

*Catesbaea melanocarpa* (No Common Name)

**5-Year Status Review:  
Summary and Evaluation**



Photo by: Omar Monsegur, U.S. Fish and Wildlife Service

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

**August 2023**

## 5-YEAR STATUS REVIEW *Catesbaea melanocarpa*

### GENERAL INFORMATION

**Current Classification:** Endangered

**Lead Field Office:** Caribbean Ecological Services Field Office (CESFO), Mayagüez, Puerto Rico, Maritza Vargas, [maritza\\_vargas@fws.gov](mailto:maritza_vargas@fws.gov)

**Reviewers:**

**Lead Regional Office:** Southeast Region, Carrie Straight, (404) 679-7226

**Date of original listing:** April 16, 1999 (64 FR 13116; March 17, 1999)

**Critical Habitat:** Critical habitat final rule: September 27, 2007 (72 FR 49212, August 28, 2007).

**Methodology used to complete the review:** In accordance with section 4(c)(2) of the Endangered Species Act of 1973, as amended (Act), the purpose of a status review is to assess each threatened species or endangered species to determine whether its status has changed and if it should be classified differently or removed from the Lists of Threatened and Endangered Wildlife and Plants ([50 CFR 424.11](#)). The U.S. Fish and Wildlife Service (Service) evaluated the biology, habitat, and threats of *Catesbaea melanocarpa* to inform this status review. In conducting this 5- year review, we relied on the best available information pertaining to historical and contemporary distributions, life histories, genetics, habitats, and threats of this species.

We announced initiation of this review in the Federal Register on May 13, 2022 (87 FR 29364) with a 60-day comment period and received no comments. The primary sources of information used in this analysis were the 1999 final listing rule (64 FR 13116), the 2005 recovery plan and agencies unpublished survey data and reports, and personal communication with recognized experts. This review was completed by the U.S. Fish and Wildlife Service, Caribbean Ecological Services Field Office (CESFO), Mayagüez, Puerto Rico. All literature and documents used for this review are on file at CESFO.

**FR Notice citation announcing the species is under active review:** May 13, 2022 (87 FR 29364)

**Species' Recovery Priority Number at start of 5-year review ([48 FR 43098](#)):** 5. *Catesbaea melanocarpa* is a species with a high degree of threat and a low recovery potential.

**Review History:**

Previous 5-year status reviews recommending no change in status were published on April 26, 2011 and September 25, 2018 (Service 2011 and 2018, respectively).

## REVIEW ANALYSIS

### Listed Entity

#### **Taxonomy and nomenclature**

No new information exists for *Catesbaea melanocarpa* regarding changes in nomenclature or taxonomy.

#### **Distinct Population Segment (DPS) ([61 FR 4722](#))**

The Act defines species as including any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate wildlife. This definition limits listing of a DPS to only vertebrate species. Because the species under review is not a vertebrate, the DPS policy does not apply.

### Recovery Criteria

#### **Recovery Plan or Outline:**

Recovery Plan for *Catesbaea melanocarpa*, July 15, 2005

Downlisting: Downlisting of the species from endangered to threatened status will be considered when: (1) the habitat known to support the two extant populations (St. Croix and Peñones de Melones) is enhanced and protected through landowner conservation agreements or easements; (2) extant populations are enhanced through the planting of additional propagated individuals to augment the number of adult individuals to at least 250; (3) at least one population within each of the following previously occupied habitat is found and/or established: Guánica Commonwealth Forest (PR), Susúa Commonwealth Forest (PR), Barbuda, Antigua, and Guadeloupe; and (4) research is conducted on key biological and genetic issues, including effective propagation techniques, and number of individuals within a population and number of populations needed for the establishment of self-sustaining populations and a viable overall population.

Delisting: An overall, self-sustaining or viable population of *Catesbaea melanocarpa* will be considered for delisting when: (1) populations are protected by long term conservation strategies designed and implemented to address manmade threats and to ensure the continued existence of the species; (2) self-sustaining subpopulations are established in previously unoccupied but suitable protected habitat at Sandy Point National Wildlife Refuge (USVI), Cabo Rojo National Wildlife Refuge (PR), La Tinaja in Sierra Bermeja (Laguna Cartagena National Wildlife Refuge, PR), and any other identified suitable conservation area within the dry forest zone to establish an overall viable population; and (3) the numbers of populations, their sizes, genetic makeup and distribution needed to ensure self-sustainability are determined and achieved.

None of the delisting or downlisting criteria have been met.

### Biology and Habitat Summary

A detailed review of the species' biology, distribution, abundance, and its habitat can be found in the previous *Catesbaea melanocarpa* 5-year status reviews (Service 2011, 2018). *Catesbaea*

*melanocarpa* is known from Puerto Rico (municipalities of Guánica, Peñuelas, Cabo Rojo) and from St. Croix, U. S. Virgin Islands (USVI) (Figure 1). In addition, it has been reported in the islands of Antigua, Barbuda, and Guadeloupe (Proctor 1991; Figure 1).

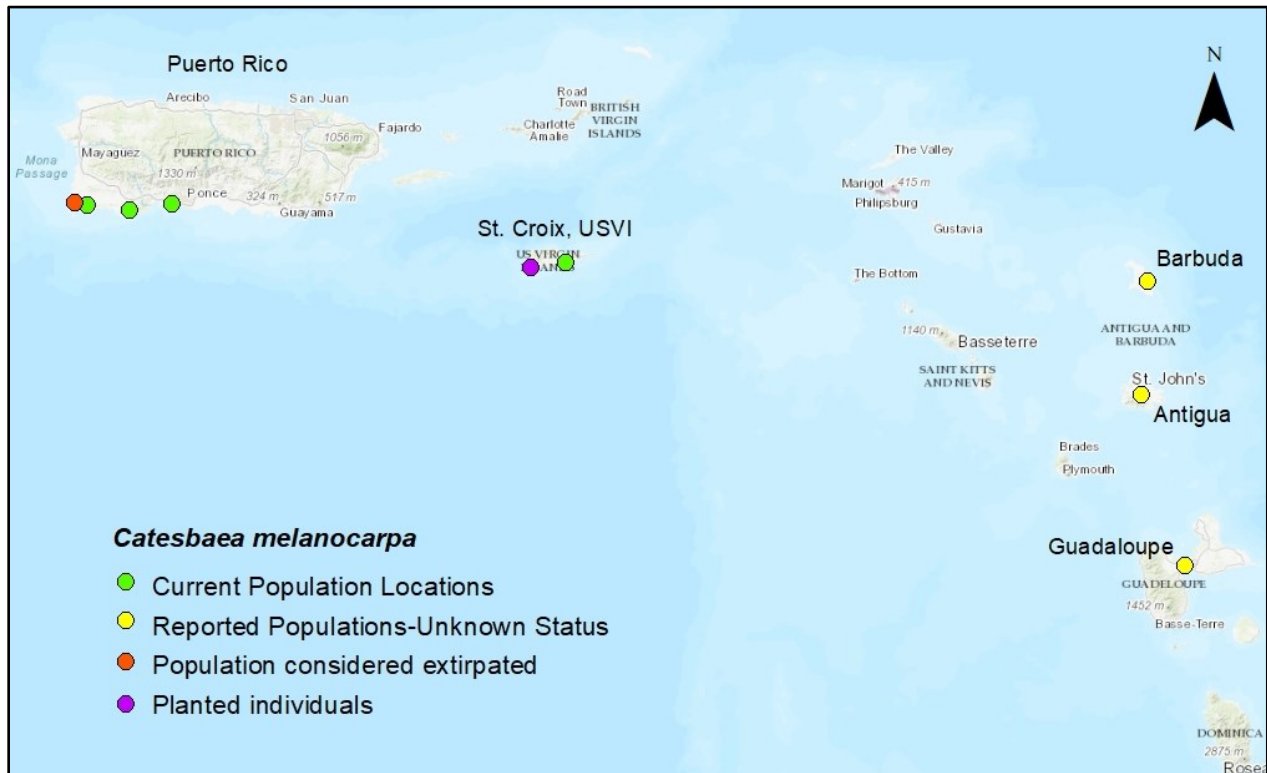


Figure 1. *Catesbaea melanocarpa* population locations

## Populations

Details on the USVI and Puerto Rico populations are described below. We have no current information about the condition of populations on islands of Antigua, Barbuda, and Guadeloupe. In Antigua, a relatively recent list, includes the species as being “locally found” in the Nelson's Dockyard, National Park, Doigs, Black Ghaut Hills, Guinea Bush, and Morris Looby indicating that the species may still be extant in several areas (Antigua and Barbuda Department of Environment 2021).

St. Croix, USVI: (Ha’Penny site): The most recent population assessment occurred in 2019-2020, where approximately 2,077 individuals were found with a demographic profile that included 625 adults, 1,074 juveniles, and 378 seedlings (St. Croix Environmental Association [SEA] 2023; Table 1). *Catesbaea melanocarpa* individuals were observed in clusters ranging from a single individual to over 100 individual plants, including varying sizes that suggest some recruitment within this population (SEA 2023; Table 2). The basal diameter of 564 individuals over 50 centimeters in height is included in Table 3, and ranged from 2 to 70 mm, most measuring under 20 mm (SEA 2023; Table 3).

In 2022, a trail camera was used to monitor two *Catesbaea melanocarpa* plants in St. Croix. The cameras recorded pearly-eye trashers (*Margathrops fugatus*), common doves (*Columbina passerine*), Zenaida doves (*Zenaida aurita*) and black rats (*Rattus rattus*, an invasive non-native species) visiting the trees. The ground doves and the black rats were observed eating fruits (Morgan et al. 2022)

Guánica (Guánica Commonwealth Forest), Puerto Rico: Within the population of Guánica Commonwealth Forest are two locations, one along El Fuerte Trail and another along Ojo de Agua Trail. In 2019, the new location at Ojo de Agua Trail was discovered, which consisted of 11 *Catesbaea melanocarpa* individuals (Plaza-Muñiz and Megill-Irizarry 2023). This new locality is approximately 900 meters (m) north from the previously known location along El Fuerte Trail.

In 2019, researchers documented recruitment within the population along El Fuerte Trail. Three seedlings were associated with two adults that were part of the existing eleven individuals were documented (Plaza-Muñiz and Megill-Irizarry 2023). During different visits conducted to this site from 2018 to 2022, Plaza-Muñiz and Megill-Irizarry (2023) found plants with flowers in October, immature fruits between February through April and in October and November, and mature fruits in February through April.

As part of a study of the plants within Guánica Commonwealth Forest, researchers measured the diameter and height of the 11 plants at El Fuerte Trail in 2019, 2020, and 2021 and the 11 along Ojo de Agua Trail in 2020 and 2021 (Plaza-Muñiz and Megill-Irizarry 2023). In 2021, along El Fuerte Trail, the basal diameter ranged from 0.3 cm to 2.5 cm with an average of 1.10 cm, and individual heights ranged from 0.20 m to 1.60 m with an average of 0.73 m tall (Figure 2). The plants along Ojo de Agua Trail had a larger range and a smaller overall average basal diameter compared to those at El Fuerte Trail (range: 0.03-2.9 cm; average: 0.44 cm). Similarly, the heights of individuals at Ojo de Agua Trail had a wider range, however they had a larger average height than those at El Fuerte Trail (range: 0.1-2.5 m; average: 0.78 m).

El Conuco Natural Protected Area, Puerto Rico: In 2019, a new population of *Catesbaea melanocarpa* was discovered at El Conuco Natural Protected Area, a natural reserve found in southwest Puerto Rico and managed by the NGO Para La Naturaleza (PLN) (Arocho-Hernández 2020). The terrain of El Conuco area is very steep, well drained soils with low natural fertility and low organic content. The *Catesbaea melanocarpa* population there consists of 25 individuals; one cluster had 23 adults and one seedling, and another cluster had one sapling (Arocho-Hernández 2020; Table 1). During different visits conducted to this population, PLN staff found plants with green fruits between December 2019 and January 2020, and mature fruits between February and March 2020. The average basal stem diameter was 1.25 cm and the average height of plants was 1.2 m, the tallest individual documented was seven feet tall (Arocho-Hernández 2020).

In 2020, trail cameras were located close to two adults *Catesbaea melanocarpa* individuals with fruits. The cameras recorded Puerto Rican bullfinch (*Loxigilla portoricensis*) and rose-breasted grosbeak (*Pheucticus ludovicianus*) visiting and eating *Catesbaea melanocarpa* fruits. Also, the exotic rhesus macaque (*Indochinese rhesus*) was observed eating fruits from these trees (Arocho-Hernández 2020).

Peñuelas (Encarnacion Ward), Puerto Rico: The latest information from this site is from 2011, when only one adult individual was documented (Service 2018; Table 1).

Punta Melones (Cabo Rojo), Puerto Rico: Twelve adults and seven seedlings were reported for this population in 2009 (Service 2018). The latest survey conducted at this site was in 2012, and no *Catesbaea melanocarpa* individuals were recorded (DNER 2012). As of 2018, this population was considered extirpated due deforestation and fire (DNER 2012; Service 2018; Table 1).

Table 1. *Catesbaea melanocarpa* population estimates by locations. Numbers represent adults, [juveniles], and (seedlings). No data available is abbreviated as ND and Extirpated populations are abbreviated as EX (Service 2011 and 2018, Arocho-Hernández 2020, SEA 2023, and Plaza-Muniz and McGill-Irizarry 2023).

Location	2001	2002	2009	2011	2012	2013	2016	2017	2018	2019	2020
Ha' Penny, St. Croix, USVI	ND	100	ND	ND	ND	126 (116)	312	380	406	ND	625 [1,074] (378)
Fuerte Trail, Guánica, PR	12	ND	ND	ND	ND	ND	ND	ND	11	11 (3)	11 (3)
Ojo de Agua, Guánica, PR										11	11
Peñuelas, PR				1	ND	ND	ND	ND	ND	ND	ND
Punta Melones, Cabo Rojo, PR			12 (7)	ND	0 (0)	EX	EX	EX	EX	EX	EX
El Conuco, Cabo Rojo, PR										23 [1] (1)	23 [1] (1)
<b>Total</b>	<b>12</b>	<b>100</b>	<b>19</b>	<b>1</b>	<b>0</b>	<b>242</b>	<b>312</b>	<b>380</b>	<b>417</b>	<b>50</b>	<b>2,127</b>

Table 2. *Catesbaea melanocarpa* distribution of cluster size in Ha'Penney, St. Croix, USVI (SEA 2023)

Number of <i>Catesbaea melanocarpa</i> clusters	Number of individuals per cluster
62	1
87	2 to 10
6	11 to 20
16	21 to 100
4	Over 100
175	Total

Table 3. Basal diameter of 564 *Catesbaea melanocarpa* individuals over 50 cm in height at Ha’Penny site, St. Croix, USVI (SEA 2023)

Basal diameter (millimeters)	Number of <i>Catesbaea melanocarpa</i> individuals
1 to 10	216
11 to 20	219
21 to 30	76
31 to 40	34
41 to 50	13
Over 50	6

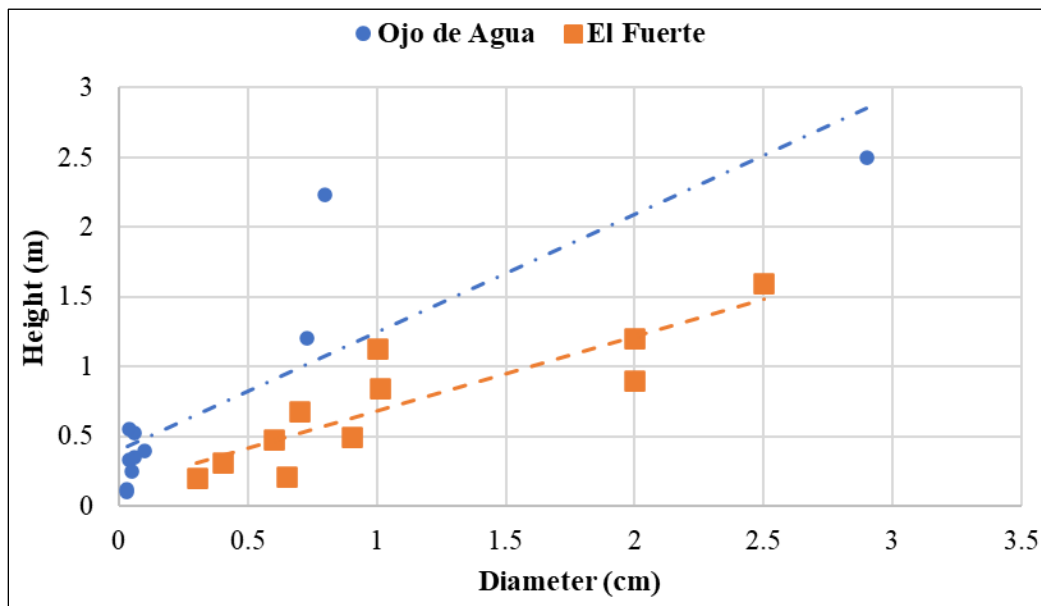


Figure 2. Graph of *Catesbaea melanocarpa* diameters and heights for the 11 individuals found along Ojo de Agua Trail and the 11 individuals found along El Fuerte Trail in Guánica Commonwealth Forest, Puerto Rico. Data taken from Plaza-Muñiz and Megill-Irizarry 2023.

**Other information:**

Propagation trials with *Catesbaea melanocarpa* conducted by Michael Morgan from University of Virgin Islands, proved that propagation by seeds is more successful than vegetative cuttings (Morgan et al. 2022, SEA 2023). Seeds will start to germinate at about 17 days after sowing with a typical germination of 18 percent, and germination peak around day 60. Vegetative cuttings had very limited success in the trials, out of 216 cuttings, three produced viable plants resulting in a limited success of one percent (Morgan et al. 2022).

There was a project to establish two new *Catesbaea melanocarpa* populations in St. Croix, USVI: one within the Sandy Point National Wildlife Refuge and the other at Salt River Bay National Historic Park and Ecological Preserve. Unfortunately, due to difficulties with the plant propagation there was not much material for planting. However, in 2021, the project was able to plant twelve individuals at the Refuge, but because of drought conditions only four individuals

survived (SEA 2023, Morgan pers. comm. 2023). In 2022, when the drought ended, an additional twenty individuals were planted at the Refuge (SEA 2023, Morgan pers. comm. 2023). No information about the current status of the latter individuals was provided.

### **Threats (Five-Factor Analysis) Summary**

A detailed review of the species' threats can be found in the 2011 and 2018 *Catesbaea melanocarpa* 5-year status reviews (Service 2011, 2018). The status of a species is determined from an assessment of factors specified in section 4 (a)(1) of the Act, including: Factor A: the present or threatened destruction, modification, or curtailment of its habitat or range; Factor B: overutilization for commercial, recreational, scientific, or educational purposes; Factor C: disease or predation; Factor D: the inadequacy of existing regulatory mechanisms; Factor E: other natural or manmade factors affecting its continued existence. During this review, we found no new information indicating significant changes on how the above-mentioned Factors are affecting the overall status of *Catesbaea melanocarpa* from the previous five-year status reviews (Service 2011, 2018). A summary of current threats to the species is detailed below.

The present or threatened destruction, modification, or curtailment of the habitat (Factor A) and natural and manmade factors (Factor E) continues to be the primary threats to *Catesbaea melanocarpa* as a result of deforestation and land clearing for urban (residential, commercial and tourist) development and resulting from fires. The Ha'Penney population, which harbors the majority (98 percent) of the known *Catesbaea melanocarpa* individuals is at higher risk of this threat because the ownership of the area keeps changing. Although part of the area where the population is located is currently preserved for conservation, another area containing *Catesbaea melanocarpa* is purportedly for sale (SEA 2023). Depending on land use and activities of the new owners those individuals could be at risk. Habitat impacts may be indirect and result in increased risk to the species through impacts from invasive species (e.g., *M. maximus*) and increased fire risk. Another possible threat may be from changes in climatic conditions, specifically associated with severe droughts. A decrease in annual average precipitation in Puerto Rico and the U.S. Virgin Islands is projected over the 21st century (Runkle et al. 2022), and temperatures has risen almost 2°F since the 20<sup>th</sup> century (Runkle et al 2022). For *Catesbaea melanocarpa*, a reduction in precipitation within a subtropical dry forest where precipitation is already reduced, may compromise its phenology, seed viability, seedling recruitment, and seedling survival.

The population located in Guánica Commonwealth Forest and the new population found in El Conuco Natural Protected Area are both protected from development as they are located within areas managed for conservation. However, Ojo de Agua individuals, the new site found within Guánica Commonwealth Forest is located near powerlines, therefore, maintenance or repairs could pose a threat from clearing that could be required to reach the powerlines (Plaza-Muñiz and Megill-Irizarry 2023). Furthermore, the habitat at El Conuco is extensively degraded due to former deforestation for cattle ranching and associated habitat intrusion by nonnative invasive plant species (e.g., *Megathyrsus maximus*) (Envirosurvey 2020; Service 2022). The presence of *M. maximus* makes the habitat and individual *Catesbaea* vulnerable to fires, particularly human-induced fires during the dry season. In fact, impacts to individuals of the endangered *Trichilia triacantha*, *Eugenia woodburyana*, *Aristida portoricensis*, *Aristida chaseae*, and *Vernonia proctorii* were recorded in the proximity of known individuals of *Catesbaea melanocarpa* during



a fire event in 2019 at El Conuco (Service 2022). Information shows that these threats remain ongoing, and occur throughout the species' range, and we expect this threat to continue in the future.

We have no evidence that overutilization for commercial, recreational, scientific, or educational purposes (Factor B) poses a significant threat for the species. In addition, although predation (Factor C) by deer has been observed in the Ha'Penney population, this stressor did not appear to be significant threat to the species existence (SEA 2023). Some recent studies described above for St. Croix have also noted ground doves and black rats eating fruits of this plant. And in El Conuco, exotic macaques were documented eating the fruits. It is unknown what type of impact this has on the species. Commonwealth and Territorial laws and regulations provide some level of protections for *Catesbaea melanocarpa* (Factor D); however, enforcement on private lands continues to be a challenge as accidental damage or extirpation of individuals has occurred (e.g., Punta Melones population). Additionally, in emergency response efforts post-hurricanes or other storm events, access even within protected lands like that described above may require clearing and could result in inadvertent destruction of plants or their habitats. Therefore, currently regulatory mechanisms are not sufficient to protect the species from threats.

### **Synthesis**

*Catesbaea melanocarpa* is a small spiny shrub under the Rubiaceae family. It currently occurs on the island of St. Croix (Ha'Penny), USVI, and in Puerto Rico (i.e., two localities in Guánica, one in Peñuelas, and one in Cabo Rojo) and on the islands of Antigua, Barbuda, and Guadeloupe. In 2019, one new population and an additional location for Guánica were discovered, one in Cabo Rojo in southwest Puerto Rico at El Conuco Natural Protected Area and an additional location in Ojo de Agua Trail in Guánica. One known population from Punta Melones, Cabo Rojo, Puerto Rico is currently considered extirpated. The current overall *Catesbaea melanocarpa* population estimate within the U.S. Territories in the Caribbean is 2,127 individuals: about 2,077 individuals in St. Croix, USVI, and about 50 individuals in Puerto Rico.

The species continues to be threatened by habitat destruction or modification by deforestation and land clearing for urban (residential, commercial and tourist) development and from natural and manmade factors such as fires, and droughts caused by climatic changes. The populations at the Guánica Commonwealth Forest and El Conuco in Puerto Rico remains relatively protected because both locations are managed for conservation. However, even those populations may be threatened by land use changes for activities related to emergency response. Nonetheless, the habitat at El Conuco is degraded due to past deforestation for cattle ranching and associated habitat intrusion by nonnative invasive plant species, making it prone to other threats like fires. In St. Croix, the species is at risk because it occurs in private land that is purported for sale. Because of current low population numbers and numbers of individuals per cluster, particularly in Puerto Rico, ongoing threats, and uncertainty about the current condition of the species, we believe that *Catesbaea melanocarpa* continues to meet the definition of an endangered species.

### **RECOMMENDED FUTURE ACTIVITIES**

- The Service and partners should expand habitat surveys within suitable habitat in the proximity of known localities (e.g., Sierra Bermeja, Guánica Commonwealth Forest and Ponte to Peñuelas).
- To better understand the species viability, we recommend the long-term monitoring of known localities to address its long-term survival of individuals and to record any evidence of natural recruitment.
- Evaluate the seed banking potential of the species, and if feasible establish *ex situ* conservation efforts (seed bank) in collaboration with plant conservation institutions (e.g., Fairchild and Atlanta Botanical Gardens).
- Refine propagation protocols from seed and cuttings to support ongoing and future reintroduction and population enhancement efforts.
- Use trap cameras to evaluate the effects of fruit predation on *Catesbaea melanocarpa* and its relation to possible low recruitment of individuals, and to record evidence of seed dispersal by native birds.

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## RESULTS / SIGNATURES

### U.S. Fish and Wildlife Service Status Review of *Catesbaea melanocarpa*

#### **Status Recommendation:**

On the basis of this review, we recommend the following status for this species. A 5-year review presents a recommendation of the species status. Any change to the status requires a separate rulemaking process that includes public review and comment, as defined in the Act.

Downlist to Threatened

Uplist to Endangered

Delist:

*The species is extinct*

*The species does not meet the definition of an endangered or threatened species*

*The listed entity does not meet the statutory definition of a species*

No change needed

**Field Supervisor, Caribbean Ecological Services Field Office, Fish and Wildlife Service**

Approve \_\_\_\_\_

\* Since 2014, Field Supervisors in the Region have been delegated authority to approve 5-year reviews that do not recommend a status change