducted in 2010 and 2012 resulted in population estimates of 136 and 129 individuals respectively, while mark-resight surveys also conducted in 2010 and 2012 resulted in population estimates of 249 (SE ±36) and 384 (SE ± 47) respectively (Geographic Consultants 2013). This last method would indicate that the lizard population on Protestant Cay appears to be increasing, although the magnitude of the increase is uncertain (Geographic Consultants 2013).

On Ruth Cay, 10 individuals from Protestant Cay and one individual from Green Cay were introduced successfully in 1990 and 1995, respectively. Surveys conducted between March and May 2003, estimated a weighted mean population of 60 individuals (McNair and Mackay 2005). McNair and Mackay (2005) observed that the lizard population at Ruth Cay has increased since the first translocation. During December 2007, a lizard survey estimated approximately 170 adult lizards at a density of 250 individuals per hectare (Treglia and Fitzgerald 2010). Treglia and Fitzgerald (2010) note that based on their results and observations, the lizard population of Ruth Cay appears to be doing very well. More recent surveys in 2008 and December 2010 tested previous area census methods and paint mark-resight methods. However, these were considered obsolete as results were not accurate enough to run a population estimate analysis (Geographic Consultants 2011b; J. Valiulis, personal communication).

Between late April and early May 2008, 57 lizards from Green Cay were translocated (32 females and 25 males) to Buck Island. The translocation reports indicate that the population of lizards introduced is very likely to be self-sustaining, based on observations of normal behaviors, mating, and appearance of hatchlings within two months of the translocation of gravid females to the island. The population should persist because of the successful eradication and continued efforts of the NPS to maintain the island free of mongoose and rats (Treglia and Fitzgerald 2008; Treglia and Fitzgerald 2010b). In addition, unmarked gravid adult females and juveniles were captured in subsequent visits, thus proving that within the year since translocation individuals had hatched, grown to maturity, and successfully mated (Treglia and Fitzgerald 2010b). A more comprehensive population estimate at Buck Island is planned for 2013.

b. Genetics, genetic variation, or trends in genetic variation.

Several samples have been collected for genetic analysis. However, in an attempt to provide an inbreeding analysis, Knowles (1997) reported failing to obtain an adequate number of tissue samples from Green Cay. Treglia and Fitzgerald (2008) mentioned collecting toe-clips and tail-tips of 37 lizards from Ruth Cay in 2007, which are stored at the Texas Cooperative Wildlife Collection. Genetic samples were also collected from each lizard during the 2008 capture and translocation event from Green Cay to Buck Island.

Recent genetic analysis of the mentioned samples found low genetic variability within populations of the lizard; significant genetic differentiation among the three populations examined (Protestant, Ruth and Green Cays); and also found signatures of recent bottlenecks and critically low effective population size values in all populations (Hurtado et al. 2012). The authors explain that low genetic diversity observed within lizard populations is consistent with a history of rapid and drastic population reductions that led to the endangered status of *A. polops* (Hurtado et al. 2012).

Among the lizard populations sampled, Protestant Cay has substantially the lowest allelic diversity and low-frequency alleles, and the highest inbreeding coefficient, which are probably the consequences of the species dramatic history on that Cay since the construction of the hotel. Hurtado et al. (2012) suggest that the lizard population in Protestant Cay experienced a dramatic decline in its genetic diversity over an 18-year period, and urgent actions are warranted to change this trend.

c. Taxonomic classification or changes in nomenclature. We have no new relevant information regarding taxonomy of this species.

d. Spatial distribution, trends in spatial distribution (*e.g.*, increasingly fragmented, increased numbers of corridors, etc.), or historic range (*e.g.*, corrections to the historical range, change in distribution of the species within its historic range, etc.).

The St. Croix ground lizard historic distribution included St. Croix, Green Cay, Protestant Cay, and presumably Buck Island (USFWS 1984). At the time of listing, the species was only known from Protestant Cay and Green Cay NWR. The last report of the species in the main island of St. Croix was in 1968 (USFWS 1984). The distribution of the species has presently expanded as a result of successful translocation efforts. Currently, the species is known from Protestant Cay, Green Cay National Wildlife Refuge, Ruth Cay and Buck Island Reef NM (Figure 1). Green Cay and Protestant Cay are designated critical habitat for the species.

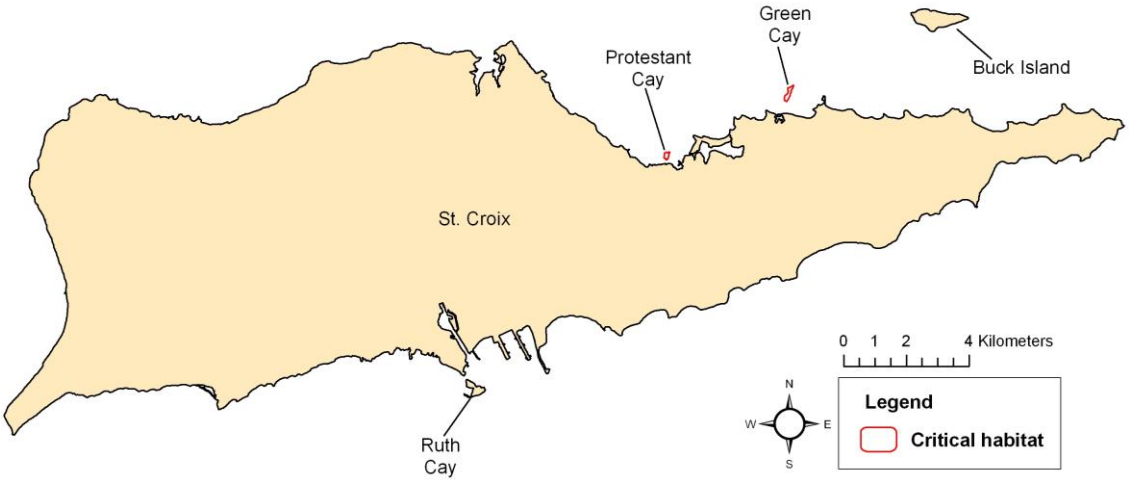

Figure 1. Current distribution of the St. Croix ground lizard in St. Croix, USVI.

e. Habitat.

The St. Croix ground lizard is currently utilizing coastal dry forest vegetation on four offshore islands of St. Croix, USVI (U.S. Virgin Islands). Green Cay NWR is a 5.17 ha (ca. 14.1 acres) islet located in Chenay Bay about 150 m offshore the northeastern

coast of St. Croix (McNair and Lombard 2004). McNair and Lombard (2004) provide general descriptions of the habitat of the St. Croix ground lizard in the three most obvious topographical and vegetative features on Green Cay (North, South, and Beach). The north area is comprised primarily of a shrub-grassland association; the south area is primarily open and closed dry and mesic forest with some shrub-grassland association; and the beach area (southern tip, and some margins of the east, west and north coast) has some trees like buttonwood (*Conocarpus erectus*), manchineel (*Hippomane mancinella*), sea grape (*Coccoloba uvifera*) and sea side maho (*Thespesia populnea*). Lizards were more abundant in forested areas in the southern half of the cay, but scarcer than expected on beaches, especially treeless areas. This is consistent with what Wiley (1984) and Meier *et al*. (1993) found. Wiley (1984) notes that the most important habitat components selected by the lizard were, suitable substrate for burrowing, presence of leaf or tidal litter, and areas which offered both canopied and exposed sections for thermoregulation. Meier *et al*. (1993) states tree density is the habitat factor most closely-related to distribution of the St. Croix ground lizard, being observed more frequently where trees were present.

Protestant Cay is a 1.2 ha (ca. 3 acres) islet in Christiansted Harbor off the northeastern coast of St. Croix (McNair and Coles 2003). Habitat of Protestant Cay consists of subtropical dry forest severely disturbed by the introduction of exotic vegetation, which is part of the landscape of an existing hotel (McNair 2003). The presence of the St. Croix ground lizard is associated with a higher percentage of litter, woody debris, and shrubs with higher stem heights (McNair 2003). The species occupies .23 ha (ca. 0.6 acres) or 19.5% of the cay. Geographic Consulting (2011a) developed a habitat restoration plan for the lizard on Protestant Cay, but there is no record of its implementation.

Ruth Cay (7.5 ha), located off the south-central coast of St. Croix, was built with dredge spoils from the construction of shipping channels for former Harvey Alumina Plant in 1965. It is composed of sand and coral rubble, with a central saltwater pond and is vegetated with mangroves and littoral vegetation (Knowles 1996). The substrate of the islet consists of sand, shell and coral rubble. Over half of the lizards counted were in smaller areas of woodland (primarily littoral habitat) as opposed to within larger areas of scrub, and lizards were not counted on barren habitat with no vegetation in the coral rubble (McNair and Mackay 2005). The rather short buttonwood-dominated littoral woodland continues to increase in height, which is generally favorable for the St. Croix ground lizard (McNair and Mackay 2005). While McNair and Mackay (2005) described finding lizards in most areas with substantial vegetation, they did not find lizards in the mangroves wetlands, the small area in the northwest dominated by grassland, and in woodland and scrub along the southern perimeter of the middle third of the island where the highest coral rubble dome begins. Succession may render areas of the island uninhabitable to the lizards (Claudia Lombard, pers. comm.).

Buck Island is part of the Buck Island Reef NM in the USVI. The island is approximately 2.4 km (ca. 1.5 miles) north-east of the island of St. Croix and

comprises 80 ha (198 acres), rising from sea level to about 104 m (341.2 ft) in elevation. The island is covered with a dry, tropical deciduous forest (Witmer *et al*. 2007) and is considered optimal habitat for the lizard.

2. Five Factor Analysis

(a) Present or threatened destruction, modification, or curtailment of its habitat or range:

At the time of listing, habitat destruction and modification was identified as a threat to the species. The final rule states that the possible expansion of development on Protestant Cay or the start of development on Green Cay could seriously reduce available habitat for the species. At the present time, the St. Croix ground lizard habitat is affected by land management practices at Protestant Cay. McNair and Coles (2003) reported the Protestant Cay population is declining. The authors reported that less suitable habitat is presently available because of landscaping practices such as raking and removal of leaf litter, removal of undergrowth and woody vegetation, and planting of exotic vegetation by hotel management on the highly developed cay. McNair and Coles (2003) reported that the species declined in the areas most severely disturbed on the cay.

Although an agreement between the Service and the managers of the hotel was signed in 2003 to eliminate deleterious landscaping practices, raking of leaf litter on the hotel grounds continues (M. Rivera, USFWS, personal observation 2008) and little has been done to benefit the lizard or its habitat. In addition, in December 2011, an adverse modification of critical habitat occurred within the lizard's habitat on the cay. The Hotel on the Cay destroyed approximately 0.17 acres of suitable and occupied lizard habitat. This represents 4% of the available habitat for the lizard within the cay (USFWS memo January 26, 2012). Geographic Consulting (2011a) developed a habitat restoration plan for the lizard on Protestant Cay, but there is no record of its implementation.

Development on Green Cay is not a current threat to the species. However, some habitat degradation is occurring due to the presence of invasive vegetation (Claudia Lombard, pers. comm.). In recent years three exotic plant species are becoming more abundant throughout the cay (ginger Thomas, hurricane and guinea grass). These species do not provide suitable habitat and degrade available habitat for the lizard. Green Cay is a National Wildlife Refuge managed by the Service for conservation. Buck Island is part of the Buck Island Reef NM currently managed by the National Park Service also for conservation.

Although Ruth Cay seems to be managed by the local government, Harvey Alumina Plant also claims ownership. The cay's unprotected status makes its future uncertain. The cay may be used in the future for maintenance dredging, as the area continues to be an industrial port and vulnerable to anthropogenic and natural erosion. In addition, habitat on Ruth Cay is undergoing a succession of vegetation (from origination with dredge spoil to for example woodland and scrub) that should be assessed and managed if

necessary. Succession may render areas of the island uninhabitable to the lizards (Claudia Lombard, pers. comm.).

Based on the above, we believe that the species is currently threatened by habitat destruction and modification.

(b) Overutilization for commercial, recreational, scientific or educational purposes:

At the time of listing, overutilization for commercial, recreational, scientific or educational purposes was not considered a threat to the species. At the present time, the Service is not aware of overutilization of this species for commercial, recreational, educational, or scientific purposes.

(c) Disease or predation:

At the time of listing, predation was identified as a significant factor threatening the species. The listing identified the introduction of the Indian mongoose as a significant player in the decline of the species, and its disappearance from mainland St. Croix. At the present time, predation by mongooses and rats (*Rattus rattus*) is considered a threat on Protestant Cay (NPS 2008). In 2001, as preparation for reintroduction of the St. Croix ground lizard to Buck Island, the National Park Service successfully eliminated mongooses and black rats from Buck Island (NPS 2008; Witmer 2007).

Using a live-trapping method, a total of 60 rats were removed from Green Cay and eradication was achieved in October 2000. Regular follow-up monitoring revealed no presence of rats until January 2006. That same year a rat removal program captured 58 rats, but later evidence of rats was again observed on the cay (Claudia Lombard, pers. comm.; Mackay 2007).

On Ruth Cay, McNair and Mackay (2005) reported that black rats appear to be scarce, but recommended an eradication program. In 2007, almost 100 rats were removed from Ruth Cay, but without eradication or continued control efforts, the population of rats increased again. Currently, the USDA Wildlife Services is conducting rat control efforts (Claudia Lombard, pers. comm.)

In Protestant Cay, McNair (2003) reported cattle egrets (*Bubulcus ibis*) predating St. Croix ground lizards.

Based on the above, we believe that predation by mongooses, rats and egrets should be considered a threat to the species.

(d) Inadequacy of existing regulatory mechanisms:

When the St. Croix ground lizard was listed, the inadequacy of existing regulatory mechanisms to protect the species was identified as a threat. The species is currently protected in USVI by the Virgin Island Code, Title 12 – Chapter 2; Protection of

Indigenous, Endangered and Threatened Fish, Wildlife and Plants of the Endangered and Indigenous Species Act of 1990. The purpose of this Chapter is to protect, conserve and manage indigenous fish, wildlife and plants, and endangered or threatened species for the ultimate benefit of all Virgin Islanders, now and in the future. The Section 105 of this Chapter prohibits the harassment, injury or killing, or the attempt to do the same, or sell or offer for sale any specimen, or parts or products of an endangered or threatened species.

Based on the presence of Federal and Territorial laws and regulations protecting the St. Croix ground lizard, and the absence of evidence supporting lack of enforcement of regulations to protect this species or governmental measures to prevent destruction of its habitat, we believe that inadequacy of existing regulatory mechanisms should no longer be considered a threat to this species.

(e) Other natural or manmade factors affecting its continued existence:

At the time of listing, other natural or manmade factors were not identified as threats to the species. Because the species distribution is limited to offshore cays with low elevations, we believe that hurricanes, climate change and sea level rise threaten the species habitat. For example hurricane Hugo in 1989 destroyed habitat used by the lizard on Buck Island (McNair and Lombard 2004). Increasing sea level may affect the species and its habitat in coastal areas and offshore islets. However, because the change in sea level is a long-term process and may occur over a long period of time, this threat should be considered as low and imminent.

Synthesis

The St. Croix ground lizard was listed as endangered in 1977. At the time of listing, the St. Croix ground lizard was confined in small numbers to Green and Protestant Cay, two offshore cays near St. Croix. A recovery plan for this species was approved and signed in 1984. The plan considers both populations as stable and estimates the population on Green Cay at about 2,500 individuals and on Protestant Cay at about 50 individuals. The St. Croix ground lizard is currently utilizing coastal dry forest vegetation on four offshore islands in St. Croix, USVI. Between 600 and 2,000 individuals of the St. Croix ground lizard are estimated to occur on Green Cay, Protestant Cay, Ruth Cay and Buck Island Reef NM. Green Cay contains the largest population known from all of the four locations where it is present. Decades old surveys (spring 2002 and winter 2002-2003) of the lizard population on Protestant Cay reported 30 and 36 lizards in the cay (respectively), suggesting a decline. On Ruth Cay, 10 individuals from Protestant Cay and one individual from Green Cay were introduced successfully in 1990 and 1995, respectively. A 2003 survey reported that the lizard population at Ruth Cay has increased since the first translocations to about 60 individuals. In 2008, 57 lizards from Green Cay were translocated to Buck Island. Monitoring reports indicate that the population of lizards introduced is very likely to be self-sustaining, based on observations of normal behaviors, mating, and appearance of hatchlings within two months of the translocation of gravid females to the island. The population should persist because of the successful

eradication of mongooses and roof rats from Buck Island. Overall, more recent (2007-2012) population estimates for Ruth, Protestant, and Green Cays are higher than other previous estimates, probably because of differences in survey methods that enabled them to account better for low detectability. However, it must be noted that various survey methods have been used in the past and these varying methods make it difficult to accurately compare estimates over time.

At the time of listing, habitat destruction and modification on Protestant Cay and Green Cay, predation by mongooses, and inadequacy of regulatory mechanisms were identified as threats to the species. At the present time, the St. Croix ground lizard habitat is affected by habitat modification related to the hotel management practices on Protestant Cay (e.g. raking and removal of leaf litter, removal of undergrowth and woody vegetation, and planting of exotic vegetation); possible predation by mongooses, rats and egrets on Protestant Cay; possible rat predation on Green Cay and Ruth Cay; and possible future increase in sea level in coastal areas and offshore islets. Habitat destruction and modification on Green Cay is not a current threat to the species because this island is a National Wildlife Refuge managed by the Service for conservation. Buck Island is part of the Buck Island Reef National Monument currently managed by the National Park Service for conservation. Ruth Cay is an artificial cay built with dredge spoils from the construction of shipping channels for former Harvey Alumina Plant in 1965. The cay is currently managed by the Territorial government. The species is currently protected in USVI by the Virgin Island Code, Title 12 – Chapter 2; Protection of Indigenous, Endangered and Threatened Fish, Wildlife and Plants of the Endangered and Indigenous Species Act of 1990. Based on the above threat analysis, we continue to believe that the St. Croix ground lizard meets the definition of an endangered species.

III. RESULTS

A. Recommended Classification:

_X_ No change is needed.

IV. RECOMMENDATIONS FOR FUTURE ACTIONS

1. Evaluate success of translocation efforts to Bick Island and continue translocation if necessary to establish a self-sustainable population.

2. Initiate and/or continue rat and mongoose monitoring and control/eradication programs.

3. Initiate and/or continue habitat enhancement practices including invasive plant species removal and planting of native coastal vegetation.

4. Plan for a reverse translocation of lizards from Ruth to Protestant Cay as suggested by Hurtado et al. (2012), and assess other possible reverse translocations.

5. Protect Ruth Cay in perpetuity.

6. Assess climate change and sea level rise on lizard population and habitat.

7. Explore other possible reintroduction sites and/or translocations for the long-term survival of the species.

8. Update recovery plan and revise downlisting/delisting criteria.

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U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW of St. Croix ground lizard (*Ameiva polops*)

Current Classification: Endangered

Recommendation resulting from the 5-Year Review:

_____ **Downlist to Threatened**
_____ **Uplist to Endangered**
_____ **Delist**
_X_ **No change is needed**

Review Conducted By: Jan P. Zegarra, Caribbean Ecological Services Field Office

FIELD OFFICE APPROVAL:

Edwin E. Muñiz, Lead Field Supervisor, U.S. Fish and Wildlife Service

Approved By: Marilyn Ri Date 6/25/2013

REGIONAL OFFICE APPROVAL:

for
Cynthia Dohner, Lead Regional Director, U.S. Fish and Wildlife Service

Approved By: Ann L Valero Date 8-21-13

Appendix A. Summary of peer review for the 5-year review of *St. Croix ground lizard* (*Ameiva polops*)

A. Peer Review Method: We requested peer review from several knowledgeable individuals listed below. We received comments from Claudia Lombard (internal reviewer) and Renata Platenberg (peer reviewer). We did not receive comments from our last peer reviewer.

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B. Peer Review Charge: Peer reviewers were asked to evaluate the document and the science presented in it. They were asked to share any new information or comments/edits they had on the evaluation. They were not asked to comment on the status recommendation.

C. Summary of Peer Review Comments/Report: Most significant comments related to updated species survey reports and rat eradication efforts. Other comments related to threats already identified and recommendations for future actions.

D. Response to Peer Review: The Service evaluated all comments and reports received. All of the new information contained in the reports submitted was incorporated in the 5-year review, as well as most of the peer reviewer's comments.

Appendix B. Summary of population estimates or counts of St. Croix ground lizards compiled from results of different surveys from 1967 to 2009 (modified from McNair 2003).

Location	Year	Number	Method	Source
Green Cay	1967	300	Not given	Philobosian and Rubial 1971
	ca. 1978	200	Not given	Dodd 1978
	1980-1981	360-4300[1]	Mark and re-sight[2]	USFWS 1984
	1987	431[3]	Mark and re-sight[4]	Meier et al. 1993
	1994-1996	375 (154-564)[5]	Count[6]	Knowles 1997
	2002	183	Count[9]	McNair and Lombard 2004
	2003-2004	1169-2177	Count[6]	Mackay 2007
	2007	576	Count[9]	Mackay 2007
	2009	413	Mark and re-sight[4]	Treglia and Fitzgerald 2010a
Protestant Cay	1967	200	Not given	Philobosian and Rubial 1971
	ca. 1978	50-100	Not given	Dodd 1978
	1980-1981	50[1]	Mark and release[2]	USFWS 1984
	1987	29[7]	Count[8]	Zwank 1987
	1994-1996	23 (16-26)[5]	Count[6]	Knowles 1997
	2002	30	Count[9]	McNair 2003
	2003	36	Count[9]	McNair and Coles 2003
	2008	15	Mark and re-sight[4]	Treglia and Fitzgerald 2010a
	2009	17	Mark and re-sight[4]	Treglia and Fitzgerald 2010a
	2010	136	Count[9]	Geographic Consulting 2011b
	2011	249 ± 36	Mark and re-sight[4]	Geographic Consulting 2011b
	2012	129	Count[9]	Geographic Consulting 2013
	2012	384 ± 47	Mark and re-sight[4]	Geographic Consulting 2013
Ruth Cay	1990-1995	11	Translocated	McNair and Mackay 2005
	1996	20	Count[8]	Knowles 1997
	2002	27	Count[9]	McNair and Mackay 2005
	2003	60	Count[9]	McNair and Mackay 2005
	2007	170	Mark and re-sight[4]	Treglia and Fitzgerald 2008
	2010	Not accurate enough for analysis	Count[9]	Geographic Consulting 2011b
	2010		Mark and re-sight[4]	Geographic Consulting 2011b
Buck Island Reef NM	2008	57	Translocated	Treglia and Fitzgerald 2008

[1]Range; other values not given, [2]Mark and release; no other details available, [3]Average of 3 estimates: 420, 462 and 421, [4]Mark-resight searches within fixed-width transects, [5]Mean (range); other values can be calculated from raw data, [6]Counts based on searches within fixed-radii (3 m) points, [7]Maximum (in one-quarter hour), [8]Counts based on searches within an undefined area, [9]Counts based on searches within defined areas.