

= Lesser Antillean macaw =

The Lesser Antillean macaw or Guadeloupe macaw (*Ara guadeloupensis*) is a hypothetical extinct species of macaw that is thought to have been endemic to the Lesser Antillean island region of Guadeloupe . In spite of the absence of conserved specimens , many details about the Lesser Antillean macaw are known from several contemporary accounts , and the bird is the subject of some illustrations . Austin Hobart Clark described the species on the basis of these accounts in 1905 . Due to the lack of physical remains , and the possibility that sightings were of macaws from the South American mainland , doubts have been raised about the existence of this species . A phalanx bone from the island of Marie @-@ Galante confirmed the existence of a similar @-@ sized macaw inhabiting the region prior to the arrival of humans , and was correlated with the Lesser Antillean macaw in 2015 . Later that year , historical sources distinguishing between the red macaws of Guadeloupe and the scarlet macaw (*A. macao*) of the mainland were identified , further supporting its validity .

According to contemporary descriptions , the body of the Lesser Antillean macaw was red and the wings were red , blue and yellow . The tail feathers were between 38 and 51 cm (15 and 20 in) long . Apart from the smaller size and the all @-@ red coloration of the tail feathers , it resembled the scarlet macaw and may therefore have been a close relative of that species . The bird ate fruit ? including the poisonous manchineel , was monogamous , nested in trees and laid two eggs once or twice a year . Early writers described it as being abundant in Guadeloupe , but it was becoming rare by 1760 , and only survived in uninhabited areas . Disease and hunting by humans are thought to have eradicated it shortly afterwards . The Lesser Antillean macaw is one of 13 extinct macaw species that have been proposed to have lived in the Caribbean islands . Many of these species are now considered dubious because only three are known from physical remains , and there are no extant endemic macaws on the islands today .

= = Taxonomy = =

The Lesser Antillean macaw is well @-@ documented compared to most other extinct Caribbean macaws , since it was mentioned and described by several contemporary writers . Parrots thought to be the Lesser Antillean macaw were first mentioned by the Spanish historian Gonzalo Fernández de Oviedo y Valdés in 1553 , referring to a 1496 account by the Spanish bibliographer Ferdinand Columbus , who mentioned chicken @-@ sized parrots ? which the Island Caribs called " Guacamayas " ? in Guadeloupe . In 1774 , the French naturalist Comte de Buffon stated that the Italian explorer Christopher Columbus had found macaws in Guadeloupe . The French botanist Jean @-@ Baptiste Du Tertre gave the first detailed descriptions in 1654 and 1676 , and illustrated the bird and other animals found in Guadeloupe . The French clergyman Jean @-@ Baptiste Labat also described the bird in 1742 . Writers such as George Edwards and John Latham also mentioned the presence of red and blue macaws on the islands off America .

The American zoologist Austin Hobart Clark gave the Lesser Antillean macaw its scientific name , *Ara guadeloupensis* , in 1905 , based on the contemporary accounts , and he also cited a 1765 color plate as possibly depicting this species . He wrote that it was different in several ways from the superficially similar scarlet macaw (*A. macao*) , as well as the green @-@ winged macaw (*A. chloropterus*) and the Cuban macaw (*A. tricolor*) . Clark suggested the species might have existed on the islands of Dominica and Martinique , based on accounts of red macaws there , as well as on Guadeloupe . In his 1907 book *Extinct Birds* , the British zoologist Walter Rothschild instead claimed each island had its own species , and that the Lesser Antillean macaw was confined to Guadeloupe . In 1967 , the American ornithologist James Greenway wrote that the macaws reported from Guadeloupe could have been imported to the region from elsewhere by the native population , but this is difficult to prove . Greenway also suggested that the scarlet macaw and the Cuban macaw formed a superspecies with the Lesser Antillean macaw and other hypothetical extinct species suggested for Jamaica and Hispaniola . According to the English paleontologist Julian Hume , the similarity between the Lesser Antillean macaw and the scarlet macaw indicates that they were close

relatives , and that the Guadeloupe species may have descended from the mainland macaw .

A small parrot ulna found on the Folle Anse archaeological site on Marie @-@ Galante , an island in the Guadeloupe region , was assigned to the Lesser Antillean macaw by the ornithologists Matthew Williams and David Steadman in 2001 . In 2008 , the ornithologists Storrs Olson and Edgar Maíz López cast doubt upon this identification , and proposed that the bone instead belonged to the extant imperial amazon (*Amazona imperialis*) . The size and robustness of the bone was similar to ulnae of the imperial amazon , and though it was worn , the authors identified what appeared to be a notch , which is also present on ulnae of the genus *Amazona* , but not in the genus *Ara* . Subfossil remains from the island of Montserrat have also been suggested to belong to the Lesser Antillean macaw . The species was recognized by Birdlife International and the IUCN Red List until 2013 , but was not considered valid thereafter .

In 2015 , a terminal phalanx bone (ungual claw bone) attributable to the genus *Ara* from south @-@ western Marie @-@ Galante was described by ecologists Monica Gala and Arnaud Lenoble . It was discovered in the Blanchard Cave during excavations in 2013 @-@ 2014 , in a fossil @-@ bearing deposit dating to the late Pleistocene epoch . The deposit was radiocarbon dated to about 10 @,@ 690 years ago ; the earliest evidence of human settlement in the area has been dated to 5 @,@ 300 years ago . This confirmed that the Guadeloupe region once had an endemic macaw which could not have been brought there by humans . All other macaw bones from the Lesser Antillean islands have been recovered from archaeological sites , and could therefore have been the remains of birds brought there by Amerindians . The size of the phalanx bone matched what was described for the Lesser Antillean macaw by contemporary writers , and the authors therefore correlated the two . They conceded that this connection could only be tentative , as there were no remains of the Lesser Antillean macaw to compare with .

Later in 2015 , Lenoble reviewed overlooked historical Spanish and French sources , finding references to mainly red macaws consistent with the Lesser Antillean macaw . The writings of the French missionary Raymond Breton (on Guadeloupe from 1635 to 1654) were especially illuminating , as they showed that both he and the native Island Caribs clearly distinguished between the red macaws of Guadeloupe and the scarlet macaws from the mainland , which supports the idea that the Lesser Antillean macaw represents an independent species . As the Lesser Antillean Carib language had different words reserved for men and women , Breton gave the name of the bird as Kínoulou (?) and Caarou (?) . Lenoble furthermore concluded that the supposed violet macaw (named *Anodorhynchus purpurascens* based on accounts of blue parrots from Guadeloupe) was based on misidentified references to the also @-@ extinct Guadeloupe amazon (*Amazona violacea*) , and therefore never existed .

As many as 13 now @-@ extinct species of macaw have variously been suggested to have lived on the Caribbean islands , but many of these were based on old descriptions or drawings and only represent hypothetical species . In addition to the Lesser Antillean macaw , only two endemic Caribbean macaw species are known from physical remains ; the Cuban macaw is known from 19 museum skins and subfossils , and the Saint Croix macaw (*A. autochthones*) is known only from subfossils . Macaws are known to have been transported between the Caribbean islands and from mainland South America to the Caribbean both in historic times by Europeans and native peoples , and in prehistoric times by Paleoamericans . Parrots were important in the culture of native Caribbeans , and were among the gifts offered to Christopher Columbus when he reached the Bahamas in 1492 . Historical records of macaws on these islands , therefore , may not have represented distinct , endemic species ; it is also possible that these macaws were escaped or feral birds that had been transported to the islands from elsewhere . All the endemic Caribbean macaws were likely driven to extinction by humans in historic and prehistoric times . The identity and distribution of indigenous macaws in the Caribbean is only likely to be further resolved through paleontological discoveries and examination of contemporary reports and artwork .

= = Description = =

The Lesser Antillean macaw was described as having similar coloration to the scarlet macaw , but

with shorter tail feathers between 38 and 51 cm (15 and 20 in) long . In contrast , the tail feathers of the scarlet macaw are 61 cm (2 ft) long and have blue tips , and the outer feathers are almost entirely blue . In spite of the tail feathers being shorter , it is not certain whether the Lesser Antillean macaw was smaller than the scarlet macaw overall , as the relative proportions of body parts vary between macaw species . The tail feathers were longer than those of the Cuban macaw , which were 30 cm (12 in) long . The morphology of the fossil phalanx bone from Marie @-@ Galante was most similar to the second or third ungual of the scarlet macaw , though the bone is slightly smaller at 15 @.@ 3 mm (0 @.@ 60 in) compared to 15 ? 17 mm (0 @.@ 59 ? 0 @.@ 67 in) .

Du Tertre described the Lesser Antillean macaw as follows in 1654 :

The Macaw is the largest of all the parrot tribe ; for although the parrots of Guadeloupe are larger than all other parrots , both of the islands and of the main land , the Macaws are a third larger than they ... The head , neck , underparts , and back are flame color . The wings are a mixture of yellow , azure , and scarlet . The tail is wholly red , and a foot and a half long .

Though Clark converted Du Tertre 's tail measurement to 18 in (45 @.@ 7 cm) , Lenoble pointed out that a 17th @-@ century French foot unit was slightly larger than the English equivalent , and the measurement should rather be converted to 19 @.@ 3 in (49 cm) , indicating a smaller size difference between the Lesser Antillean macaw and the scarlet macaw .

In 1742 , Labat described the macaw in much the same way as Du Tertre , while adding several details :

It is the size of a full grown fowl . The feathers of the head , neck , back and underparts are flame color ; the wings are of a mixture of blue , yellow and red ; the tail , which is from fifteen to twenty inches in length is wholly red . The head and the beak are very large , and it walks gravely ; it talks very well , if it is taught when young ; its voice is strong and distinct ; it is amiable and kind , and allows itself to be caressed ...

Both authors wrote that the macaws were the largest parrots of Guadeloupe , and stressed that the parrots of each Caribbean island were distinct , and could be differentiated both based on their morphology and their vocalizations . According to Hume , this means that the birds described could not simply have been escaped South American macaws . Furthermore , the docile and amiable nature described by Du Tertre and Labat does not match the behavior of South American macaws .

Breton 's mid @-@ 1600s accounts of the macaw confirmed it as distinct from mainland scarlet macaws :

Macaws are larger than parrots , with a very beautiful red plumage mixed with purple in the tail and wings ... Macaws found on islands are called Kínoulou , f . Caarou . Coyáli is found on the continent , and is redder and more elegant than the island variety .

Apart from Du Tertre 's crude 1667 drawing and Labat 's 1722 derivative , a few contemporary paintings depict red macaws that may be the Lesser Antillean macaw . A color plate accompanying a 1765 volume of Buffon 's encyclopaedia *Histoire Naturelle* (no . 12 in *Planches Enluminées* , entitled *L 'Ara Rouge*) shows a red macaw with entirely red tail feathers and more red on the tertial and scapular feathers of the wing than are present on the scarlet macaw . Copies of the plate differ in the nuances used , but are identical in pattern . The painting suggests that a specimen may have been present in Europe at the time . The Swedish zoologist Carl Linnaeus cited the plate in his 1766 description of the scarlet macaw , but his description does not match the bird shown . A 1626 painting by the Dutch artist Roelant Savery , which also includes a dodo , shows a red macaw that agrees with the descriptions of the Lesser Antillean macaw . A second macaw in the painting may be the hypothetical extinct Martinique macaw (*A. martinicus*) , but though many parrots were imported into Europe at the time from all over the world , it is impossible to determine the accuracy of such paintings today .

= = Behavior and ecology = =

Du Tertre gave a detailed account of the behavior of the Lesser Antillean macaw in 1654 :

This bird lives on berries , and on the fruit of certain trees , but principally on the apples of the manchioneel (!) , which is a powerful and caustic poison to other animals . It is the prettiest sight in

the world to see ten or a dozen Macaws in a green tree . Their voice is loud and piercing , and they always cry when flying . If one imitates their cry , they stop short . They have a grave and dignified demeanor , and so far from being alarmed by many shots fired under a tree where they are perched , they gaze at their companions who fall dead to the ground without being disturbed at all , so that one may fire five or six times into the same tree without their appearing to be frightened .

In a 1667 work , Du Tertre gave a similar account , and added that the macaw only ate the poisonous manchineel (*Hippomane mancinella*) fruits in times of necessity . He also described the monogamous reproductive behavior of the bird :

The male and the female are inseparable companions and it is rare that one is seen singly . When they wish to breed (which they do once or twice a year) they make a hole with their beaks in the stump of a large tree , and construct a nest with feathers from their own bodies . They lay two eggs , the size of those of a partridge (*Perdix cinerea*) . The others of the parrot kind make their nests in the same way , but lay green eggs ... The Macaws are much larger than the large parrots of Guadeloupe or Grenada , and live longer than a man ; but they are almost all subject to a falling sickness .

The twice @-@ yearly breeding mentioned by Du Tertre may have actually been staggered breeding , which is practiced by some tropical birds .

Though Clark suggested that the Lesser Antillean macaw also occurred on Dominica and Martinique , there is no evidence for this . Instead , it probably existed on other islands close to Guadeloupe . The fossil phalanx bone from Marie @-@ Galante was deposited in a time when that island and the rest of the Guadeloupe archipelago were closer together than they are today due to lower sea @-@ levels . The areas were separated by three channels , the largest of which was 6 kilometres (3 @. @ 7 miles) wide . This would not have been a hindrance to flying animals , and the macaws of the Guadeloupe islands would probably have been a single population during the Pleistocene .

= = Extinction = =

In 1534 , German historian Johann Huttich wrote that the forests of Guadeloupe were full of red macaws , which were apparently as abundant as grasshoppers , and the native people of the region cooked its flesh together with that of humans and of other birds . In 1654 , Du Tertre stated that the flesh was tough to eat , and that some considered it unpalatable and even poisonous . He wrote that he and the other inhabitants often consumed it , and that he experienced no ill @-@ effects from it . He also stated that the native people wore the feathers decoratively on their heads and as moustaches through the septum of the nose . He described how it was hunted by the native population :

The natives make use of a stratagem to take them alive ; they watch for a chance to find them on the ground , eating the fruit which has fallen from the trees , when they approach quietly under cover of the trees , then all at once run forward , clapping their hands and filling the air with cries capable not only of astounding the birds , but of terrifying the boldest . Then the poor birds , surprised and distracted , as if struck with thunderbolt , lose the use of their wings , and , making a virtue of necessity , throw themselves on their backs and assume the defensive with the weapons nature has given them ? their beaks and claws ? with which they defend themselves so bravely that not one of the natives dares to put his hand on them . One of the natives brings a big stick which he lays across the belly of the bird , who seizes it with beak and claws ; but while he is occupied in biting it , the native ties him so adroitly to the stick that he can do with him anything he wishes ...

Since Du Tertre wrote that the macaws were prone to sickness , an outbreak of a disease , along with hunting , may have contributed to its demise . In 1760 , the French zoologist Mathurin Jacques Brisson quoted a letter by French writer M. de la Borde , which stated that macaws had become very rare in the Antillean islands because they were hunted for food . By then they could only be found in areas not frequented by humans , and were probably extinct soon afterwards . Parrots are often among the first species to be exterminated from a given locality , especially islands .