



Laney Rickman Reserve

Blue-throated Macaw Nest Box Report - August 2023



The 2022-2023 breeding season marked a significant milestone for the Blue-throated Macaw nest box program initiated in 2005. With 128 nest boxes thoughtfully positioned within the reserve and its surroundings, this season proved to be the most successful to date, yielding an impressive 15 fledged chicks amidst 18 breeding attempts. A total of 128 chicks have successfully fledged from Armonía's Nest Box Program, underscoring its substantial contribution to the conservation of this Critically Endangered species. The season's accomplishments reflect the program's dedication to protecting habitat and providing more nesting options, showcasing the value of artificial nest boxes in supporting the Blue-throated Macaw population's survival.

Laney Rickman Reserve 2022-2023 conservation program was supported by:







Pat Palmer Foundation











Laney Rickman Blue-throated Macaw Reserve

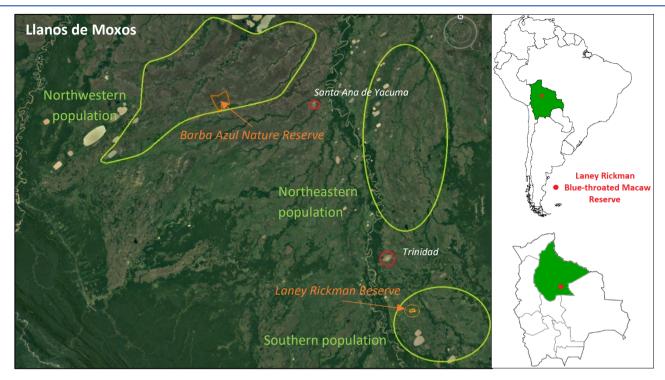


Figure 1 & 2. The Laney Rickman Blue-throated Macaw Reserve (2421 ha/5,982 ac) was established in 2018 and is located in the Southern Llanos de Moxos ecoregion, 42 kilometers south of Trinidad and 213 kilometers south of the Barba Azul Nature Reserve (11,000 ha, established in 2008). Armonía protects vital Blue-throated Macaw habitat in two isolated subpopulations (estimated Blue-throated Macaw subpopulation range indicated in light green circles).





Laney Rickman Reserve Program Summary

To ensure the continuing development and improvement of the Blue-throated Macaw Nest Box Program for the upcoming 2023-2024 season we will focus our efforts on the following activities:

- **1. Safeguard Breeding Habitat:** Our focus is on preserving crucial breeding habitat to provide a secure environment, fostering a robust population.
- **2. Habitat Restoration:** Revitalizing degraded areas with native trees enhances food and nesting options, boosting overall ecosystem health and macaw breeding success.
- **3. RPPN Declaration**: Designating the Laney Rickman Reserve as a Private Natural Heritage Reserve strengthens conservation efforts.
- **4. Enhance Firebreaks:** Maintaining and expanding firebreaks safeguards against potential hazards, preserving vital breeding habitat.
- **5. Education and Research Hub:** Establishing a Visitor/Research Centre promotes education, research, and public engagement in Blue-throated Macaw conservation.
- **6. Wildlife-Friendly Perimeter:** Creating wildlife-friendly fencing enhances reserve boundaries and protection.
- **7. Sustainable Management:** Eco-friendly ranching ensures coexistence of macaw habitats and responsible land use.
- **8. Behavioral Insights:** Studying local movement patterns provides critical data for targeted conservation efforts.





Laney Rickman Reserve Nest Box Program (2022-2023 breeding season)

Results 2022-2023 Breeding Season

The Blue-throated Macaw artificial nest box program for the 2022-2023 breeding season has yielded some really encouraging results. Out of a total of 128 nest boxes installed, 14 were utilized by Blue-throated Macaws, showcasing their increasing acceptance of our nest boxes in the area. Notably, 8 of the utilized nest boxes were used for the first time, indicating a positive response to the availability of nest boxes.

Throughout the breeding season, there were 18 breeding attempts, resulting in the laying of 47 eggs. Of these, 20 eggs successfully hatched, and an impressive 15 chicks successfully fledged, surpassing the previous record of 12 chicks fledging in 2019, 2020, and 2021. This achievement highlights the effectiveness of the artificial nest boxes in providing a suitable breeding environment for the Blue-throated Macaws.

Furthermore, the implementation of 24/7 camera trap monitoring has again offered valuable insights into macaw behavior, including conflicts with other species and interactions with predators. This enhanced monitoring has revealed that some predators might have been learning to recognize and circumvent the methods employed to prevent them from accessing the nest boxes. These findings underscore the importance of ongoing research and adaptive strategies to ensure the continued success of the Blue-throated Macaw conservation efforts.



The last chick of the season fledged on July 5 from nest box BG1 (Bird Gardens of Naples, Keriellen Lohrman) making it the chick #128 that has fledged from our nest boxes. Teodoro Camacho



Overall, the 2022-2023 breeding season has been marked by significant achievements, including increased utilization of nest boxes, improved breeding outcomes, and valuable insights gained through enhanced monitoring techniques. These results provide optimism for the future conservation of the Blue-throated Macaw population and reinforce the importance of continuing efforts to protect this critically endangered species.

Table 1. Summary of nest box usage by different species in the reproductive period of 2022-2023. A total of 20 nest boxes were used (15 in Laney Rickman Reserve and 5 in neighboring La Cantina ranch). Four nest boxes were used for a second breeding attempt by Blue-throated Macaws.

Nest box usage 2022-2023					
Species	Scientific name	# Occupied nest boxes			
Blue-throated Macaw	Ara glaucogularis	14*			
Black-bellied Whistling Duck	Dendrocygna autumnalis	5**			
Unicolored blackbird	Agelaius cyanopus	1			
Blue and yellow macaw	Ara ararauna	1			

^{*4} nest boxes with two breeding attempts

Table 2. Summary of nest boxes used by the Blue-throated Macaw during the 2022-2023 breeding season. A total of 14 nest boxes were occupied, 47 eggs laid, 20 chicks hatched, and 15 chicks fledged. LR stands for Laney Rickman Reserve; LC stands for La Cantina. For more detailed information see annex 1 & 2.

Sponsor (code)	Location	# Eggs	# Chicks	# Fledglings
Laurel Rohrer (LR)	LR	6	2	2
Bird Gardens of Naples, Keriellen Lohrman (BG1)	LR	8	3	1
Kimberley DePaul in memory of Gene DePaul (KD2)	LC	2	2	2
Bird Gardens of Naples, Keriellen Lohrman (KL1)	LR	3	3	3
Karen Justice in memory of Max Justice (MJ)	LR	3	2	2
In memory of Jim Cullen by "His Parrot Forums Family" (JC1)	LC	2	1	1
Dorothy Paterson in honor of "ABUN" Artists and Biologists Unite for Nature (ABUN)	LR	3	2	2
Laurie McFarlane (LM)	LR	6	2	2
Kim Dickerson in honor of Dabi (KD3)	LC	2	0	0
Keeland Torres (KT)	LC	2	0	0
Ray Varella (RV)	LC	4	1	0
Diane Hyde (DH2)	LR	1	1	0
Pet Paradise Virginia Beach, Erin Severts (PP)	LR	2	0	0
Laura Barwick (BV) 152	LR	3	1	0
Total		47	20	15

^{**} Ducks displaced a Blue-throated Macaw occupied nest box





Long-term results Armonía's nest box program

The long-term results of the Blue-throated Macaw nest box program, implemented by Asociación Armonía over the past 18 years, demonstrate significant achievements in the conservation of this Critically Endangered species. Over this period, a total of 128 chicks have successfully fledged from 104 breeding attempts. Notably, in the most recent breeding season, there has been a noteworthy increase in nest occupancy and fledging rates. This positive trend could be attributed to our intensified efforts to set up more nest boxes, with the number being increased from 75 to 128 over the last two years. The higher availability of nest boxes is possibly influencing the breeding success of the Blue-throated Macaws.

Although for the program's initial 10 years the Blue and Yellow Macaws were significant competitors for nesting sites, today, thanks to continuous adaptations and improvements made to the nest boxes, the dynamics have undergone a transformative change. We can observe the trend of occupancy has shifted, and the Blue and Yellow Macaws are no longer the primary competitors for the nesting sites. The adjustments made to the nest boxes have proven effective in deterring or reducing competition, allowing the critically endangered Bluethroated Macaws to secure more nesting opportunities for successful breeding. This shift in dynamics is a testament to the program's effectiveness and its ability to adapt to challenges. However, while the competitive pressure from the Blue and Yellow Macaws has been alleviated, new competitors are showing increasing interest in our nest boxes, underlining the continued importance of monitoring and adaptation efforts.



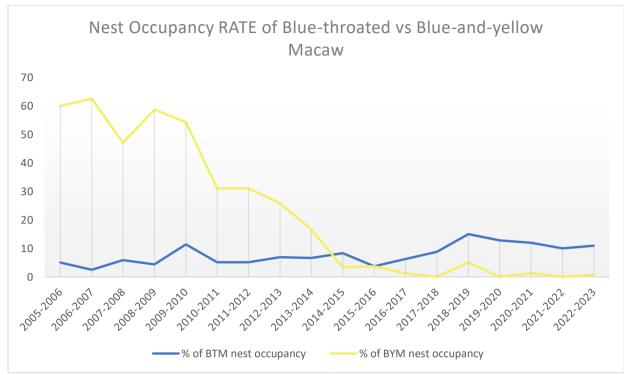


Figure 4. Nest box occupancy rate of Blue-throated Macaw vs Blue-and-yellow Macaw presented over the 18 years of Armonía's nest box program. Changes in entrance size between 2013 and 2015, favorably impacted the competition between these large macaws.

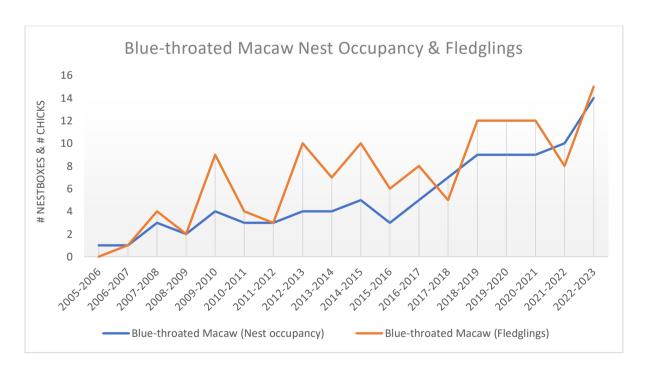


Figure 5. Blue-throated Macaw nest occupancy vs. number of fledglings presented over the 18 years of Armonía's nest box program. The cumulative number of successful Blue-throated Macaw fledglings from Armonía's Nest box Program reached 128 during the 2022 – 2023 breeding season.



Camera trap insights

The camera trap monitoring during this season provided intriguing insights into the interactions and conflicts between Bluethroated Macaws and other species in the area. One notable observation was the ongoing feud between the Blue-throated Macaws and Black-bellied Whistling Ducks. This rivalry escalated to a distressing event, where a dead duck was found inside one of the active Blue-throated Macaw nests. This incident highlights the intensity competition for nesting sites and resources between the two species. Furthermore, in a potential startling attempt by the Blackbellied Whistling Ducks to occupy a Bluethroated Macaw, a macaw was presumably wounded and found dead near a nest with one of its wings broken. The footage we have been collecting of the different altercations shed light on the complex interactions and challenges faced by the Blue-throated Macaws in their efforts to protect and defend their nests against competing species.



In addition to the conflicts between the macaws and ducks, the camera trap monitoring also revealed the presence of a Barn Owl attempting to access an occupied nest with chicks. However, the Barn Owl's larger head size proved to be a hindrance, and it failed in its attempt to enter the nest. This observation underscores the importance of artificial nest boxes in providing a secure environment for the vulnerable macaw chicks, protecting them from potential predators like Barn Owls.

Overall, the camera trap information we have been obtaining every season has provided us with valuable and fascinating data on the dynamics of species interactions within the nesting area. These findings contribute to a deeper understanding of the challenges faced by the Bluethroated Macaws and emphasize the significance of ongoing monitoring and conservation efforts to ensure the successful breeding and survival of this critically endangered species.





Annex 1: Summary of nest boxes occupancy

Table 3. Summary of the 20 occupied nest boxes out of 128 set this breeding season in the Laney Rickman Reserve (Esperancita, Nuevo Berlin, Las Trancas) and La Cantina ranch. The sponsor code column contains the initials of the sponsor (person or institution) that sponsored the nest during this breeding season. The nest code column is a fixed code that identifies each nest and remains permanent across the breeding seasons. The column "historic BTM use" indicates the number of times the nest was occupied by Blue-throated Macaws (BTM) in the past, and tree species indicated to which type of tree the nest box was located. A total of 14 nest boxes were used by Blue-throated Macaws. BTM results: 47 eggs, 20 hatched and 15 chicks fledged.

#	Nest code	Sponsor	Historic BTM use	Species	Tree species	# (egg, chick)	Dates (first egg, chick and fledging)
1	PBA4	СВ	-	Black-bellied whistling duck	Acrocomia aculeata (Totai palm)	Eggs:3	Eggs:27 FEB 2023
2	PBA 5	LR	(2021-2022)	Blue-throated Macaw	Acrocomia aculeata (Totai palm)	Eggs:3 Chicks:0	Eggs: 10 DEC 2022
2	PBA 5	LR	(2021-2022)	Blue-throated Macaw	Acrocomia aculeata (Totai palm)	Eggs:6 Chicks:2 Fledged:3	Eggs: 27 FEB 2023 Chicks: 29 MAR 2023 Fledged: 25 JUN 2023
3	РВА9	SD	-	Unicolored Blackbird	Copernicia alba (Palma blanca palm)	Eggs: 4	Egg: 27 FEB 2023
4	PBA17	ABS	-	Black-bellied whistling duck	Acrocomia aculeata (Totai palm)	Eggs:42	Eggs: 27 FEB 2023
5	PBA 18	BG1	(2018-2019) (2019-2020)	Blue-throated Macaw	Acrocomia aculeata (Totai palm)	Eggs: 5 Chicks:2 (Natural death, potentially malnourished)	Eggs: 2 JAN 2023 Chicks: 26 JAN 2023
5	PBA 18	BG1	(2018-2019) (2019-2020)	Blue-throated Macaw	Acrocomia aculeata (Totai palm)	Eggs: 2 Chick: 1 Fledged:1	Eggs: 14 MAR 2023 Chick: 7 APR 2023 Fledged: 5 JUL 2023
6	PBA 45	KD3	-	Blue-throated Macaw	Attalea princeps (Motacu palm)	Eggs: 2 (Abandoned after conflict with ducks)	Eggs: 22 FEB 2023
6	PBA 45	KD4	-	Black-bellied whistling duck	Attalea princeps (Motacu palm)	Egg: 1	Egg: 6 MAR 2023
7	PBA 46	KD2	(2011-2012) (2021-2022)	Blue-throated Macaw	Attalea princeps (Motacu palm)	Eggs: 2 Chicks: 2 Fledged: 2	Eggs: 13 DEC 2022 Chicks: 9 JAN 2023 Fledged: 9 APR 2023
8	PBA 48	KT	(2021-2022)	Blue-throated Macaw	Attalea princeps (Motacu palm)	Eggs: 2 (abandoned)	Egg: 13 DEC 2022



9	PBA 52	RV	(2010-2011)	Blue-throated Macaw	Acrocomia aculeata (Totai palm)	Eggs: 2	Eggs: 22 JAN 2023
9	PBA 52	RV	(2010-2011)	Blue-throated Macaw	Acrocomia aculeata (Totai palm)	Eggs: 2 Chick: 1 (Bee infestation)	Eggs: 6 MAR 2023 Chick: 25 MAR 2023
10	PBA 81	KL1	(2019-2020) (2020-2021) (2021-2022)	Blue-throated Macaw	Acrocomia aculeata (Totai palm)	Eggs: 3 Chicks: 3 Fledged: 3	Eggs: 10 DEC 2022 Chicks: 3 JAN 2023 Fledged: 10 APR 2023
11	PBA 84	MJ	-	Blue-throated Macaw	Acrocomia aculeata (Totai palm)	Eggs: 3 Chicks: 2 Fledged: 2	Eggs: 14 DEC 2022 Chick: 27 DEC 2022 Fledged: 21 MAR 2023
12	PBA85	PJ	(2020-2021) (2021-2022)	Black-bellied whistling duck	Acrocomia aculeata (Totai palm)	Eggs: 35	Eggs: 28 FEB 2023
13	PBA 86	JC1	-	Blue-throated Macaw	Acrocomia aculeata (Totai palm)	Eggs: 2 Chick: 1	Eggs: 14 DEC 2022 Chick: 11 JAN 2023 Fledged: 10 APR 2023
14	PBA 93	DH2	-	Blue-throated Macaw	Acrocomia aculeata (Totai palm)	Egg: 1 Chick: 1 (Abandoned nest)	Egg: 3 JAN 2023 Chick: 20 JAN 2023
15	PBA96	ABA	-	Blue and Yellow Macaw	Acrocomia aculeata (Totai palm)	Eggs: 2 Chick: 1	Egg and chick: 15 FEB 2023
16	PBA 121	ABUN	-	Blue-throated Macaw	Acrocomia aculeata (Totai palm)	Eggs: 3 Chicks: 2 Fledged: 2	Eggs: 15 DEC 2022 Chicks: 20 DEC 2022 Fledged: 15 MAR 2022
17	PBA 123	PP	-	Blue-throated Macaw	Copernicia alba (Palma blanca palm)	Eggs: 2 (Predated)	Eggs: 27 DEC 2022
18	PBA 127	MUM	-	Black-bellied whistling duck	Attalea princeps (Motacu palm)	Eggs: 58	Eggs: 26 FEB 2023
19	PBA 152	BV	-	Blue-throated Macaw	Acrocomia aculeata (Totai palm)	Eggs: 3 Chick: 1 (natural death)	Eggs: 26 JAN 2023 Chick: 25 FEB 2023
20	PBA 153	LM	-	Blue-throated Macaw	Acrocomia aculeata (Totai palm)	Eggs: 2	Eggs: 10 DEC 2022
20	PBA 153	LM	-	Blue-throated Macaw	Acrocomia aculeata (Totai palm)	Eggs: 3 Chicks: 2 Fledged: 2	Eggs: 26 JAN 2023 Chicks: 20 FEB 2023 Fledged: 15 MAY 2023



Annex 2: Description of nest boxes used by Blue-throated Macaws

Sponsor (code): Laurel Rohrer (LR)

Nest code: PBA 5

Location: Laney Rickman Blue-throated Macaw Reserve

Nest with two breeding attempts. First breeding attempt with 3 eggs that were abandoned after Black-bellied whistling duck activity on the nest registered by camera traps. The second breeding attempt was successful with two chicks that developed normally and were banded with numbers BO 13 2023 and BO 15 2023.



1st attempt. December 13, 2022



2nd attempt. March 14



March 29



April 24



May 9



May 26



Sponsor code: Bird Gardens of Naples, Keriellen Lohrman (BG1)

Nest code: PBA 18

Location: Laney Rickman Blue-throated Macaw Reserve

Nest with two breeding attempts. Sadly, although five eggs were laid during the first attempt, it was unsuccessful after two hatched did not developed well and died naturally. The second breeding attempt was successful with three eggs and one chick fledging. The chick was banded with number BO 014 2023.



1st attempt. February 10



2nd attempt. March 22



April 7



April 24



May 15



June 19



Sponsor code: Kim Dickerson in honor of Dabi (KD3)

Nest code: PBA 45

Location: La Cantina ranch

One unsuccessful nesting attempt with two BTM eggs. Conflict with ducks that ended with one adult duck dead.







March 6



Sponsor code: Kimberley DePaul in memory of Gene DePaul (KD2)

Nest code: PBA 46

Location: La Cantina ranch

One successful breeding attempt with 2 chicks fledging from their nest. Chicks were banded with numbers BO 05 2023 and BO 06 2023. A barn owl attempted to enter the nest, but the cavity size was too small for its head. Chicks were safe from another identified predator.



December 13, 2022



January 9



January 28



February 13



March 6



March 25



Sponsor code: Keeland Torres (KT)

Nest code: PBA 48

Location: La Cantina Ranch

On December 13 one egg was found during nest box monitoring. Camera trap monitoring showed the constant presence of ducks around the nest. Eventually, the nest was abandoned.



December 20, 2022



Sponsor code: Ray Varella (RV)

Nest code: PBA 52

Location: La Cantina Ranch

Sadly, there were two unsuccessful nesting attempts in this nest. During the first attempt two eggs were laid, one ended up infertile and the nest was abandoned. The second breeding attempt had 2 eggs, of which one hatched and the chick was developing normally, however the nest was infested by bees and the chick could not survive.



1st Attempt. January 28



2nd Attempt. April 24



Sponsor code: Bird Gardens of Naples, Keriellen Lohrman (KL1)

Nest code: PBA 81

Location: Laney Rickman Reserve

This is the fourth season of use by Blue-throated Macaws of this nest. This season, 3 chicks successfully developed and fledged. The first two eggs were found on December 10, 2022, and all three chicks were ready to fledge by April 10. The three bands used have the numbers BO 07 2023, BO 08 2023 and BO 10 2023



December 14, 2022



January 11



January 26



February 9



February 28



March 30. 1st chick fledged



Sponsor code: Karen Justice in memory of Max Justice (MJ)

Nest code: PBA 84

Location: Laney Rickman Blue-throated Macaw Reserve

Successful nest with two chicks fledging by March 30. Three eggs were laid early in the season by December 14. Two chicks hatched and developed normally. Band numbers BO 03 2023 and BO 04 2023 were used.



December 14, 2022



January 3



January 14



February 2



February 14



March 15.



Sponsor code: In memory of Jim Cullen by "His ParrotForums Family" (JC1)

Nest code: PBA 86

Location: Laney Rickman Blue-throated Macaw Reserve

Another successful nest with one chick fledging after a normal development. Two eggs were found on December 14, 2022, of which one hatched. This single chick was banded with number BO 09 2023.



December 14, 2022



January 11



January 26



February 9



February 28



April 3



Sponsor code: Diane Hyde (DH2)

Nest code: PBA 93

Location: Laney Rickman Blue-throated Macaw Reserve – Nuevo Berlin

One egg was found on January 3, after a few days 1 chick hatched. On monitoring on February 1^{st} , the nest was found abandoned. Camera trap footage did not record any strange occurrence until that date.







January 26



Sponsor code: Dorothy Paterson in honor of "ABUN" Artists and Biologists Unite for Nature

(ABUN)

Nest code: PBA 121

Location: Laney Rickman Blue-throated Macaw Reserve

Successful nest with two chicks fledging after a normal development. Three eggs were found on December 15, 2022, of which two hatched by the end of December. Two chicks developed quite quickly in comparison with other nests that were active at the same time. The first chick fledged by March 15 and the second by March 22.



December 15, 2022



December 27, 2022



January 16



February 2



February 22



March 8



Sponsor code: Pet Paradise Virginia Beach, Erin Severts (PP)

Nest code: PBA 123

Location: Laney Rickman Blue-throated Macaw Reserve

On December 22 two eggs were found during nest box monitoring. Camera trap monitoring showed a Tyra (Eira Barbara) entering and most likely, predating the nest.



December 22, 2022



Sponsor code: Laura Barwick (BV)

Nest code: PBA 152

Location: Laney Rickman Blue-throated Macaw Reserve

One chick hatched in this nest out of three total eggs. Sadly, since the chick hatched and throughout its development, the staff noticed an abnormality. At every monitoring the chick was found facing up. Eventually, the chick could not survive.







March 27



Sponsor code: Laurie McFarlane (LM)

Nest code: PBA 153

Location: Laney Rickman Blue-throated Macaw Reserve

Nest with two breeding attempts. During the first breeding attempt 2 eggs were laid but the nest was abandoned with one egg broken. The second attempt was successful with 3 eggs laid by January 28 and two chicks developing normally and fledging by May 15.



1st attempt. December 19, 2022



2nd attempt. January 28



February 20



March 2



March 27



May 5