

Hunting and habitat loss have combined to reduce this once abundant and widespread pigeon of Cuba, Jamaica, Haiti, the Dominican Republic and Puerto Rico to the situation where it is threatened everywhere and gravely at risk in Cuba (highest known population c.100 pairs), Jamaica and Puerto Rico (apparently under 300 birds); a recent decline has occurred in the Dominican Republic, and only in Haiti, where firearms and ammunition are too expensive, are there reports of birds in some numbers. Captive breeding is being used to attempt to reverse trends in Puerto Rico, but protection of habitat there is still needed; elsewhere surveys are imperative to obtain an adequate perspective on the species's conservation.

DISTRIBUTION The Plain Pigeon (see Remarks 1) is endemic to the Greater Antilles, i.e. Cuba (including Isla de la Juventud or Isle of Pines), Jamaica, Hispaniola and Puerto Rico. In the following account, records are arranged from west to east and, unless otherwise indicated, refer either to one individual observed or to an unspecified number of individuals (as in the original source), with coordinates taken from OG (1955b, 1958, 1963a) and DMATC (1972, 1973):

Cuba (*Pinar del Río*) forests of Península de Guanahacabibes, where several pairs were observed in the surroundings of Cabo San Antonio in July 1957 (Vaurie 1957) and down to the present (O. H. Garrido *in litt.* 1991, A. Mitchell *in litt.* 1992); Cayo Real (21°58'N 83°35'W), Cayos de San Felipe, sometime in the 1970s (Garrido and García Montaña 1975, Garrido 1986, O. H. Garrido *in litt.* 1991); (*Habana*) neighbourhood of "Havana", where the type-specimen was collected (Vigors 1827); (*Matanzas*) Ciénaga de Zapata, reported nesting on an ungiven date (Gundlach 1871-1875), and currently (O. H. Garrido *in litt.* 1991); Zanja "La Cocodrila" (in the area of Santo Tomás, 22°24'N 81°25'W), Península de Zapata, where the species has sporadically been observed (Garrido 1980); Santo Tomás, May 1933 and April 1935 (four specimens in FMNH); Soplillar (22°17'N 81°09'W), December 1991 (J. M. Jiménez López *in litt.* 1992); (*Cienfuegos*) San Blas (21°59'N 80°13'W), Trinidad Mountains, where the species was found common between February and July 1933 (Rutten 1934); (*Villa Clara*) "Las Villas (formerly Santa Clara)" (see Remarks 2), apparently in the mid-1950s (Bond 1956b); (*Sancti Spiritus*) along the río Agabama (21°51'N 79°50'W), where the species was common in March and April 1933 (Rutten 1934); (*Camagüey*) "Camagüey" (the province), apparently in the mid-1950s (Bond 1956b); Cayo Romano, undated (Acosta and Berovides 1984); Santa Rosa (21°17'N 78°04'W), February 1923 (eight specimens in AMNH, BMNH, CM and FMNH) and March 1923 (specimen in USNM); La Belén (= Belén, 21°00'N 77°43'W) and other areas near the Sierra de Najasa (21°03'N 77°47'W), currently (O. H. Garrido *in litt.* 1991); (*Granma*) Birama (20°48'N 77°12'W, presumably in the area of Esteros de Birama, 20°38'N 77°13'W), where a population possibly still exists (O. H. Garrido *in litt.* 1991); (*Guantánamo*) Guantánamo Bay, undated (Gundlach 1878b); regions near Guantánamo (Garrido and García Montaña 1975); in the area of Los Caños (20°03'N 75°09'W), where it was not rare early in the twentieth century (O. H. Garrido *in litt.* 1991); Cuchillas del Toa Biosphere Reserve (20°27'N 74°58'W) (Ojito de Agua area), sometime between 1985 and 1987 (Giraldo Alayón *et al.* 1987); (*Isle of Pines*) Santa Bárbara (21°49'N 83°01'W), sometime between 1909 and 1914 (see Todd 1916); Los Indios (21°42'N 83°00'W), August, September and December 1912 (seven specimens in CM and FMNH) and January 1913 (four specimens in AMNH and CM) with a nest on 29 April 1910 which contained eggs on 4 May (Todd 1915b, 1916); Cañada Mountains (= Sierra de la Cañada, 21°45'N 82°57'W), "Nuevas River" (= río de las Nuevas, 21°56'N 82°56'W), McKinley (21°53'N 82°55'W, see Remarks 3) to Nueva Gerona, sometime between 1909 and 1914 (see Todd 1916); San Pedro (21°37'N 82°53'W), March 1902 (specimen in AMNH); "Santa Fé" (21°45'N 82°45'W), around the mid-nineteenth century (see Todd 1916); Palma Alta (21°34'N 82°40'W), March 1902 (specimen in AMNH);

Jamaica Amity (18°15'N 78°06'W), apparently mid-1950s (Jeffery-Smith 1956); St Elizabeth parish, apparently mid-1950s (Bond 1956b); Trelawney, February 1908 (specimen in AMNH); woods of Trelawney, where the species was evidently heard in the mid-1950s (Jeffery-Smith 1956; also Ridgway 1916); Freeman's Hale (untraced, but in Trelawney parish), September 1959 (specimen in USNM); Balaclava (18°10'N 77°39'W), apparently mid-1950s (Jeffery-Smith 1956); Barbecue Bottom (between Clark's Town and Albert Town: see the map in Downer and Sutton 1990), where three birds were observed in April 1979 (see Pérez-Rivera 1990), the species being still present (Downer and Sutton 1990); Grove Valley, near Mandeville, in the 1930s (Bond 1940); Cumberland Valley (= Cumberland, 18°07'N

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77°26'W), undated (Ridgway 1916); Clarendon Plains, currently (Downer and Sutton 1990); Old Harbour, where "several" were shot in 1952 (Bond 1956b, Jeffery-Smith 1956); Moneague, undated (Ridgway 1916); Fern Gully (mountains south of Ocho Ríos: see the map in Downer and Sutton 1990), where 15 birds were observed in April 1979 (see Pérez-Rivera 1990), the species being still present (Downer and Sutton 1990); eastern St Mary parish, where a flock of eight birds was observed in the 1970s (Spence 1977); St Catherine, mid-1950s (Bond 1956b); Spanishtown (= Spanish Town), February 1864 (three specimens in AMNH and BMNH; also Salvadori 1893); Port Henderson, where about 30 birds were observed in January 1977 (see Pérez-Rivera 1990); Hardwar Gap (18°05'N 76°43'W), where a possible bird was observed flying in January 1971 (Lack 1973); Yallahs, currently (Downer and Sutton 1990); Salt Ponds, February 1864 (specimen in AMNH) and where c.25 birds were observed in December 1978 (see Pérez-Rivera 1990); Blue Mountains, mid-1950s (Bond 1940), several observations in 1973 (see Pérez-Rivera 1990) and present by 1977 (Spence 1977); Mona Reserve (see the map in Downer and Sutton 1990), 1972 (see Pérez-Rivera 1972);

Haiti Ile de la Tortue ("Tortuga Island") (Bond 1928a, 1940); (*northern peninsula*) Massif du Nord (untraced, but presumably in Nord department) (Bond 1928a); Ennery, March 1928 (specimen in ANSP); Montagnes Noires (19°23'N 72°27'W) (Bond 1928a); 1.6 km north of L'Atalaye (see Remarks 4), where the species was taken in January 1929 (see Wetmore and Swales 1931; also USNM label data); Poste Charbert, near Caracol (19°42'N 72°01'W), where it was common in April 1927 (see Wetmore and Swales 1931); along the road between Maïssade (19°10'N 72°08'W) and Hinche, where several birds were observed in April 1927 and a specimen was then collected in "Ravine Papaye", Hinche, where birds were reportedly common (Wetmore and Swales 1931; two specimens in USNM); Hinche, March 1929 (see Wetmore and Swales 1931); woods near the mouth of the Artibonite river, where five birds were observed in July 1927 (Danforth 1929); c.6 km south-east of Cerca la Source (19°10'N 71°42'W), where the species was "plentiful" in March 1927 (see Wetmore and Swales 1931; also USNM label data); (*southern peninsula*) Trou Caïman (19°16'N 72°39'W; see Remarks 5), December 1928 (specimen in FMNH); La Visite National Park (see the map in Woods and Ottenwalder 1986), where 40-50 individuals were observed on several occasions, apparently around 1984 (M. A. McDonald *in litt.* 1986); Saumatre (= Étang Saumâtre) (Bond 1928a), with two birds flying in the direction of Morne La Selle foothills in 1983 (J. A. Ottenwalder *in litt.* 1986); Forêt des Pins, Marie Claire (18°18'N 71°49'W), February 1959 (specimen in YPM); "Boucan Chat" (presumably Boucan Chatte, 18°19'N 71°45'W), March 1959 (specimen in YPM);

Dominican Republic Sierra de Neiba, currently (D. Sirí Núñez *in litt.* 1992); Lago Enriquillo (Bond 1928a) and in dry areas there around 1978 (Stockton de Dod 1978); Isla Cabritos National Park, Lago Enriquillo, where a total of 67 birds were reported in 1986 (D. Sirí Núñez *in litt.* 1992); Aguacate, a military post above Sapotén (18°19'N 71°41'W), Loma de Toro (a few km to the west of Pueblo Viejo, 18°14'N 71°31'W), around 1978 (Stockton de Dod 1978); Río Limpio (19°15'N 71°31'W) and Loma Nalga de Maco (19°13'N 71°29'W), recently (SEA/DVS 1992); Hoyo de Palempito (18°06'N 71°28'W), around 1978 (Stockton de Dod 1978); a wooded area near the southern extreme of Laguna Salada (17°41'N 71°28'W), where five birds were observed in March 1983 (Vargas Mora and González Castillo 1983); Bucán de Base (17°38'N 71°26'W), near Laguna Salada, where a flock of about 200 birds were observed in 1977 (see Vargas Mora and González Castillo 1983); "desiertos de Oviedo" (Oviedo at 17°47'N 71°22'W), around 1978 (Stockton de Dod 1978); Bucán de Isidro (untraced but presumably in the Península de Barahona), where it was reported common until 1978 (see Vargas Mora and González Castillo 1983); Jaybón (= Jaibón, 19°37'N 71°09'W), February 1935 (specimen in USNM); Constanza (18°55'N 70°45'W), September and October 1916 (three specimens in CM and USNM), April 1919 (two specimens in USNM), June 1922 (specimen in AMNH); near Constanza, where it was fairly common in May 1927 (Wetmore and Swales 1931), 1976 (Pérez-Rivera 1990) and around 1978 (Stockton de Dod 1978); Loma Tina (18°47'N 70°44'W), January 1917 (ten specimens in AMNH; also Wetmore and Swales 1931); Azua, 1976 (Pérez-Rivera 1990); Reserva Científica Ebano Verde (near Jarabacoa; see the map in DVS 1990), where three birds were observed in May 1992 (D. Sirí Núñez *in litt.* 1992); mouth of río Yuna, May 1927 (Wetmore and Swales 1931); Los Haitises (19°05'N 69°45'W), around 1981 (Stockton de Dod 1981); Samaná Bay, June 1883 (two specimens in ANSP); San Lorenzo, Samaná Bay,

July 1916 (specimen in USNM), March 1919 (three specimens in USNM), and probably nesting in March 1919 (see Wetmore and Swales 1931); Sánchez (see Remarks 6), where the species was taken in November 1916 (see Wetmore and Swales 1931; five specimens in AMNH) and February 1919 (see Wetmore and Swales 1931); Maguá (18°59'N 69°14'W; see Remarks 7), where a bird was collected in February 1883 (Cory 1885); Parque Nacional del Este, undated (Hoppe 1989, which maps the site). Untraced localities are: mouth of the arroyo Barrancota, where a few birds were observed in May 1927 (Wetmore and Swales 1931); Canotes, undated (Stockton de Dod 1978); Sánchez Ramírez, 1976 (see Pérez-Rivera 1981; R. A. Pérez-Rivera *in litt.* 1992);

Puerto Rico (*Añasco municipality*) Añasco (18°17'N 67°08'W), where two birds were observed in 1926 (Danforth 1936) and the species was believed to be reproducing around 1977 (Pérez-Rivera 1977b; see Population); (*Lares*) on the road from Lares (18°19'N 66°52'W) to Utuado (18°15'N 66°42'W), where several birds were shot in July 1876 (Gundlach 1878b); (*Utuado*) “Caguana” (= Barrio Caguana), reported to Gundlach (1878a); Barrio Caguana (18°18'N 66°45'W), where it was being hunted until 1956 (Pérez-Rivera 1981; also Population) and possibly breeding around 1977 (Pérez-Rivera 1977b, Population); Utuado (18°15'N 66°42'W), April 1912 (specimen in CM) and still present in June 1980 (Pérez-Rivera 1981); caves in Hacienda Jobo (untraced but near Utuado), where bones of the species have been found (Wetmore 1922); (*Yauco*) “Altura de Yauco” (Yauco at 18°02'N 66°51'W), where hunters reported seeing the species on an ungiven date; (*Guayanilla*) Punta Verraco (17°59'N 66°47'W), reported by hunters on an ungiven date; (*Arecibo*) one or more sites where the species is known to have been hunted on an ungiven date; (*Ponce*) Ponce municipality, where Plain Pigeons were hunted and sold as food in 1961; mangroves of “El Tuque” (untraced), June 1980, with hunters reportedly securing the species at “Tuque” (near Peñuelas, 18°03'N 66°43'W) (all five from Pérez-Rivera 1981); “Barrio Canas” (= Barrio Cañas, 18°01'N 66°40'W), where several bones were found in 1934 in a midden (Wetmore 1938); (*Manatí*) around Manatí town (18°25'N 66°30'W), where the species was rediscovered in 1958 and at some stage hunted (Pérez-Rivera 1978, 1981); (*Morovís*) caves in the vicinity of Morovís (18°20'N 66°24'W), where bones of the species have been identified (Wetmore 1927); (*Salinas*) near Campamento de la Guardia Nacional (untraced, but on route no.1 (see USGS 1951) to Cayey, where the species was observed in December 1979 (Pérez-Rivera 1981); (*Aibonito*), 1970–1980 (Pérez-Rivera and Collazo Algarín 1976, Pérez-Rivera 1981); (*Cayey*) near Cayey, from April to June of an unstated year (Pérez-Rivera 1981); Toita de Cayey (= Toita, 18°08'N 66°11'W), nesting around 1980 (Pérez-Rivera 1981); Arenas de Cayey (= Arenas, 18°10'N 66°08'W), around 1977 (Pérez-Rivera 1977b); area of Guavate (18°08'N 66°05'W), where the species is known to have bred (Pérez-Rivera 1984; also Population); (*Cidra*) vicinity of Lake Cidra (18°11'N 66°10'N), currently (see Population); (*Agua Buenas*) along route 156 (which links Agua Buenas, 18°15'N 66°06'W, and Caguas, 18°14'N 66°02'W), 1970–1980, mainly in areas with canyons (tributaries of the río Bayamón) (Pérez-Rivera 1981); (*Guayama*) surroundings of Lago Carite (18°04'N 66°06'W), where it has been reported by hunters, and in June 1980 a bird was heard calling in appropriate habitat for breeding (Pérez-Rivera 1981); (*Caguas*) km 3 of “Autopista de las Américas” (linking Cayey and Caguas) towards “las Quebradillas” (= Quebrada de las Quebradillas, 18°12'N 66°03'W), 1970–1980 (Pérez-Rivera 1981); in the bamboo areas of the río Turabo (18°13'N 66°01'W), 1970–1980 (Pérez-Rivera 1981); in the area next to “Peaje de Caguas-Cayey”, 1970–1980 (Pérez-Rivera 1981); Borinquén (18°10'N 66°02'W), 1970–1980 (March–August) (Pérez-Rivera 1981); (*Gurabo*) Gurabo municipality, in the 1950s (Pérez-Rivera 1981); bamboos of the río Gurabo (18°17'N 66°06'W), February 1977 (Pérez-Rivera 1981); Estación Experimental Agrícola de Gurabo (Gurabo at 18°16'N 65°58'W), 1974 (Pérez-Rivera 1981); margins of the río Grande de Loíza (near Gurabo: see USGS 1951), where 20 birds were observed in February 1980 (Pérez-Rivera 1981); Florida (18°11'N 65°57'W), May 1977 (Pérez-Rivera 1981); (*Juncos*) c.3 km before Juncos (18°14'N 65°55'W) along the motorway to Caguas from Humacao, October 1980, November 1980 and March 1981 (Pérez-Rivera 1981); (*Las Piedras*) Las Piedras (18°11'N 65°53'W), where the species was hunted sometime before 1976; c.1 km from Barrio Tejas (18°09'N 65°51'W), December 1980 (Pérez-Rivera 1981); (*Naguabo*) Naguabo municipality, undated (Pérez-Rivera 1977b).

POPULATION The Plain Pigeon has declined dramatically throughout its range, being almost wiped out from Puerto Rico, Jamaica and Cuba, where it is considered in immediate danger of extinction, its status

in Hispaniola being “not being much better”, i.e. also considered threatened; thus if no urgent, strong measures are taken the species could well become extinct in the next 50 years (Pérez-Rivera 1990). Bangs and Kennard (1920) noted the decline throughout its range, and reported that it had been common “in the early days” but referred to it as “disappearing rapidly”.

Cuba The Plain Pigeon appears to have been abundant in former times on both the mainland and the Isle of Pines (Todd 1916, Barbour 1923, Garrido 1986), but according to Todd (1916) by the start of this century its numbers were very much reduced and it was practically extinct in many parts. Bangs and Kennard (1920) believed it to be on the verge of extinction, and Barbour (1923) considered it an “excessively” rare bird. During the second half of the nineteenth century, it appears to have been recorded in the Ciénaga de Zapata and shores of Guantánamo Bay in great numbers, but not in the interior of the island, and even by the start of the twentieth century it was considered nearly extinct in the two localities mentioned (Gundlach 1871-1875, Barbour 1923). However, Rutten (1933) found it “really common” in the Trinidad Mountains near San Blas (February–July 1933) and along the río Agabama (March and April 1933), while the number of specimens collected at Santa Rosa, Camagüey, in February 1923 (eight: see Distribution) suggests that at that time it was still common there, and Bond (1940), presumably drawing in part on this evidence, referred to the species as locally common in the provinces of Santa Clara (presumably what is today Villa Clara) and Camagüey. Later, Bond (1956b) indicated that it was rare in Oriente and in extreme western Pinar del Río (Península de Guanahacabibes), but his contention that the species was well established in parts of Cuba (Bond 1961) has not been confirmed by further field research. Nowadays it is very localized in Guanahacabibes, the Zapata peninsula and in parts of the Sierra de Najasa (where the population is presumed to be no larger than 15 pairs), but a small population may also exist in the Esteros de Birama (see Distribution) (O. H. Garrido *in litt.* 1991). Whether birds are still present in nearby areas in Guantánamo, as indicated by Garrido and García Montaña (1975) and Garrido (1986), is unknown. The relatively recent record of the species in Cayo Real may indicate a small population there (Garrido 1986) and another may exist in the southern parts of Pinar del Río (Garrido 1986). A small recovery of the population in the Península de Guanahacabibes as a result of educational programmes has been noted (Garrido 1986), and at around 100 pairs or less this is the strongest known population in the country (O. H. Garrido *in litt.* 1991). On the Isle of Pines the species was abundant but evidently suffering early in the twentieth century, when “large bags” were “the rule” after hunts conducted by local people (Todd 1916, Garrido 1986; also Distribution); but Barbour (1923) could not find the species from 1915 to 1918 despite many visits to the island at all times of the year, and thus he believed it to have “probably gone”, while Bond (1940, 1956b) considered it rare and local. Garrido (1986) noted the lack of recent records, although he believed that small groups might still be confined to some areas, but it is now judged that the species has indeed been exterminated there (O. H. Garrido *in litt.* 1991).

Jamaica The species appears to have been scarce a century ago, and from March (1863) and Scott (1891-1893) it is not readily clear whether it was ever a common species. Scott (1891-1893) referred in vague terms to its former abundance, himself being unable to find the species in the north-east part of the island around Boston, and March (1863) referred to small groups of six or eight passing from the hills to the fields to feed on “guinea corn”. During the present century the species has steadily declined, becoming very rare (Lack 1973, Pérez-Rivera 1990). Bangs and Kennard (1920) believed that it was on the verge of extinction, Bond (1940) considered it “apparently rare and local”, while Jeffery-Smith (1956) referred to it as “rarely seen but far from extinct”. In 1952 several were shot near Old Harbour (Bond 1956b) and Bond (1961) considered it “rare” but “probably in no immediate danger”. Spence (1973) indicated that it appears regularly in the foothills of the Blue Mountains when *Ficus* trees are fruiting, and Lack (1976) noted that the last published record was in July and August 1963, although he observed a bird which he believed to be this species in January 1971. Vogel *et al.* (1989) considered the Plain Pigeon “very rare” with no nesting “observed in recent years”, and Downer and Sutton (1990) also considered it a very rare and endangered resident. More recent records (see Distribution) could well prove to be of birds from just one or two breeding localities, and the species's current status may well be similar to or even worse than that in Puerto Rico, given the possible damage caused to it by Hurricane Gilbert (Pérez-Rivera 1990).

Haiti Bond (1928a) considered the Plain Pigeon the “most common pigeon” in the north and to be local in

the south, not uncommon on Tortuga Island but absent on Gonave. In April 1927, Wetmore and Swales (1931) considered it the “most common” of the large pigeons in the vicinity of Hinche and particularly along the Ravine Papaye, where resting groups of 2-10 were found, and it was also common at Poste Charbert, near Caracol. In March 1927 it was “very plentiful” at Cerca-la-Source (see Wetmore and Swales 1931). M. A. McDonald (*in litt.* 1986) reported seeing 40-50 birds in La Visite National Park on several occasions (see Remarks 8), and C. A. Woods (verbally 1992) judged the species to be locally common, apparently owing to the lack of firearms amongst the poverty-stricken populace (see Remarks 9).

Dominican Republic The Plain Pigeon appears to have been abundant in the mid-nineteenth century (see Pérez-Rivera 1990), and according to Stockton de Dod (1987) it was once very common, flying in “clouds”. Wetmore and Swales (1931) found it locally common but only in the wooded interior of the island, e.g. “fairly common” near Constanza in May 1927. Bond (1940) considered it to be locally common, and Bond (1961) and Greenway (1967) referred to it as well established in parts of Hispaniola, but none of them provided further details. Stockton de Dod (1978) believed that the population in the island was “substantial” although it could not be considered common, and later (Stockton de Dod 1981) thought the species relatively common (“población regular”) although reduced in numbers. Perhaps the largest concentration recorded in recent times is of a flock of 200 in flight at Bucán de Base in August 1977 (W. Arendt in Vargas Mora and González Castillo 1983). The species was reported to be common near Bucán de Isidro around 1978 (see Vargas Mora and González Castillo 1983) and near Sánchez Ramírez (see Pérez-Rivera 1981). A. Stockton de Dod (*in litt.* 1986) reported that a “substantial” population still existed in the country. In 1986 67 birds were reported from Isla Cabritos, Lago Enriquillo, but the population there is believed to have declined (D. Sirí Núñez *in litt.* 1992). Also in 1986 a search for the species (covering c.3,500 km and conducted in different parts of the Cordillera Central and Los Haitises) resulted in failure to locate any birds, the areas where the species was present 10 years before having been cleared or used for agriculture (Pérez-Rivera 1990). From this survey and information provided by hunters and aviculturists, Pérez-Rivera (1990) concluded that the species currently has a very restricted distribution with the healthiest populations being in the extreme south-west and in the north-east in the least transformed areas of Los Haitises. D. Sirí Núñez (*in litt.* 1992) has also reported a considerable decline, with a few individuals still present in the Sierra de Neiba; furthermore Pérez-Rivera (1990) indicated that if habitat destruction continues at its current rate the species will be soon in danger of extinction.

Puerto Rico The Plain Pigeon appears to have been abundant and widespread in former times, with reports of “hundreds” in the first half of the nineteenth century (see Pérez-Rivera 1990; also Wiley 1985b), but when the bird was described in 1866 it was already rare, with only one specimen being collected in 1860 (see Pérez-Rivera 1978). In 1878, it was reported from around Lares (Gundlach 1878a,b) but the next specimen was not collected until 1912 near Utuado (see Distribution). Neither Bowdish (1902-1903) nor Wetmore (1927, 1928) observed the species while working in Puerto Rico in the late nineteenth and in the early twentieth centuries. Danforth (1936) observed the species in 1926 in Añasco, after which he considered it to have become extinct around 1936 (hence Bond 1941). Although there was evidence of hunting during the early 1950s in a few widely scattered areas (Pérez Rivera 1981, Wiley 1985b), Bond (1956b) still believed that the species was extinct. It was rediscovered in 1958 near Manatí, and in 1959 a bird was shot near Naguabo (see Pérez-Rivera 1981), but it was not until 1963 that a population was discovered around the Lake of Cidra (see, e.g., Bond 1964, Wiley 1985b, Pérez-Rivera 1990) and only in 1973 was the first nest reported (Pérez-Rivera and Collazo 1976), the first census in the area yielding 63 birds (Wiley 1985b). Nesting pigeons have since been found in neighbouring districts and individuals have been seen far from the Cidra area (Pérez-Rivera 1981, USFWS 1982, Wiley 1985b). In November 1976 a census revealed the existence of about 200 individuals (Pérez-Rivera 1977a), and Pérez-Rivera (1977b) reported finding nests in Toita and Arenas de Cayey (the first record of the pigeons nesting outside the Cidra area, possibly reflecting a population increase or else a retreat to areas where competition with the Scaly-naped Pigeon *Columba squamosa* could be avoided; see Threats). Pérez-Rivera (1981) indicated that the species's range appeared to be larger than was previously believed and located in four areas, namely (1) Añasco, (2) Yauco–Ponce, (3) Lares–Manatí and (4) Salinas and Guayama towards the north in Caguas and to the east as far as Naguabo (see map 2 in Pérez-Rivera 1981). The population is

known to have decreased since the first investigations started in 1973, and in July, August and September 1983 censuses resulted in an average of 33 birds, this being the smallest number recorded for 10 years, and only five nests were found between 1982 and 1983 at Cidra (in the fourth area listed above), whereas between March and July 1975 at least 15 active nests had been found in just one of the nesting sites in the Cidra area (Propiedad Cancio) (Pérez-Rivera 1984). A small population at Guavate (within the Cidra–Cayey area) stood at 21 birds in April 1981, only two in August 1982, but 12-14 in January 1983 (Pérez-Rivera 1984). According to Wiley (1985b) the population remained at about 70 birds between late 1976 and 1983 (69 in a November 1983 census around Cidra: Pérez-Rivera 1984), but nesting success had apparently declined, with a substantial reduction in breeding effort: despite extensive searches, only six nests were located in 1984, and all failed (Wiley 1985b). However, periodic censuses conducted in the same area of Cidra between 1984 and 1991 resulted as follows (figures represent the minimum number of birds): November 1984 155, December 1985 129, June 1986 122, August 1986 221, January 1987 118, September 1987 193, April 1988 148, December 1988 70, September 1989 204, October 1990 255, February 1991 196 (Pérez-Rivera and Ruiz-Lebrón 1992). Larger numbers were detected from August to November (when less reproductive activity exists and flocking behaviour is more common; see Ecology), while from December to June (main breeding period) birds are less detectable as they tend to remain in the nesting areas (Pérez-Rivera and Ruiz-Lebrón 1992). Although the above figures appear to suggest an increase in the population (notably from 1988 to 1991), this has been attributed to an improvement of the census method rather than an improvement in what was being censused; moreover, a population decline is predicted as a result of the current destruction of nesting, roosting and feeding areas by development at Cidra and by the recent passage of Hurricane Hugo (Pérez-Rivera and Ruiz-Lebrón 1992; see Threats). The Plain Pigeon's estimated density in the municipality of Cidra between 1985 and 1989 was in the order of 0.4-1.2 birds per km² and elsewhere birds were detected only twice in 2,400 point counts conducted at 90 sampling stations (Rivera-Milán 1992).

ECOLOGY The Plain Pigeon is known to occupy very different habitats at all altitudes, including forested lowlands (primary and second growth), desert thorn-scrub, mountain forest (pinewoods or broadleaf rainforest), coastal mangroves, open savannas and cultivated country (e.g. Gosse 1847, Gundlach 1878b, Bond 1928a, 1956b, Vaurie 1957, Wiley 1985b, Garrido 1986). However, its habitat preferences appear to be slightly different in each of the islands within its range, although this presumably is due to habitat alteration and thus different availability of resources. In Cuba the species has been more frequently reported in open country, lowland forests, mangroves and swampy areas (Gundlach 1871-1875, 1878a, Todd 1916, Garrido 1986), although it has also been reported from two mountainous areas (Trinidad Mountains and Sierra de Najasa: see Distribution). In Jamaica the species was formerly widespread at all altitudes (Gosse 1847), but it duly retreated into the mountain rainforest (Gosse 1847), and March (1863) described it as a “highland pigeon”, although it still made forays to lowland fruit trees to feed (King 1978-1979), and feeds in coastal mangroves, chiefly in the southern coastal plains (Downer and Sutton 1990). In northern Haiti it was known to occur in the upland pine-forest (Bond 1928a), and in the Dominican Republic it was found in dry coastal deserts, mangroves and in the mountains in both pine and broadleaf woodland (Wetmore and Swales 1931, Stockton de Dod 1978, Vargas Mora and González Castillo 1983). In Puerto Rico it frequented lowland forests (Danforth 1936), but is now mainly restricted to second-growth areas with native and exotic plants and patches of farmland and cattle pastures (USFWS 1982, Wiley 1985b).

The Plain Pigeon feeds on fruits, berries, seeds, buds, leaves and flowers (R. A. Pérez-Rivera *in litt.* 1992; see below). In Cuba it was reported feeding on the berry of the “ateye tree” *Cordia allococca* (see Greenway 1967) and Rutton (1934) reported it eating the fruit of the royal palm *Roystonea regia*. In Jamaica it was known to descend to the plains in search of ripening “guinea corn” in January and February (March 1863), and it has been observed feeding on fruiting fig *Ficus* (Spence 1973). In Puerto Rico the bulk of the diet consists of fruits of the royal palm *Roystonea borinquena*, *Cestrum diurnum*, and *Didymopanax morototoni*, and although the species can obtain its food near or on the ground (including cattle-spilt grain), it shows the characteristics of a highly arboreal pigeon, doing most of its feeding in trees (Pérez-Rivera 1978, 1985, Pérez-Rivera *et al.* 1988, which see for further information on the species's diet in Puerto Rico).

The (typical pigeon) nest is placed in trees (including mangroves, pines, hardwoods, etc.) at moderate heights above the ground on horizontal branches of trees or epiphytic plants, with one (Puerto

Rico) or two eggs (March 1863, Wetmore and Swales 1931, Bond 1957, Greenway 1967, Pérez-Rivera and Collazo Algarín 1976, Pérez-Rivera 1978, 1984, Balát and González 1982, Garrido 1986). In Puerto Rico, reproduction has been intensively studied (e.g. Pérez-Rivera and Collazo Algarín 1976, Pérez-Rivera 1978, Wiley 1985b, Pérez-Rivera *et al.* 1988) and birds are known to nest chiefly in bamboo groves and hardwood canyons: the first habitat consists of mature dense stands of bamboo, which occur along the banks of shallow ravines formed by runoff water, or at the edges of a large water-body, while the hardwood associations are in little canyons, mostly formed by second-growth vegetation such as *Cecropia peltata*, *Didymopanax morototoni*, *Spathodea campanulata*, *Eugenia jambos* and *Miconia prasina*. The site selected for nesting is always characterized by the presence of bulky vegetation and proximity to water: of 40 nests studied 75% were found in bamboo vegetation, and of the remaining 25% five were in *Eugenia jambos*, three in *Cydista aequinoctalis*, one in *Bucida buceras* and another in *Spathodea campanulata*; the nests have been found at heights ranging from 6 to 21 m, the average being 14.5 m in bamboo and 9.6 m in hardwood vegetation (Pérez-Rivera 1978). Mean distances between nests in Puerto Rico were found to be 12 m, with (simultaneous and successful) nests observed as close as 6 m, although fighting between males caused the loss of an egg (i.e. nest failure) in a case where two nests were only 4 m apart (Pérez-Rivera and Collazo Algarín 1976). Breeding in Cuba has been reported in April, May and July (Todd 1916, Greenway 1967, Balát and González 1982, Garrido 1986), in Jamaica from April to July (Downer and Sutton 1990) and in Hispaniola in April (nest found: Wetmore and Swales 1931) through to July (egg in specimen collected on 22 June: AMNH label data). In Puerto Rico, the breeding season is not clearly defined, and can occur all year round, although egg-laying peaks are from December to June (Pérez-Rivera and Collazo Algarín 1976, Pérez-Rivera 1978, USFWS 1982, Pérez-Rivera *et al.* 1988). The incubation period in the wild has been reported to be from 13 to 15 days, and squabs fledge at the age of 21 to 23 days (Pérez-Rivera 1978, USFWS 1982, Pérez-Rivera *et al.* 1988). Pérez-Rivera (1978) indicated that reproductive success in Puerto Rico was 44.4% and 50% in 1975 and 1976 respectively, and Wiley (1985b) found that, from a total of 78 pairs studied in 1974 and 1975, 61% failed to fledge young. After the breeding season, notably in autumn, Plain Pigeons have a tendency to occur in flocks and thus become more detectable (Pérez-Rivera and Ruiz-Lebrón 1992).

THREATS Habitat destruction and excessive hunting can be blamed for the species's critical situation throughout its range (Wetmore and Swales 1931, King 1978-1979, Vogel *et al.* 1989, Pérez-Rivera 1990, O. H. Garrido *in litt.* 1991). The Plain Pigeon has a reputation of having no wariness and thus being an easy target for hunters (Greenway 1967); this fact was also stressed by Todd (1916) in referring portentously to the heavy persecution to which it was subjected on the Isle of Pines; in Barbour's (1923) words "such a stupid bird, so good to eat, never could survive". Despite being protected throughout its range, illegal hunting has continued to be a problem (King 1978-1979, Pérez-Rivera 1984, 1990, O. H. Garrido *in litt.* 1991). Natural factors such as hurricanes can also be very damaging to reduced populations of pigeons (e.g. Varty 1991; see below).

In addition to the above threats, in Puerto Rico the main problem in the Cidra area (the last stronghold of the species: see Population) is urban development (see Pérez-Rivera and Ruiz-Lebrón 1992), transformation for cattle-grazing, and large areas being planted with "pangola" *Digitaria decumbens* which restricts the growth of thistles and thus limits the source of food. Further threats are predation of eggs and chicks by rats, Pearly-eyed Thrashers *Margarops fuscatus*, Red-legged Thrushes *Mimocichla plumbea*, and man, who uses chicks for food (Pérez-Rivera and Collazo Algarín 1976, Pérez-Rivera 1978), and parasitism of chicks by larvae of the fly *Philornis pici*, which is known to have affected five chicks collected for captive breeding (Pérez-Rivera and Collazo Algarín 1976, Pérez-Rivera 1985). Wiley (1985b) found that rats destroyed 10% of the nests and Pearly-eyed Thrashers 2% (and he noted that the pigeon tended to be commoner where the thrasher was rarer), but the most important cause of nest failure (56%) was man and man-related activities (e.g. cattle-grazing, cutting of nesting habitat, malicious destruction of nests). Competition with the territorially more vigorous Scaly-naped Pigeon for food and nest-sites may be another problem: Plain Pigeons have been forced to nest in the introduced bamboo, which is less suitable than the hardwood as it is less protected against heavy rains; this competition seems likely to increase since hardwood areas are being altered or eliminated for human development (see below) and Scaly-naped Pigeons seem to be moving into the bamboo to nest (Pérez-Rivera 1977a,b, 1978). Small woodlots often surrounded by housing tracts or industrial complexes are being lost at an alarming rate to continuing urban and industrial growth, and local government is interested in the further development of

Cidra (Pérez-Rivera 1984, 1990, Wiley 1985b, Pérez-Rivera and Ruiz-Lebrón 1992; see table 5 in this last reference for examples of destruction of important areas for the Plain Pigeon in the municipality of Cidra from 1988 to 1991), an effect that is presumably responsible for an increase in sightings of Plain Pigeons in nearby municipalities as habitat at Cidra disappears; this dispersion can result in further conservation problems as it would require the identification and protection of additional areas (Pérez-Rivera and Ruiz-Lebrón 1992). Although agents of the commonwealth occasionally patrol Cidra, shooting is still heard around Plain Pigeon habitat (Wiley 1985b, Pérez-Rivera and Ruiz-Lebrón 1992). The passage of Hurricane Hugo in September 1989 is known to have damaged at least one important area for the Plain Pigeon in the municipality of Cidra (Pérez-Rivera and Ruiz-Lebrón 1992), and no attempt at breeding was detected after the hurricane up to April 1990 (Pérez-Rivera 1990).

MEASURES TAKEN To date the only positive intervention for the Plain Pigeon has been on Puerto Rico.

Cuba The species is protected against hunting, but this is not enforced (see Threats). It benefits to some degree from the following protected areas: Ciénaga de Zapata National Park, Cayo Romano and Cayos de San Felipe National Reserves, Santo Tomás Faunal Refuge, Guanahacabibes Biosphere Reserve; according to O. H. Garrido (*in litt.* 1991), La Belén, Camagüey, is currently a protected area.

Jamaica The species is protected against hunting at all times, but regulations have sometimes been inadequately enforced (King 1978-1979, Vogel *et al.* 1989). The Blue and John Crow Mountains are currently being established as a national park (Varty 1991, N. Varty verbally 1992).

Haiti The species has been reported from La Visite National Park, but its current status there is unknown.

Dominican Republic The species is protected (Stockton de Dod 1981) but illegally hunted (Pérez-Rivera 1990). From the information given under Distribution it occurs or has occurred in the following national parks: Jaragua, Baoruco, Isla Cabritos, the contiguous Armando Bermúdez and José del Carmen Ramírez, Los Haitises and del Este (see Distribution; also the map in Hoppe 1989), and the importance of the proposed extension of the Los Haitises National Park is stressed in Measures Taken under Hispaniolan Hawk *Buteo ridgwayi*.

Puerto Rico The Plain Pigeon is protected by commonwealth law; a recovery team for the species was formed in 1976 and a recovery plan was approved in 1982 (USFWS 1982), but the U.S. Fish and Wildlife Service disbanded the team (Wiley 1985b). In 1989 a new recovery team was named for the Plain Pigeon but it was again disbanded (R. A. Pérez-Rivera *in litt.* 1992). The municipality of Cidra was closed to hunting in 1967 expressly to preserve the Plain Pigeon, and additional areas known to be used by the species were closed to hunting in 1978 (USFWS 1982, Wiley 1985b): the Department of Natural Resources provided surveillance in the Cidra area, but this did not prevent illegal hunting as was shown by the 1982-1983 censuses (USFWS 1982, Pérez-Rivera 1984). Educational campaigns have been conducted in the Cayey area (Pérez-Rivera 1977a). In 1983 the University of Puerto Rico (Humacao Campus) began a research programme on captive propagation for Plain Pigeons; in April 1988 Plain Pigeons bred successfully for the first time in captivity, and as of 1992 there were 116 in captivity (Díaz-Soltero 1988, Pérez-Rivera *et al.* 1988, R. A. Pérez-Rivera *in litt.* 1992). Furthermore, a new aviary has been constructed (under a cooperative agreement between USFWS, the Department of Natural Resources of Puerto Rico and the University of Puerto Rico) to produce at least 60 birds per year in order to enter the release phase of the project (planned to start in August 1992) (R. A. Pérez-Rivera *in litt.* 1992). Although a reintroduction site was selected in the Río Abajo Commonwealth Forest between Utuado and Arecibo (R. A. Pérez-Rivera *in litt.* 1987, Díaz-Soltero 1988) this area has been discarded and instead 10 birds equipped with radio transmitters will be released at Cidra; late in 1993 reintroduction is planned in the Guajataca State Forest (R. A. Pérez-Rivera *in litt.* 1992). In addition a group of professors of the University of Puerto Rico has incorporated a foundation for the conservation of the species (Fundación para la Conservación de la Paloma Sabanera), which is starting an educational campaign in Cidra (in August 1992) and aims to provide funds and logistical support for the captive breeding programme and to

acquire critical habitat (\$50,000 are already available to buy land to protect the species) (R. A. Pérez-Rivera *in litt.* 1992).

MEASURES PROPOSED Protection of habitat and effective control of widespread illegal hunting throughout the Plain Pigeon's range are the major problems that need to be tackled.

Cuba A survey to clarify and locate the existence of the last populations of the species is long overdue (searches in southern Pinar del Río and in the Esteros de Birama could result in additional populations being discovered: Garrido 1986, O. H. Garrido *in litt.* 1991); the total population size should be ascertained, and further searches in areas where the species was once present (e.g. Guantánamo province) are needed. Current threats to the species must be studied, as must the degree of protection afforded by the existing protected areas; this could be implemented together with work on the Blue-headed Quail-dove *Starnoenas cyanocephala* (at least in areas where both species are present; see relevant account). A captive breeding programme for several columbids (including the Plain Pigeon) is being prepared, this including a cooperative agreement between the Instituto de Sistemática y Ecología (Academia de Ciencias de Cuba) and the University of Puerto Rico (R. A. Pérez-Rivera *in litt.* 1992).

Jamaica Surveys are urgently needed to locate the last important breeding areas for the species and to estimate the total population. An educational campaign for the protection of the species from illegal hunting could be extended to include the Ring-tailed Pigeon *Columba caribaea*, with which there is much overlap in range and habitat requirements (see relevant account).

Haiti Although the species is apparently still locally common (see Population), it is important to conduct fieldwork in order to confirm this and to identify important areas, the population sizes within them, and possible threats; this could well be linked to similar efforts conducted in the Dominican Republic.

Dominican Republic More studies on the species's distribution are needed, and its current status needs clarification, since the most recent reports have suggested a steep decline (see Population). It would be of great value to estimate population sizes within the existing protected areas and to assess whether these are adequately protected.

Puerto Rico The Plain Pigeon would greatly benefit from the implementation of a package of measures: (a) designation of (in legal terms) "Critical habitat" for the species in the municipalities of Cidra and Cayey is long overdue and should urgently be implemented in order to ensure the protection of the habitat while the captive breeding and re-establishment programmes are developed; (b) any development project in the municipalities of Cidra and Cayey should be well vetted in order to avoid damage to the species's critical habitat; (c) illegal shooting of the species should be prevented, for which much more surveillance is needed; (d) more educational campaigns in favour of the species are needed (Wiley 1985b, Pérez-Rivera and Ruiz-Lebrón 1992, P. A. Pérez-Rivera *in litt.* 1992).

REMARKS (1) Although the Plain Pigeon has long been considered a polytypic species (e.g. Peters 1937, Hellmayr and Conover 1942), it is currently not clear whether it should be treated as monotypic (Banks 1986) or polytypic (Pérez-Rivera 1990). (2) There is some confusion of old province names in this record, which appears to fall within that currently called Villa Clara. (3) The species was known to be nesting at McKinley around 1911 (see Todd 1916). (4) There are two adjacent localities bearing the same name at 19°20'N 72°16'W and 19°21'N 72°18'W (DMATC 1973). (5) There are two localities sharing this name, the one chosen here being based on the specimen label data, which specifies 40 miles west of Port-au-Prince. (6) In this same area Christy's (1897) report of the species clearly reflects that it was extremely abundant at the head of Samaná Bay in June, July and August 1895, but Wetmore and Swales (1931) believed that he had confused the Plain Pigeon with the White-headed Pigeon *C. leucocephala*, a species not listed in his account but which they found abundant in that area. (7) Although there are several localities in the Dominican Republic with this name, the specimen (in FMNH) is labelled "Seibo, Magua", so coordinates are those given for the Maguá within the Seibo administration. (8) Observations of large flocks in Hispaniola (e.g. 40-50 individuals and up to 200 birds: see Distribution) have to be treated with

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caution, as after the breeding season (i.e. from August to December) Plain Pigeons tend to form large flocks that contain significant proportions of the total population, moving back and forth (see Ecology) over such an area as to create a false impression of their true numerical strength: thus around Cidra, Puerto Rico, hunters are known to have overestimated the population size after sightings of large post-breeding flocks (R. A. Pérez-Rivera *in litt.* 1992). (9) Although the population in Haiti lacks firearms, it is most likely that squabs are taken from nests and adults trapped, since pigeons are an important source of protein; in the Dominican Republic, people have been observed selling doves and pigeons at the roadsides (R. A. Pérez-Rivera *in litt.* 1992).