

The Puerto Rican Parrot Project: An ongoing success story



The Puerto Rican Parrot (*Amazona vittata*) is one of the rarest birds in the world. This parrot is the last surviving species of parrot native to the United States as Puerto Rico is considered a US Territory. The parrot population was once estimated at around a million individuals. In 1837, a major hurricane affected the island but apparently its effects on this species were minimal. By 1864, this bird was abundant in the eastern lowlands of Puerto Rico. In 1867, Hurricane San Narciso caused severe damages to the island. In 1872, the small Indian mongoose (*Herpestes auro-punctatus*), one of the natural enemies of the PRP, was introduced from Calcutta, India. During 1876, Spain proclaimed El Yunque as a forest reserve, making it the oldest reserve

in the Western Hemisphere. El Yunque National Forest (YNF), formerly known as the Caribbean National Forest, is the last refuge for the species in the wild but not necessarily the optimal habitat.

As of February of 1899, the Culebra (an island off the coast of Puerto Rico) subspecies (*A. v. gracilipes*) was still common as was the main species on the main island. Several major hurricanes hit this area in 1899, 1928 and 1932. The combined destruction of these atmospheric disturbances drastically reduced the number of PRP and, in some areas, eliminated them completely. By 1912, the Culebra subspecies disappeared due to hunting pressures as they were considered a pest to crop farmers on this small island. That same year, Alexander Wetmore found small groups of parrots remaining in the mountains of eastern Puerto Rico, the low land areas near the northeastern coast, and the Luquillo mountains. The mountains have been their last stand in the wild until the releases at the Rio Abajo State Forest (RAW) in 2006, a reserve to the commonwealth of Puerto Rico.

Even though hurricanes have played a major role in the near extinction of this species, the main reason is the loss of habitat and scarcity of nesting cavities related to human activities. Other factors, but not limited to, have been the natural enemies for the species such as the Red Tail Hawk (*Buteo jamaicensis*) which is their main predator, the Pearly-eyed Thrasher (*Margarops fuscatus*) a nesting cavity competitor, the Puerto Rican Boa (*Epicrates inornatus*), an endangered species as well, introduced Africanized bees (*Apis mellifera*), the introduced small Indian mongoose (*Herpestes auro-punctatus*) mentioned above, feral cats, feral dogs, the Broad-Wing Hawk (*Buteo platypterus brunescens*), introduced rats (*Rattus rattus* and *Rattus norvegicus*), parasitic flies (*Philornis pici*) and diseases that can affect psittacines in the wild. The destruction of old-growth trees for precious woods for multiple uses eliminates the number of suitable tree hollows for nesting sites. It is known that the indigenous inhabitants used the PRP as a source of food. Feathers and written accounts of how it was hunted are recorded in some of the oldest Spanish texts such as from Fray Iñigo Abad y La Sierra and many other studied by the famous Puerto Rican archeologist, Dr. Ricardo Alegría.



During the 1930's the population was estimated to be about 2000 individuals. During 1953-1956, the Puerto Rican agronomist, Don Antonio Rodriguez-Vidal, conducted the first study of the PRP and the estimated population was approximately 225 PRP. By 1964, the population of PRP went as low as 70 and by 1967 only 24 PRP were surveyed in the wild. As of March in that same year, the species was listed as endangered within its range in the Federal Register. The lowest number ever reached by the species was 1975 where only 13 PRP were surveyed in their last habitat within the islands of Puerto Rico, YNF.

Population numbers

Read the following information and keep track of the changes in population data. You will use **ONLY** the data below in order to organize and graph the data on the following page.

Wild Population: The population was once estimated to consist of approximately 2,000 birds in the 1930s but suffered a serious decline since. By 1956, the Puerto Rican agronomist, Don Antonio Rodriguez-Vidal, conducted the first study of the PRP and the estimated population was at approximately 225. By 1964, the population of PRP dropped as low as 70 and by 1967 only 24 PRP were surveyed in the wild. As of March in that same year, the species was listed as endangered within its range in the Federal Register. The lowest number ever reached by the species was 1975 where only 13 PRP were surveyed in their last habitat within the islands of Puerto Rico, YNF.

Conservation breeding programs, like the Puerto Rican Parrot Project that began in 1990, have prevented the species' extinction. Two breeding facilities have seen much success in recent years: one in El Yunque National Forest and another in Rio Abajo Commonwealth Forest. Hurricane Hugo reduced the wild population from 47 to about 23 in 1989. By 1992, there were a minimum of 22 parrots in the wild and 58 in captivity, with much breeding success in July, 1992. In 2000, this species still numbered 40 wild birds, plus 10 newly released birds. In 2004, the wild population was approximately 35 individuals, and in 2006, 20 birds were released in the Rio Abajo State Forest, increasing it to 55. In 2007, another 26 birds were released and 19 more were released in 2008. In 2011, the wild population numbered nearly 70 wild individuals spread over two areas. In 2013, there were up to 84 wild birds plus 16 fledged chicks at Rio Abajo and about 20 wild birds at El Yunque.

Managed Population: Population numbers are comprised of those birds who fledge from the nest. In 2003, 7 birds were raised and fledged in the Luquillo Aviary. In 2004, 16 hatched but 10 chicks survived to fledge. The same number fledged in 2005 but 15 more fledged in 2006. It continued to increase in 2007 with 19 new fledglings but only 10 more were produced the following year. In 2007, all birds were moved from the Luquillo Aviary to the new Iguaca Aviary. In 2009, 18 chicks fledged successfully and 28 chicks fledged the following year. 30 chicks survived to fledge in 2011 and 39 left the nest in 2012. Increasing survivorship of chicks is important when mounting a recovery effort such as this.



About the Scientists

In 1991, Jafet Velez-Valentin began his career with the U.S. Fish and Wildlife Service as a Field Technician with recovery efforts for the Endangered Puerto Rican parrot. Most of the time, he was monitoring nesting cavities in the wild, participating in census from platforms over the forest canopy, and assisting in the Luquillo Aviary daily works. By 1996, he was spending most of his time working directly with the parrots in captivity and by 1998 became the senior technician for the Luquillo Aviary. By 2000, he became the Aviary Team Leader. Ricardo Valentin is currently the head aviculturist and manager of the Puerto Rican Parrot Restoration Program. He oversees the operations of the aviary in the Rio Abajo Forest in Puerto Rico.



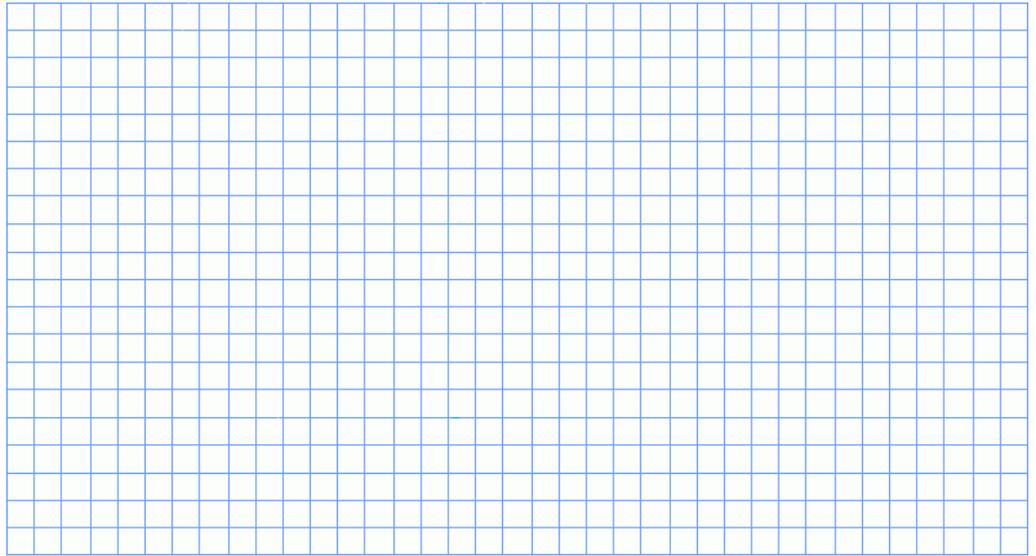
These materials adapted from direct communication with J. Vélez-Valentín as well as Earnhardt, J., Vélez-Valentín, J., Valentin, R., Long, S., Lynch, C., & Schowe, K. (2014). The Puerto Rican parrot reintroduction program: sustainable management of the aviary population. Zoo biology, 33(2), 89-98.

Activity 1: The Wild Population

Name: _____

While reading the passage regarding birds in the wild, organize your data in the table provided by year. Then complete a line graph to represent your data at the right. **Be sure increments on each axis are equally spaced to ensure a correct growth curve.**

Year	Number of individuals
1975	13
1989	
1992	
2000	
2004	
2006	
2007	
2008	
2011	
2013	

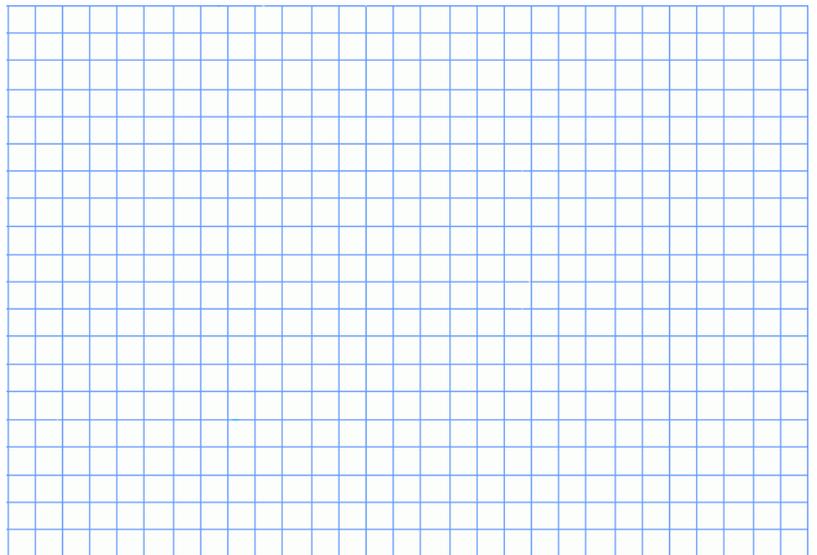


Describe the population trend here: _____

Activity 2: The Managed Population

While reading the passage regarding birds raised in the Puerto Rican aviaries, organize your data in the table provided by year. Then complete a line graph to represent the **number of chicks fledged**. Be sure increments on each axis are equally spaced to ensure a correct growth curve. You can then calculate the percentage of survivorship from hatching to fledging.

Year	Number of eggs hatched	Number of chicks fledged	% survivorship
2003	13	7	
2004	16		
2005	14		
2006	15		
2007	22		
2008	10		
2009	31		
2010	38		
2011	46		
2012	57		

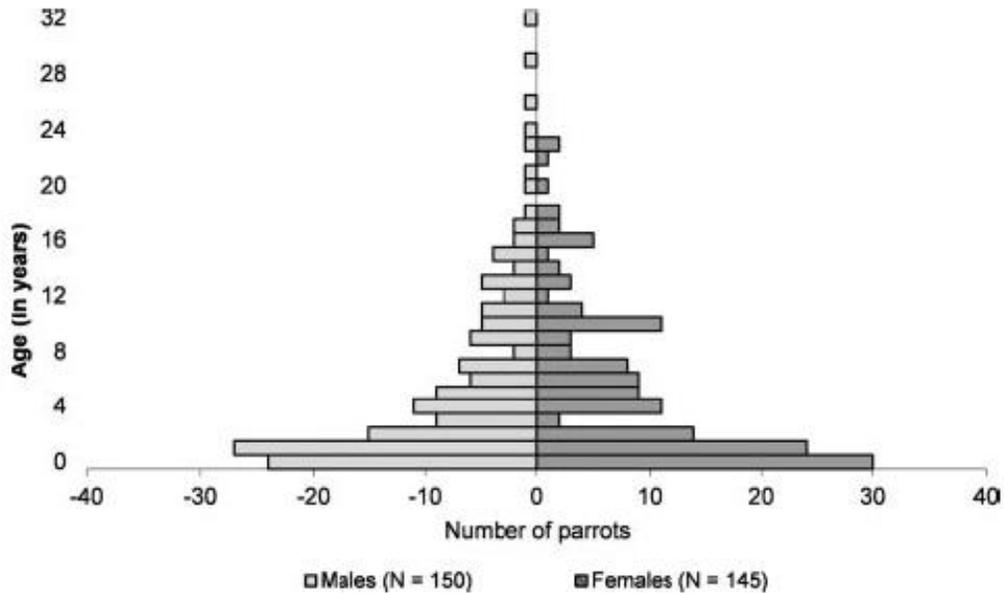


Describe the chick survivorship trend here: _____

What seems to have helped the increase chick survivorship? _____

Provide evidence for your answer from your data here: _____

Using the pyramid provided, do the analysis required to answer the questions below.



Analysis Questions:

Q1: How can you tell from the data if there are more male chicks or female chicks? _____

Q2: In which age bracket are the most birds today? _____

Q3: Using the data provided, explain your answer for Q2. _____

Q4: The shape of the pyramid can help you predict the trend in growth. What does this pyramid tell you about their growth rate?

Q5: Based on the information you have been provided, what factors do you think could have changed the shape of the pyramid?

Q6: How would the factors you listed in Q5 affect this population? Predict how this population will grow based on this trend.
