PLAN FOR THE CONSERVATION OF THREATENED PARROTS "Santa Marta Parakeet (Pyrrha Viridiana)" OF COLOMBIA 2019–2025: PROGRESS, ACHIEVEMENTS AND OUTLOOK

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RESUMEN

The plan for the conservation of threatened parrots "Santa Marta parakeet (pyorrhea Viridiana)" of Colombia 2019–2025: progress, achievements and outlook constituted as a successful model to lead the strategies seeking to mitigate the main threats on Santa Marta parakeet (pyorrhea Viridiana in Colombia. This plan was based on all the information available on these species up to 2020. The execution of investigations and actions framed within it allowed to obtain enormous advances in knowledge and conservation of the species involved. Considering the data collected after publication of the final document, the COLOMBIA WILD CORPORATION along with others Actors raised to collect all the information new available until 2019 and re-evaluate the situation of each threatened parrot, including eight species or additional sub-species, whose populations are find themselves in some degree of danger and whose situation should be reconsidered. We present in this article the "plan for the conservation of threatened parrots "Santa Marta parakeet (pyorrhea Viridiana)" of Colombia 2019–2025: progress, achievements and outlook", The plan integrates the results into Investigation of the Threatened Parrots Program of Fuverde and results of other institutions and people, and exposes the main threats and requirements of this group and future needs in terms of research and conservation. While particular threats by species are disparate, the overall framework of the plan covers all the needs that obviously must bedcovers. After being socialized and discussed during the "Workshop on Socialization and Discussion of Plan 2019-2025", we propose this document as the guideline at the national level to direct future efforts towards the conservation of threatened parrots from Colombia.

Keywords: Colombia, conservation, parrots threatened, action plan.

INTRODUCTION

Without a doubt, the Psittacidae family is one of the families of birds most threatened due to low and degradation of their habitat, and hunting and looting of nests for various purposes (Rodríguez – Mahesh &Hernández – Camacho 2002, Juniper & Parr 1998). In total, 11 of the 53 species present in Colombia are find themselves under some category of threat from theine (Rodríguez – Mahesh & Hernández – Camacho2002), which has attracted the attention of many researchers and conservationists for more than30 years. This wide spread interest in protecting psittacine has led to the achievement of agreements international and local conservation programs. In addition to the action plan for Psittaciformes prepared by IUCN (Rodríguez & Hernández2002), in Colombia the "plan for the conservation of threatened parrots "Santa Marta parakeet (pyorrhea Viridiana)" of Colombia 2019–2025: progress, achievements and outlook",

which established four priorities:1) identify the ecological requirements of species, 2) identify priority areas for their conservation, 3) ensure habitat protection necessary to sustain viable populations, and 4)promote environmental awareness (Quevedo – Gil2006). Within the framework of said plan about 22 threats affecting Andean parrots, being grouped into four classes: direct, indirect, biological and scientific (Quevedo – Gil2006). Similarly, actions were proposed that they had to go to lessen the effect of the

same. Although the "plan for the conservation of threatened parrots "Santa Marta parakeet (pyorrhea Viridiana)" of Colombia 2019–2025: progress, achievements and outlook," became an important tool to direct efforts in research and conservation for each species, this required a restructuring. All the information obtained from 2005 to 2019 had to be compiled and analyzed to assess the current situation of species, and identify the effects that the actions of conservation have had on their threats. Also, of it all the growing information on various parrots Andeans treated in said document made evident the need to consider other threatened species that have not been previously treated, or species that are not currently considered endangered, but that his situation deserves attention. With this in mind, Fuverde considered pertinent identify achievements under the plan since 2005, determine the current status of conservation of threatened parrots, reassess the species conservation needs, and extend or redesign routing guidelines research and conservation efforts in the country. Within this context, we present in this article the "plan for the conservation of threatened parrots "Santa Marta parakeet (pyorrhea Viridiana)" of Colombia 2019–2025: progress, achievements and outlook", where we summarize the results of our analyzes for 15 parrot species threatened in the country.

2. METHODS

2.1. Plan framework

Based on the considerations and goals set for the "Plan for the conservation of threatened parrots "Santa Marta parakeet (pyorrhea Viridiana)" of Colombia 2019–2025: progress, achievements and outlook" (Quevedo – Gil 2006), we found relevant to continue the objectives recorded in said document. The above with thein order to make this work a tool for evaluate the achievements obtained in the framework of said plan. This means that the general objective, the specific objectives, expected results and activities proposed in the 2019-

2025plan continue to be the guidelines for efforts aimed at conserving parrot populations. However, an additional objective has been included and have added some results that reflect the new information generated on the ecology of some of these species. Furthermore, following their commendations of Quevedo – Gil (2006), the group species has been extended from nine to 15 and the threat assessment matrix has been modified according to the advance in the knowledge of each one of this. The objectives of the 2019-2025 plan will be the guideline for de signing research strategies and conservation of the 15 species considered. Without However, threat assessment should be the frame of reference for decision-making regarding each bird in particular.

2.2. Species consideration

The species included in the 2019–2025 plan (Quevedo – Gil 2006) continue to be taken into account for this new version: Santa Marta Parakeet (Pyrrha Viridiana)"

2.3. Species assessment

The data reported for each species in the evaluation of the state of knowledge and conservation of parrots (this volume) were employees as the guidelines for adjusting the objectives of the action plan and the threat matrix that prioritizes each of the pressures according to the species. The matrix was initially based on the same22 threats identified and proposed categories at the 2002 bench. However, in this occasion we reduced threats to 20 and We transform the qualifications of each one (A: high; M: medium; B: low; N: it is not a threat; -: no evaluated) on a scale of arbitrary values that allows to easily compare the situation of a species compared to the others (0: it is not a threat;1: low; 2: mean; 3: high; NE: not evaluated).

2.4. Work table

Similar to the 2019-2025 plan, all information reported here and the results and conclusions derivatives were to be extended to the community ornithological, specifically to all actors external to the foundation involved in the conservation of threatened parrots. In such a way, the workshop "Work Table – Plan National Action for the Conservation of Endangered Parrots of Colombia 2019-2025". To this government organizations were invited and non-governmental organizations that have collaborated with the Fuverde' Threatened Parrots Program, ornithologists, conservationists and people from local communities and other entities that have developed actions framed within the plan2019-2025or independent y involved in the research and conservation of the Psittacine of the country. In total, there were 23people representing 11 institutions. The objectives of the workshop sought to assess the scope of the results proposed during the first plan.

2.4.1. General objective of the table

Assess the relevance of the current framework of the plan and formulate new guidelines to ensure the permanence of threatened parrot populations, based on the progress of the conservation status of Each species.

2.4.2. Specific objectives in this version an objective (objective iii) and small modifications have been made to two others regarding the table made in 2002(objectives ii and iv). I. Present the current state of knowledge about natural history of parrot species threatened from Colombia. ii. Identify and reevaluate threats on parrot species of national interest and local. iii. Identify the current conservation status of the species of threatened parrots of Colombia, the actions proposed and carried out, and conservation needs of each of the species of interest. Assess the relevance of the guidelines established in the 2019-2025plan and again recommended in the 2019-2025 plan, and propose other alternatives consistent with the state current conservation of the species of interest. After the workshop, the impressions and suggestions to supplement the information recorded for each species and the general framework of the plan were taken into account. The results set out below are derived from the discussion with the participants of the first version of the plan during the table in 2010.

3. RESULTS

"National Action Plan for the Conservation of threatened parrots Colombia 2019-2025" Specific objectives detached from the objective general frame a series of expected results, which in turn are the guidelines for activities necessary to decrease or suppress the impact of the threats identified for all species in general.

3.1.1. General purpose

Ensure the permanence of viable populations of threatened species of parrots in the Andes Colombians.

3.1.2. Specific objectives.

Objective 1. To determine the population status of threatened parrot species Expected results• Estimated abundance and population density in the core areas of its geographical distribution. • Population sizes at the local level and national estimates. • Patio-temporal variations in abundances and their relationship with supply of resources and beginning of the reproductive season evaluated. Activities• Development of a reliable methodology for parrot population monitoring and rigorous estimation of its density and size population.• Population monitoring.• Linking of theses and interns in the development of monitoring plans and population research.• Linking researchers with experience in the design and execution

of investigations and demographic analysis.• Experimentation in the use of artificial nests by the species of interest and monitoring annual of the same.• Recognition and monitoring of possible competitors and predators.• Tracking populations using Telemetry with representative samples of the parrot populations.• Capture and tagging of individuals for development of studies that reveal the structure population and demographic trends in Each species.• Design and implementation of genetic studies that allow estimating genetic variability, intra- and inter-population, and infer the possible consequences based on results obtained.• Design and implementation of ecological studies and genetic to confirm the status of species for isolated populations of taxa considered as species in the present panni. Objective 2. Identify the requirements ecological of threatened parrot species Expected results• Specific identified requirements (diet, reproduction, nesting, distances displacement, etc.).• Habitat in use characterized for each species.• Habitat preferences and relationship between abundance of resources and changes in the niche trophic and use of habitat units available for the evaluated species.• Structure of the reproductive groups in cooperative breeders, the degree of kinship between individuals and the role performed according to the age evaluated.• Potential spatial distribution of the 15 species threatened patterned.• Identification of biogeographic patterns and assessment of main threats and gaps of conservation throughout its distribution. Assessment of the possible consequences of climate change on geographical distribution of threatened parrot species. Activities• Habitat characterization (surveys floristics, identification of specimens of herbal). • Determination of habitat preferences and Spatial-temporal variations in the use of landscape units. • Quantification of fruit production of plant species of importance to parrots another possible resource used by them.

• Relationship between phenological events and spatiotemporal variations in diet and width of the trophic niche.• Production of vegetation cover maps.• Evaluation of the population status of the species important vegetables for parrots from their age structure.• Predictions of the spatial distribution of parrots threatened based on characteristics biotic and abiotic.• Verification in the field of distributions predicted space.• Predictions of the spatial distribution of parrots threatened under different scenarios of climate change.• Linking of theses and interns in the development of monitoring plans and ecological research.• Construction of canopy stations to carry out detailed ecological observations.• Experimentation in the use of artificial nests by the species of interest and monitoring annual of the same.• Recognition and monitoring of possible competitors and

predators.• Design and implementation of genetic studies and behavioral to determine the structure of reproductive groups in breeders cooperatives, in addition to the degree of relationship between adults and helpers.• Capture and tagging of individuals to identify the age of the helpers in kind with cooperative breeding; as well as for determine the age at which individuals they act as reproductive adults.• Tracking populations using Telemetry with representative samples of the populations to identify displacement and routes on a local scale and its relation to abundance of resources'. Objective 3. Identify priority areas for conserving parrot species threatened Expected results• Current and potential spatial distribution for each one of the 15 parrot species modeled.

• Priority areas for conservation identified. Activities• Collection and evaluation of records of presence for each of the parrot species threatened.• Preparation of distribution range maps current and potential for each of the species of threatened parrots.• Estimation of the percentage of vegetation remnant in the distribution range and determination of habitat loss for each species.• Estimation of the percentage of representation Thitinan areas make the area of current distribution of each species.• Field evaluation of predictive models of geographical distribution. Goal 4. Ensure habitat protection necessary to sustain viable populations of the threatened parrot species Expected results• Effectiveness in assured protection. • Increased coverage of protected areas. • Administrative management supported by others organizations government Y no- governmental. • Communities trained to search for sustainable production alternatives. Activities• Acquisition of priority areas adjacent to the existing reserves.• Achievement and processing of incentives for conservation.• Project planning and management courses.• Consulting in planning and project management.• Support for the establishment of nurseries for Ecological restoration.• Achievement of a new model of areas for common use of wood energy forests and timber.• Protection of forest fragments using fences, in order to avoid the incursion of domestic species such as cattle to existing fragments.• Advice to municipalities in the preparation and updating of the environmental component of land use plans.• Theoretical-practical training workshops in sustainable production alternatives.

• Pilot projects in sustainable practices of production. • Participatory socioeconomic diagnosis by analyzing community surveys. Goal 5. Promote environmental awareness Expected results• Local community trained to monitor parrot populations. • Teachers trained for the implementation of environmental curricula. • Massive campaigns to raise awareness environmental (egg Lora Bus) executed. • Advertising

campaigns on activities developed by Fevered published. Activities• Creation and training of local groups of bird watchers. • Donation of bird guides and binoculars. • Design of environmental curricula. • Training talks for teachers in education environmental. • Donation of educational material. • Establishment of student social service in protected areas.

3.2. Threat matrix and evaluation of priorities

While the particular conservation needs of each species are detailed in another work (saboteur – Delgadillo & Paetz, p. 86–151 of this number), the idea of this document is to issue recommendations and set goals based on general requirements of the Psittacidae family. The matrix of threats that we present to the following is a weighted summary of the pressures and threats identified in development of information for each of the species of threatened parrots (Table 1). This reference should be worked in conjunction with the plan described above when it comes to designing strategies or carrying out actions for a specific species. As you can see, the main threats to all species are: slash and burn; livestock the Agriculture; the little effectiveness of the protected areas where they find; he trades or hunting; and poor knowledge about his biology and ecology. Also, there are some intrinsic threats to your biology that are common for the 15 species, such as population size low, gregarious behavior (which facilitates looting), high ecological specificity and broad population movements.

4. DISCUSSION AND CONCLUSIONS

Below we summarize the general impressions of the discussion of the plan corresponding to each species during the worktable. Also, we contextualize in a broad sense the main advances in the knowledge of species of threatened parrots of Colombia, the main conservation actions and future needs to achieve effective protection of all members of the Psittacidae family. Regarding the 2019-2025 plan, progress in knowledge of parrot biology threatened has been considerable. Species like the Yellow-eared Parrot, the Blue-winged Parrot and the Parakeet Santa Marta are clear examples of birds whose basic biology has been explored in a wide spectrum, covering aspects of its biology reproductive, habitat use, diet, behavior foraging, population status and threats. This is without a doubt an enormous advance if you bear in mind that these three parrots are the most threatened according to theine criteria. Furthermore, continuous monitoring of the phenology of its main resources, results of research supported by the Foundation's

Artificial Nests Program Fuverde and the constant training of personnel to monitor their populations, have allowed obtain base information for the development of plans conservation and decision-making to lessen the impact of its main pressures. Carrying out the activities proposed in the 2019-2025 plan has been the main cause of the huge progress made so far in the conservation of these species. In any case, such advances have resulted in new approaches questions. In this sense, its resolution will allow approach a much more accurate assessment of current state of their populations and a knowledge deeper that will facilitate rigorous evaluation of your threatened status and raise the most strategies suitable for your protection. For two of these species, the Yellow-eared Parrot and the Parakeet of Santa Marta, it will be essential to start with studies demographic and genetic, because their populations could suffer the effects associated with allow genetic diversity or a potential effect.

In the case of the Aliased Octorara, the efforts should focus on continuing the restoration of native vegetation, since the habitat loss and its reduced distribution geographic continue to be its main threat. The progress made with these species does not have only been in the field of research, but in that of its conservation. Through such projects such as the mobile environmental classroom –Lora Bus– and several environmental campaigns has reached numerous municipalities in order to raise awareness in young people and children about the importance of these birds. It should be noted that these campaigns have had the important support from numerous institutions, achieving a long range. In this way, campaigns advertising such as "reconcile with the nature" have reached more than 15,000 people by 27 television channels, with an impact on audience close to 20'000,000 people. Likewise, workshops and other training have sought to support community initiatives looking for sustainable development alternatives. In addition, the establishment of nature reserves of the Yellow-eared Parrot birds (habitat protection O. icteroid), Lora Aliased (habitat protection of H. Fuertes and L. branchia) and El Dorado(protection of the P. Viridiana habitat), and the start of the Artificial Nest Program and implementation of nurseries to propagate plants that are part of the diets of the species of interest have been part of a multiple strategy approaches that seeks to cushion the impact of threats of a different nature. During the workshop another group of parrots with a different situation, although with advances significant: The Red-fronted Parakeet, the

Parrot Mountaineer, the Parakeet Paramount, the Parakeet Ali Amarillo and the Caria Marilla Octorara. Your state apparent is not as critical as the three species previous, and therefore constitute as an enormous challenge in scientific and applied terms.

Yes, well the efforts of Fuverde and all entities involved in its conservation have supported and driven studies and educational campaigns, the state of his knowledge is still far from adequate for formulate specific strategies for their protection. He studies of some of these birds has turned out to be a complex task (egg Parakeet Frostproof, Parakeet Paramount and Octorara Caria Marilla), and even their ecological requirements and their population status are not have been determined in the desired way. While the conservation actions have been significant, how to show a job documenting the status current knowledge and conservation of parrots threatened (see Botero – Delgadillo & Paetz, p.86–151 of this issue), your success will largely depend measure of the scientific support with which they can tell. It will be essential to delve into their habitat requirements, their movements to local scale, its abundances and basic aspects of its reproductive biology. A third group of particular importance formed: The Scarlet Macaw Verde Limón, the Scarlet Macaw Green and the Spotted Parakeet. Although these birds they are considered threatened with extinction, it is highly probable that its conservation status be more concerning than you suppose. The actions of conservation are null for the Parakeet and is perhaps the only threatened parrot whose state of knowledge has not advanced for 10 years or plus. The two macaws (genus Ara) present a similar situation, although the COLOMBIA WILD CORPORATION has started with some research in the Green Macaw and with the participation in the development of conservation workshops Scarlet Macaw. For these birds, the lack of commitment of government organizations and on-governmental and poor knowledge about their Biology remain serious threats. In this sense, the priority is to fill such gaps of information in order to formulate a strategy preliminary supported by scientific arguments.

The inclusion in the plan of the Parakeet of Sentoid's Parakeet and Comigrate Parakeet Pacifica drew the attention of those attending the workshop, since the first two are recognized in the actuality as subspecies of the Painted Parakeet(Pyrrha pacta), while the third is a race Geographical of the Comigrate Parakeet (Pyrrha melanuric). However, the compilation on all the biological and ecological information available on the same, suggests that its state of conservation must be urgently evaluated, as it is isolated populations or evolutionary units

independent (see Botero – Delgadillo & Paetz, pages.86–151 of this issue).

This is definitely an Enough argument to propose them as species or priority sub-species, and taking into account their potential distribution and its threats, it is plausible that they are critically threatened parrots. No Despite the efforts started since 2007 by of the Pyrrha Project of the COLOMBIA WILD CORPORATION, gaps in conservation and research for these birds are numerous. The commitment of said entity and his collaborators have already produced the first results for Todd's Parakeet and Parakeet Pacific Comigrate, and still looking to replicate the effects that the project has had for the Parakeet Santa Marta and the Parakeet Alamillo. In the case opsin parakeet, efforts should be directed to continue explorations to determine the presence of remaining populations in the area core of its geographical distribution. One last species considered during the plan was the Parrot Carronade, a parrot that does not know found cataloged under any criteria of threatens, but whose situation is alarming. The Parrot Carronade is a parrot endemic to one biogeographic region with huge voids of knowledge and subjected to capture and hunting. Single the start of awareness campaigns in the communities, increasing representation of protected areas in their range and study design ecological and populational, will lead to determine precisely its state of conservation and the measures necessary to suppress the effects negatives of all pressures. Final impressions during the table discussion exhibited some concern about the absence of other actors that could be key in the conservation of some species. Without a doubt, the factor common in the recommendations of the participants was the link of the private company for the support for conservation and education actions. Likewise, as the participation of universities and government organizations in projects investigation. Participants noted that the current knowledge in some species is far from ideal for proposing a threat category consistent with their status. Such was the case of the Mountain Parrot, the Parakeet Aiamarillo, the Parakeet Aliquoted, the Parakeet Frostproof and Pericú Paramount; for three Last, it was argued that the national category of Threat should reflect a more critical state. From Similarly, it was suggested that the situation of the Parakeet of Santa Marta, the Scarlet Macaw and the Parrot Carronade can be more alarming. Finally, during the workshop they discussed other alternatives that could be positive if they are properly applied. In addition, of the ecological restoration activities carried out by the Parks Special Administrative Antinationalism Naturales (UAESPNN) and Fuverde DE independently, the design of corridors biological, the implementation of easements ecological and the establishment of protected areas perpetuity, efforts should

focus on execution of sustainable development strategies. Clear examples of such strategies are mechanisms for obtaining incentives in communities, the inclusion of the figure of payments by environmental services in national policies and environmental certifications. The final conclusion of the workshop, adopted for culminate this document, is that the link active of all directly related entities or indirectly with threatened parrots will bifundamental. Only joint effort will allow advance in the knowledge of the 15 species, with thein order to make effective and consistent decisions.

The participation of the entities involved in the workshop must transcend the contributions made to this work. These are expected to facilitate their application across the country and strengthen it as national strategy. In this way, it will be expected obtain results similar to the 2019-2025plan, a Once the validity of this document ends. Thanks We express our thanks to all institutions that throughout these years have supported in multiple ways projects framed within the Threatened Parrots Program, among them: Ministry of the Environment, UAESPNN, Eco films, Colombian Network Association of Natural Reserves of Civil Society, The Nature Conservancy Colombia, Corporation Autonomous Regional of Quindío, Corporation Autonomous Regional of Tolima, Corporation Autonomous Regional of Antioquia, Corporation Autonomous Regional of Caldas, Corporation Autonomous Region of the Sine and San Valleys Jorge, Regional Autonomous Corporation of the North of Santander, Corporation for sustainable development Uribe, Regional Autonomous Corporation of Magdalena, Regional Autonomous Corporation of Cundinamarca. Also to the Municipal Mayors Garden, Genoa, Roncesvalles, Ryosuke, Puerto Boyacá, Sabanilla and El Carmen, and to the Unit Environmental Technician of the Municipality of Ocala, atlas Mellissa Ecological Foundation, the Church Catholic, the faculty of the centers in the municipalities where the Program has arrived, municipal assistance units agricultural technique, Colombian Red Cross, Volunteer firefighters, local stations and channels in the study areas. We wish express special thanks to all attendees to the "Socialization and Discussion Workshop Plan 2019-2025 ": José Vicente Rodríguez and María Isabel Moreno (Conservation International Colombia); David Bjarne – Bonilla (Loreto Project Camilleri); Jorge E. Prada R., Eliana K. Moreno P. antibrane María Bonilla (CORTOLIMA); Oscar Ospina (CORPOCALDAS); Luz Dray Aludel(UAESPNN); Andrea Suboral (SINAP

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