

REVIEW OF PROPOSALS TO AMEND APPENDICES I AND II

A. Proposal

Transfer of *Cattleya trianaei* from Appendix I to Appendix II.

B. Proponent

Colombia.

C. Supporting statement1. Taxonomy

1.1 Class: Angiospermae

1.2 Order: Orchidales

1.3 Family: Orchidaceae

1.4 Genus: *Cattleya* Lindl. 1821

Species: *Cattleya trianaei* Linden & Reichb.f. 1860

1.5 Scientific synonyms: *Cattleya bogotensis* Linden ex C. Morr. 1897;
Cattleya kimballiana L. Linden & Rodigas 1887;
Cattleya labiata var. *trianae* (Lindley & Rchbf) Duch. 1860;
Cattleya lindigii Karst;
Epidendrum labiatum var. *trianae* Rchb.f. 1861

1.6 Common names: Spanish: Orquídea de navidad; Orquídea de invierno (United States of America); Cattleya del Dr. Triana; Flor de mayo (Colombia)
French:
English: Christmas orchid; Winter cattleya (United States); Cattleya; Dr. Triana's Cattleya (Colombia)

1.7 Code numbers: ---

2. Biological parameters

Cattleya trianaei is an orchid of epiphytic or lithophytic habit. It belongs to the group of unifoliate in the genus *Cattleya*. It has a large terminal inflorescence, enclosed in a basal sheath. The colour of the flowers is variable, and their size runs from 14 to 16 cm. The petals, lavender in colour, are twice as large as the sepals. The dorsal sepal tends to fall backwards and sometimes folds into a sort of tube at the base. The labellum (lip) is detached from the column, and is usually of a showy colour, typically purple on the outside and yellow on the inside. There are variations in colour within the species, so for ornamental purposes, the following varieties are known:

Standard variety: its characteristics are those described in the previous paragraph.

Semi-alba variety: white sepals and petals; the lip is yellow and purple, with white borders around the purple.

Alba variety: the sepals and petals are white. The lip is faintly lavender on the outside and yellow towards the inside.

Concolor variety: the sepals, petals and lip are lavender on the outside. Although subdued at times, this colour is identifiable as it is the same on all three structures. The lip is yellow towards the inside.

Caerulea variety: tends to be bluish in colour. The lip is a faint shade of blue, although sometimes it may be quite bright.

Sangretoro variety: this name refers to plants whose flowers are very dark in colour, with deep purple petals and sepals.

2.1 Distribution

The species *Cattleya trianaei* is endemic to the Colombian Andes. The first plant was collected in 1783 near the municipality of Mariquita (Tolima) by Francisco Eloy Valenzuela. Its distribution is restricted to the upper Magdalena River basin, especially in the departments of Huila, Tolima and Cundinamarca, at altitudes between 600 and 1940 m. (Annex 1). Part of its range coincides with that of the species *Cattleya warsewiczii*, with which it forms a natural hybrid (Constantino & Calderón, 2002).

2.2 Habitat availability

The species grows in gallery forests and subxerophytic thickets of the upper Magdalena River basin (Constantino & Calderón, 2002). Orjuela-R. (2002) observed that *Cattleya trianaei* plants displayed great flexibility and adaptability to their surroundings, and the epiphytic ones are able to grow on a wide variety of phorophytes (host plants). Their position in relation to the ground level varies with the degree of humidity in the area where they are found. This means that the lower the humidity, the closer they grow to the ground. In drier areas the plants even grow on rocks (lithophytic habit).

2.3 Population status

In the year 2002 studies were promoted to determine the population status of the species in the wild. The results of these studies showed historic records of 16 subpopulations located between northern Cundinamarca and San Agustín, along borders with the departments of Huila and Cauca (Constantino & Calderón, 2002; Orjuela-R., 2002). These data were obtained from specimens found in herbaria of the Quindío University (HUQ), the Colombian National Herbarium (COL) of the Colombian National University's Institute of Natural Sciences, the Javeriana University Herbarium (HUJ), the Herbarium at the Medellín "Joaquín Antonio Uribe" Botanic Garden (JAUM) and the Universidad del Valle Herbarium; from historic records (Ospina & Dressler, 1974; Toulemonde, 2004); and from conversations Eduardo Calderón, Emilio Constantino and M. Andrea Orjuela-R held with local nurserymen and inhabitants throughout the range.

Of the 16 subpopulations recorded historically, the one in the department of Tolima, located near the Combeima River (Ibagué) (Calderón, E., pers. com., 2004), has disappeared because of major harvesting pressure, documented at the time by Ospina & Dressler (1996). However, populations are currently conserved in important areas of the departments of Huila and Tolima, so difficult to access that conditions are favourable for maintaining these populations in a good state of conservation. Between September and October, 2002, census counts were taken of three representative subpopulations of the species located in a protected area belonging to the Civil Society Reserve Network, and in wooded areas of the department of Huila (Orjuela-R., 2002). In this evaluation, individual plants were counted at different stages of development. The location's geographical coordinates were recorded, as were the phorophytes on which the plants were found, along with other observations of an ecological nature, such as phenological notes, associated plants, preferred habit and a description of the habitat. All these aspects came into play in evaluating not only population status, but also potential threats to the species. These evaluations were made during the flowering season, when it is easy to distinguish the species. Evaluation of the subpopulations resulted in a total of 145 individual plants (Table 1) (Orjuela-R., 2002) that were clones, in other words, a set of shoots forming a plant.

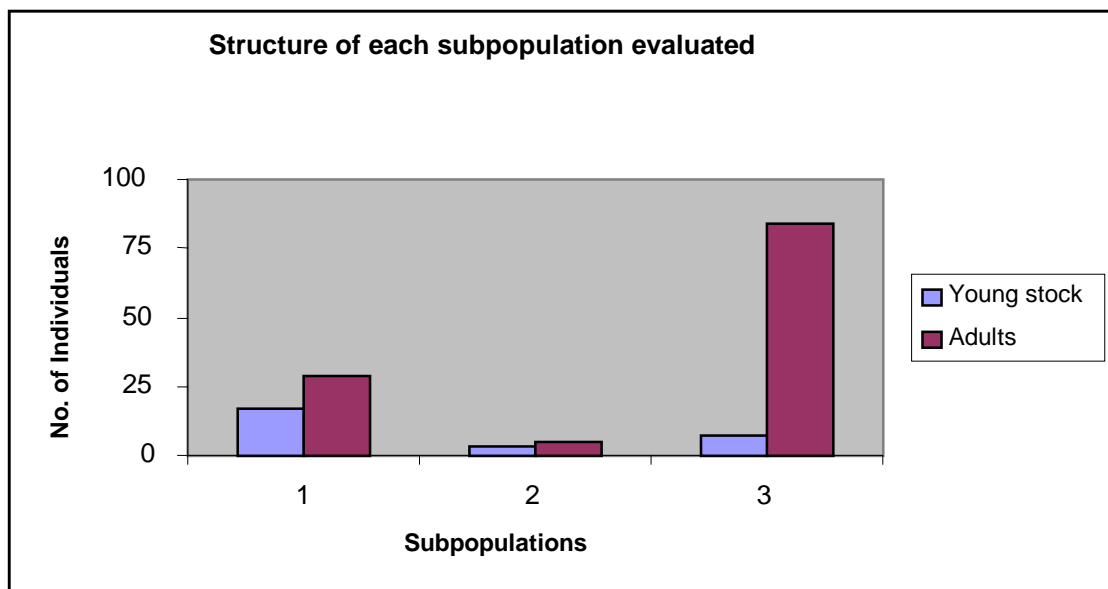
Table 1. *Cattleya trianaei* population count. "Individuals" is the number of clones counted. Since all the individuals had flowers, they were counted as adults.

Subpopulation	Location	Young Stock	Adults	Individual	Dead
1*	Garzón	17	29	46	0
2	Gigante	3	5	8	0
3	Garzón	7	84	91	0
		27	118	145	0

* Civil Society Reserve.

In 118 of the clones counted (adult individuals), flowers or signs of blossoming were observed. In general, the number of adults was found to be higher than that of young plants; the most outstanding difference is shown in subpopulation 3, which is also the largest one (91 individuals) (Figure 1).

Figure 1. Ratio of young and adult plants for each subpopulation of *Cattleya trianaei* recorded (Orjuela-R., 2002).



This characteristic may mean there is a great influx of new individuals in all the subpopulations, stemming from the currently existing adults. Intraspecific competition among younger specimens (effects of density-dependence) could be seen to prevent the young ones from surviving. This would explain the low number of juveniles in these subpopulations that are not subject to harvesting processes.

Furthermore, the species is known to exist in another protected area (Civil Society Reserve), in the department of Cundinamarca, where a subpopulation of the alba variety occurs (E. Calderón, pers. com., 2002). Following the range of this species, it may possibly be found in the Nevado del Huila National Natural Park and in the Cueva de los Guácharos National Natural Park, although the altitude range in these two parks is higher than that recorded for the distribution of the species.

***Ex situ* populations**

The Colombian National Network of Botanic Gardens currently has seven live collections of the Orchidaceae family, with records of 266 species and 1,301 individuals. Eighty of these recorded individuals belong to the species *Cattleya trianaei* and they are distributed among the country's botanic gardens and registered private collections (Table 2) (Olaya *et al.*, 2001, 2003).

Table 2. *Ex situ* collections registered for Colombian botanic gardens. (Source: Olaya, 2003).

Location	Origin	No. individuals
José Celestino Mutis Botanic Garden, Bogota (JBB)	Cundinamarca, Huila, Tolima*	11
Popayán Botanic Garden – Popayán University Foundation (JBP)	Cundinamarca, Huila, Cauca*	38
San Jorge Botanic Garden – Ibagué (Tol.) (JBSJ)	Ibagué, Tolima*	12
Velez Collection**	Cundinamarca, Antioquia Tolima y Huila*	17
Pereira Technological University Botanic Garden (JBUTP)	Sua Mena Nursery Laboratory (Pereira, Risaralda)	2
	TOTAL	80

* The individuals come from natural subpopulations of the species.

** Information on the Vélez private collection, incorporated into the Popayán Botanic Garden database, is included here – FUP (2003).

There are also 5 commercial nurseries for international trade registered with the Ministry of the Environment, Housing and Territorial Development, where artificial propagation programmes for *Cattleya trianaei* have been underway since 1972, either by vegetative reproduction, consisting of cultivating scions cut off the plant, or by sexual reproduction from seeds obtained through assisted pollination.

2.4 Population trends

Interest in *Cattleya* species has declined since the 1960's, allowing the plants to remain present in their habitat (Toulemonde, 2004). This fact, along with the existence of specimens in private collections and good parental stock in the various nurseries that cultivate these specimens, has led to a decrease in harvesting pressure throughout the range of *Cattleya trianaei*. Thus, conditions are favourable for existing subpopulations to maintain or possibly increase their numbers.

Decreased harvesting is one positive factor for population increase, but there are also additional strategies that allow *Cattleya trianaei* to persist where conditions are favourable (E. Calderón, pers. com., 2002; Orjuela-R., per. obs. M.A., 2002):

- Two strategies allow for recruitment: vegetative reproduction, as evidenced in the shoots present on each of the clones observed, and production through flowers, fruit and seeds dispersed by the wind. Besides augmenting populations, sexual reproduction increases their variability and distribution.
- It has a high reproductive capacity and a short life cycle.
- It regenerates easily in disturbed habitats with solitary trees, or crags.
- It is not very selective of the phorophytes on which it grows, having been known to develop on at least 17 different phorophytes, and it can also grow on rock.
- The fact that the species adapts to different levels of humidity is another aspect that facilitates regeneration.

As a consequence of decreased harvesting pressure since the 1970s, and thanks to the species' ecological strategies such as its anemochorous dispersion, its high capacity for regeneration and

its adaptability to different environmental conditions of light and humidity, subpopulations tend to maintain their levels and even increase their range.

2.5 Geographic trends

Cattleya trianaei is endemic to the Colombian Andes.

2.6 Role of the species in its ecosystem

There are currently no biological or ecological studies involving the species in its natural environment. In the areas where population counts have been taken, Orjuela-R. (2002) found that *Cattleya trianaei* grows alongside other orchid species of the genera *Schomburkia*, *Encyclia* and *Oncidium* in is a recurring pattern, at least for the subpopulations evaluated, so it seems probable that some kind of ecological relationship exists between these species. It has also been observed that some species of Hymenoptera (ants, specifically) and Coleoptera (Curculionidae) attack the flowers.

2.7 Threats

The main threats to the species in the wild are: (1) expansion of agricultural lands, (2) livestock activities, (3) timber exploitation and (4) local uses.

3. Utilization and trade

3.1 National utilization

Most of the trade in this species occurs with *in vitro* specimens; plants in botanic gardens and private collections are kept for conservation of the species. Domestic trade comes from the production of the nurseries that are registered with the Ministry of the Environment, Housing and Territorial Development and from some other local nurseries that have permits from regional environmental authorities for national marketing. In Colombia, specimens are often exchanged among growers. However, most of the production from the nurseries registered with the Ministry is for international trade.

3.2 Legal international trade

Specimens are currently exported from nurseries registered with the Ministry that have considerable experience in generation, development and maintenance of the species in laboratory conditions. Since international demand may rise as high as 4,500 plants per year, it can only be satisfied by these commercial operations, with their artificial propagation programmes.

The Colombian Management Authority's export data for the period from 1993 to 2003 show that *Cattleya* is the most heavily exported genus, totalling 21,394 specimens (average annual export: 1,988, maximum level: 4,453 in the year 2002; minimum amount exported: 633 in 1990). While exports of the genus *Cattleya* have undergone periods of decline, levels have generally followed a rising trend over the period analysed. Nevertheless, exports of the species *Cattleya trianaei* during this period only account for 5.30 per cent of total exports of specimens of the genus. The main importing countries are Japan, the United States of America, Canada, the United Kingdom of Great Britain and Northern Ireland, Ecuador, Germany and Venezuela.

3.3 Illegal trade

While it is true that international trade may have a negative impact on orchid species in general, statistics on illegal trade reflect the report of a seizure of orchids in the United States of America in 1997. These specimens were returned to Colombia and delivered to the José Celestino Mutis Botanic Garden in Bogota, where a technical, scientific evaluation of the confiscated orchids was performed. This shipment included specimens of *C. violacea* and *Cattleya* sp. To date, for the past 10 years, no official statistics of illegal exports of *Cattleya trianaei* are available.

3.4 Actual or potential trade impacts

International trade is covered entirely by nurseries equipped for this purpose. Wild populations of the species are no longer substantially threatened by harvesting activity that endangers the growth of their populations, as international trade is supplied through specimens produced *in vitro*.

3.5 Artificial propagation for commercial purposes

In Colombia, the species has been artificially propagated since 1950. *C. trianaei* is a very easy species to produce outside of its natural habitat. Given the proper conditions of humidity and sunlight, and with the proper substrate, these plants adapt adequately. The five registered nurseries are correctly equipped with facilities for *in vitro* cultivation, laboratories, laminar flow chambers and greenhouses designed for their production capacity, not only of *Cattleya trianaei*, but also of the other orchid species they grow. These are currently produced by means of three techniques: (1) asexual *in vivo* reproduction (plant division), (2) sexual *in vitro* reproduction (from seeds) and (3) asexual *in vitro* reproduction (tissue culture).

Apart from the Colombian nurseries, the species is artificially propagated in nurseries in Ecuador, the United States, Venezuela and Japan.

4. Conservation and management

4.1 Legal status

4.1.1 National

The species is not currently categorized under any degree of threat in Colombia. It is no longer considered in danger of extinction, thanks to its ability to live in a range of habitats and to increase its population quickly.

Cattleya trianaei is the national flower of Colombia. For this reason, protection campaigns have been implemented, along with research programmes on the species' biology and ecology, in order to propose long-term measures to control and safeguard the remaining populations. One such programme is the Plant Conservation Strategy (IAvH *et al.*, 2001) with the general aim of determining a strategy to foster national conservation of plant species, genera and families. Furthermore, the Alexander von Humboldt Institute, in association with the Ministry of the Environment, Housing and Territorial Development, the academic community and other Colombian institutions, established the Action Plan for the Conservation of Orchids of the Genus *Cattleya* in Colombia – Pilot Project (2002), given the need to generate a strategy encouraging conservation of the genus.

Besides these initiatives, the National Network of Botanic Gardens has set the conservation of the species as one of its priorities, through *in vitro* propagation programmes at various botanic gardens around the country (Olaya, 2001, 2003). In addition to these conservation efforts, two Civil Society Reserves are devoted to *in situ* conservation of populations of this species in the departments of Huila and Cundinamarca.

4.1.2 International

The species is currently included in CITES Appendix I.

4.2 Species management

4.2.1 Population monitoring

To date, counting has taken place on three subpopulations of the species located in the department of Huila. The existence of populations must be evaluated in the 16 historic

locations and in other areas where scientific knowledge is lacking. As new populations are recorded, the hope is to perform the quick evaluation proposed by Constantino and Calderón (2002) in order to implement a long-term monitoring programme. An in-depth population evaluation must also be carried out to establish the species' ecological role and the characteristics of its life history, as well as the way harvesting truly affects growth and maintenance of the populations.

4.2.2 Habitat conservation

Two Civil Society Reserves have been established to protect two populations of the species located in the departments of Huila and Cundinamarca. No specific management plans are known, nor are there records of the presence of the species in other reserve areas such as the national natural parks, although it is believed to occur in Los Guácharos and in el Nevado del Huila, but this must be confirmed.

4.2.3 Management measures

The five nurseries registered with the Ministry of the Environment, Housing and Territorial Development produce specimens of this species *in vitro*. There is no overall management programme currently in place to regulate populations of the species or guarantee their regeneration and/or reintroduction.

Nurserymen would generally be willing to collaborate on generating a plan of action aimed at conserving wild populations. This alternative is presently under discussion, at a preliminary stage. Management of the species will mainly need to include:

- Evaluation of its real distribution;
- Preliminary determination of population status;
- Evaluation of wild populations;
- Proposal and initiation of long-term monitoring and evaluation programmes for the remaining populations; and
- Generation of a conservation strategy taking into account current *in situ* and *ex situ* efforts and action to be taken from now on.

4.3 Control measures

4.3.1 International trade

Since international trade is based on *in vitro* production, this is considered to have contributed to the conservation and recovery of the remaining wild populations.

4.3.2 Domestic measures

See sub-paragraph 4.1.1.

5. Information on similar species

The species is difficult to differentiate from other species of *Cattleya* and related hybrids, particularly with plants not in blossom, as occurs when the species is exported. In Colombia, six other (endemic) species of *Cattleya* exist in the wild, from which *Cattleya trianaei* is distinguishable by its geographical distribution and its characteristic flowers.

In the case of artificially propagated plants, shipments are usually composed of plants not in blossom, which makes it difficult to identify the species at entry and exit ports, especially if the inspection officer is not familiar with the group. These species and their hybrids are very similar in their vegetative state so it is considered necessary to implement controls performed by people who

know the species very well, in order to ensure that plants traded as *Cattleya trianaei* are actually specimens of the species in question.

6. Other comments

7. Additional remarks

This species should be included in Appendix II, as trade nowadays is in plants artificially propagated in nurseries, not only in Colombia, but also in other countries, such as Venezuela, Japan, Ecuador, the United States and Brazil. While some harvesting from populations in the wild is known to take place for domestic trade, it is considered that pressure from such harvesting has now substantially decreased, in comparison with the major depletion of natural populations that occurred in the late 19th and early 20th centuries. Artificial propagation of the species has lessened the exploitation of wild populations.

The impression is that under the proper stimuli, artificially propagated populations may be used to re-establish populations of the species. For this purpose, research projects must be undertaken on biological, ecological and genetic aspects. Nowadays, part of the nurserymen are willing to support actions towards attaining this objective.

Something to bear in mind for the final decision is that efforts are currently being made to conserve the species, not only *in situ* but also *ex situ*, in botanic gardens, Civil Society Reserves, and upon the initiative of the inhabitants themselves in several municipalities around the country, and especially in the department of Huila. The fact that *Cattleya trianaei* is the national flower gives it great cultural value, and this can be put to good use in generating other *in situ* and *ex situ* conservation activities.

This is a species of remarkable genotypic and phenotypic variability. The variations in the colouring of the flowers are evidence of the wide range of possible genetic combinations. This variability is perhaps one of the reasons why the species continues to exist in spite of having been subject to significant pressure from harvesting in the past, and may be important when it comes to recover its former numbers. Furthermore, as observed in the field, the species' great flexibility allows it to live in widely differing conditions of humidity, from damp to dry, within the altitude range where it grows. It is probably a generalist species, and that is why it has survived over time, maintaining its populations in spite of the pressures that have been exerted upon them.

- *Ex situ* and *in situ* conservation initiatives are currently underway for the species.
- In terms of *ex situ* activities, specimens in botanic gardens and private collections are noteworthy.
- *In situ*, two Civil Society Reserves maintain subpopulations of the species in the departments of Huila and Cundinamarca.

The proponent feels that transferring the species from CITES Appendix I to Appendix II would have the following positive effects:

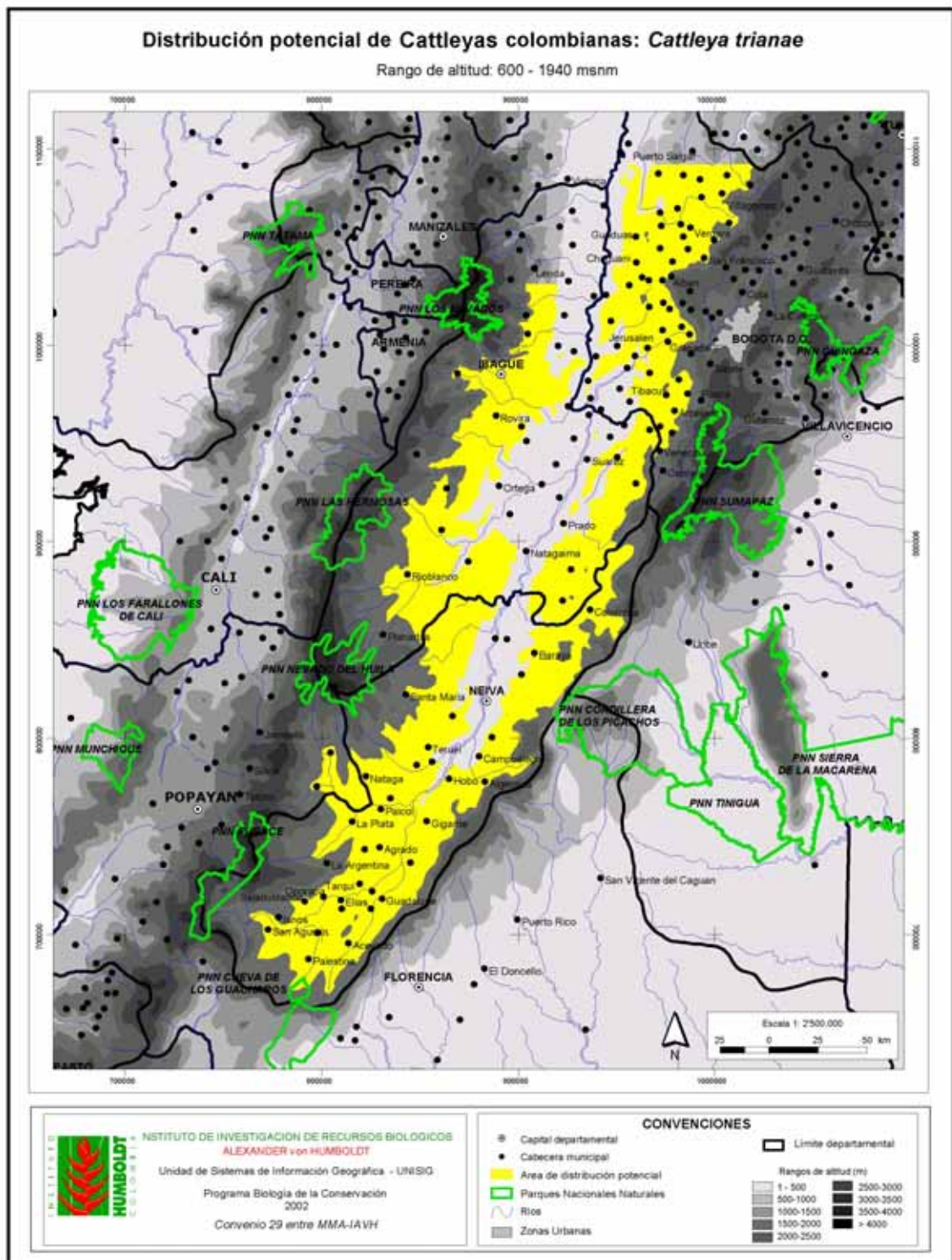
1. It would provide incentives for nurserymen and owners of private collections to seek biological and ecological information on natural populations, and to find ways to promote conservation of the species through reintroduction quotas.
2. It would also entice nurserymen to collaborate to conservation programmes through the establishment of quotas of specimens earmarked for reintroduction.

8. References

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Potential distribution of *Cattleya trianaei*.
Source: Constantino & Calderón, 2002.



Natural ecosystems remaining in the distribution area of *Cattleya trianaei*.
Source: Constantino & Calderón, 2002.

