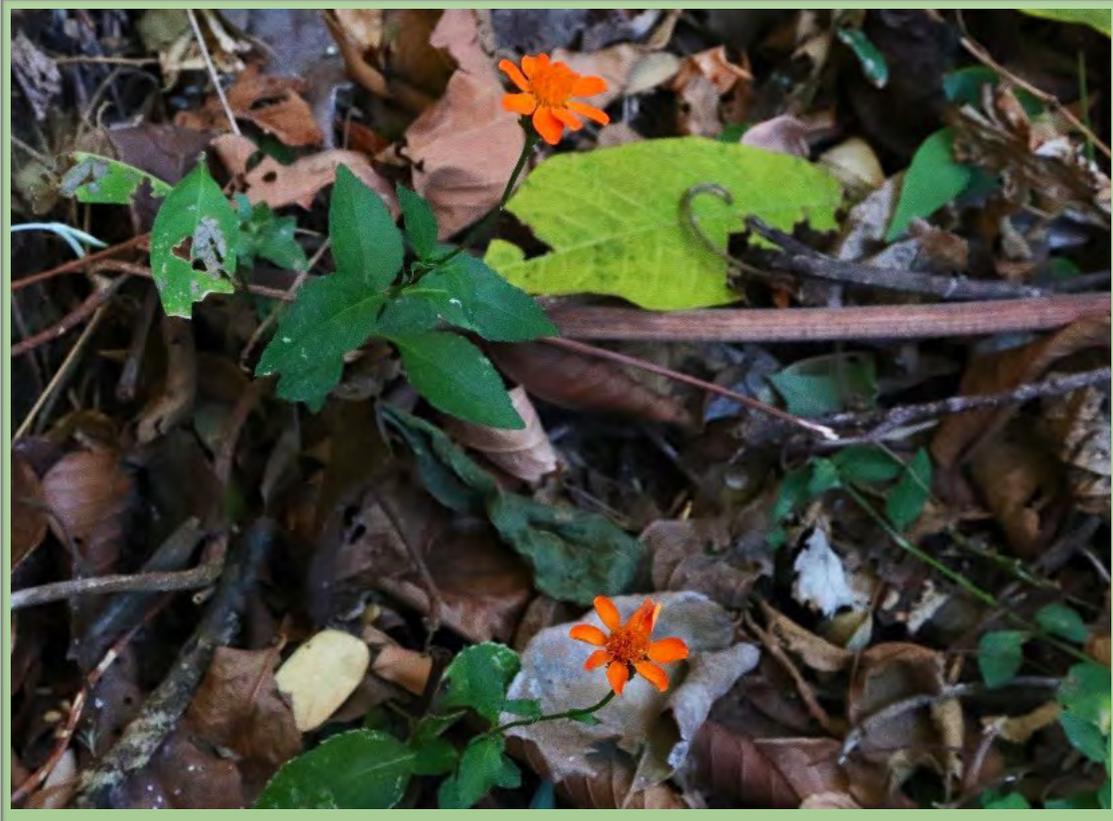


A Selection of Native Plants with Ornamental Potential for Use in Urban and Rural Habitats: An *Ex situ* Conservation Assessment



Parque Zoológico y Jardín Botánico Nacional Simón Bolívar
San José, Costa Rica
14-15 February, 2019

FINAL REPORT

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Cover Picture: *Pseudogynoxys cummingii*. Fernando Cabezas.

Thanks to Lizbeth Ovares, Paula Álvarez and Cristina Formoso from Fundación Pro Zoológicos for their effort in taking notes during the Workshop and thus getting a more complete Final Report.

A contribution between Fundación Pro Zoológicos and the IUCN SSC Conservation Planning Specialists Group (CPSG Mesoamerica).

CPSG, SSC and IUCN promote workshops and other forums for the analysis and consideration of conservation-related problems and consider that the reports of these meetings are very useful when they are widely distributed.

The opinions and recommendations expressed in this report reflect the issues discussed and the ideas expressed by workshop participants and do not necessarily reflect the opinion or position of CPSG, SSC or IUCN and its members.

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**Section I
Executive summary**

Executive summary

Fundación Pro Zoológicos together with Conservation Planning Specialist Group (IUCN/SSC-CPSG Mesoamerica) have worked on the development of conservation planning workshops on plant species such as orchids and medicinal plants, as well as tree species for the rehabilitation in geographical areas close to Simón Bolívar National Zoological Park and Botanical Garden and Santa Ana Conservation Center. This as part of the commitment to conservation and as active members of CPSG, Botanic Garden Conservation International (BGCI) and the Botanical Gardens Network of Costa Rica.

There is a wide variety of native and exotic plants that are used in our gardens, parks, and other green areas, which provide a component of scenic beauty and attract pollinators in these urban and rural habitats. However, there is a growing interest in using more native species, which provide functions such as the use of food resources (nectar, pollen, fruits ...) for fauna, or increase the ecosystem complexity and biodiversity within the places where they are planted.

This workshop was held at the Simón Bolívar National Zoological Park and Botanical Garden on February 14-15, 2019 with the participation of 45 people representing 25 organizations and two independents. The objective was to collect and assess information on a selection of native plants that have ornamental characteristics and that can also meet remarkable functions in the ecosystem and for human use, to serve as a guide for researchers, nurseries, landscapers and the general public when choosing between different plant options, that could be brought to a nursery and used in urban and rural areas, which could also have a role in conservation in areas with human intervention.

The first activity was a presentation by Willow Zuchowski on: “La belleza de las plantas nativas ornamentales de Costa Rica y el peligro de algunas invasoras” Subsequently, in the two days of the workshop, a selection of 105 species from a list of 232 supplied before the workshop by several experts, was assessed, trying to prioritize species that are not yet so common in commercial nurseries. The analysis consisted in asking participants about seven issues related to: 1. Identification of the suggested species, 2. Description of the species, 3. Potential ecological functions associated, 4. Services potentially associated with humans, 5. Functions in gardens, urban parks or similar, 6. Information on *ex situ* management, 7. *Ex situ* conservation benefits for the species to be brought to a nursery. In this analysis, different elements of the Integrated Collection Assessment and Planning (ICAP) were adapted. This process uses in situ and ex situ elements to apply the decision process of the IUCN Ex situ Management Guidelines for the Conservation of Species, although it is directed towards zoos and aquariums, The ICAP process is designed to be flexible and applicable to large or small groups of taxa, and the resulting analyzes and recommendations are more general or detailed as appropriate.

The 105 species (11 endemic counting those that are in both Costa Rica and Panama) are from 44 different families. A large part of the species is recommended for its use in gardens and parks (58 species). An important group (23) has value in ecological restoration, since they play a valuable role in its ecosystem as providers of food or shelter. Many of the species attract animals or insects, mainly bees (58), birds associated with fruits or seeds (42), hummingbirds (37) and butterflies (30). Another group of species (20), although also attracts fauna, was not considered to be in the category of restoration. Also, many species may have

a non-fauna-related function, such as serving as barriers, preventing erosion, improving soil quality among others (49); or provide some service to the human being (41). There are several species that need efforts to be able to bring them to the nursery and to be able to use them in urban environments without threatening their wild populations (33) and even that these be directed at wild populations (11), creation of seed / germplasm banks (8) and reintroduction (10) of rare species to the wildlife. General information if the plant is associated to fauna species and endemism whether it is found only in Costa Rica or also in Panama, is in Table 1 on the Annexes section. The information contained in this report is expected to help the improvement of urban and rural ecosystems preferring native plants over exotic plants, to reduce the collection of plants in the field and to be a source of material for possible reintroductions, which may be necessary in the future.

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Section II

Participants' answers to workshop questions

A Selection of Native Plants of Costa Rica with Ornamental Potential

**Parque Zoológico y Jardín Botánico Nacional Simón Bolívar
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Participants' answers to workshop questions

Question 1. What is your personal goal for this workshop? What do you want to achieve with this workshop?

-Porque trabajo muy de la mano con arquitectos en la recomendación de especies vegetales para foresta urbana.

-Por lo menos una lista de plantas nativas ornamentales de amplia distribución, características que podemos compartir con viveros, instituciones, etc. Listas por región.

-Conocer más sobre las especies de plantas nativas como opción para la ciudad.

-Tratar de conocer mucho sobre las plantas nativas y compartir conocimientos.

-Conocer especies nativas para su incorporación y reproducción en espacios públicos.

-Aprendizaje continuo.

-Soy estudiante de la Maestría en paisajismo y Diseño de sitio, deseo conocer y discutir sobre plantas con potencial para los diseños, sus ventajas.

-Conocer los planteamientos técnicos-legales para la utilización de plantas nativas con potencial ornamental.

-Conocer más opciones de plantas nativas para sembrar en jardines. Saber quiénes propagan.

-Actualizarme sobre plantas nativas. Conocer el trabajo de FUNDAZOO.

-Mi objetivo es aprender sobre plantas nativas que se puedan tener como ornamentales. Deseo que se logre una buena transmisión del conocimiento de estas especies por parte de los expertos.

-Aprender y compartir mi conocimiento para lograr mayor uso de plantas nativas.

- Poder mejorar mi conocimiento sobre plantas.
- Reconocer especies (especiales) para incluir en el diseño nuevas.
- Amplitud en el conocimiento de las especies nativas.
- Aprender sobre plantas nativas con potencial ornamental.
- Conocer diversos actores involucrados en la reproducción y manejo de la flora nativa costarricense.
- Ayudar a crear conciencia y respeto por las plantas nativas e incrementar sus poblaciones. Fomentar su reproducción de acuerdo con su distribución natural.
- Volver a ver a Gerardo. Difundir el concepto del uso de plantas nativas.
- Aumentar los conocimientos acerca de nuestras nativas para fomentar su uso.
- Lograr información certera de diferentes plantas y su estado actual.
- Conocer más sobre las distintas especies en cuanto a la taxonomía y cultivo.
- Aprender de las plantas nativas para uso ornamental en jardines. Administro un Polideportivo con áreas verdes.
- Aprender, compartir nuevas experiencias.
- Conocer acerca de las plantas nativas con potencial ornamental y la parte lega de uso de la biodiversidad.
- Conocer sobre plantas nativas y su uso ornamental.
- Lograr una base de datos y un proceso que permita desarrollar y fortalecer el uso de plantas nativas en programas de paisajismo, jardinería y conservación.
- Adquirir herramientas teórica-prácticas que implementar a nivel profesional.
- Ampliar aprendizaje de especies y su conservación.
- Conocer la percepción de los expertos botánicos y los interesados en el uso de especies nativas a nivel nacional.
- Compartir y recibir información sobre plantas nativas con potencial ornamental y contribuir a la concientización de su importancia.
- Aprender para poder ayudar.
- Crecimiento personal. Contactos. Apertura con instituciones.
- Profundizar en el uso de plantas nativas en diseños paisajistas.

- Aprender sobre cuales plantas nos sirven para desarrollar los proyectos y jardines en donde laboramos. Conocer más sobre las plantas de Costa Rica.
- Poder aplicar conocimiento en el trabajo y vida personal.
- Aprendizaje general y red de contactos.
- Tener conocimiento de las plantas nativas con potencial ornamental que se puedan incluir dentro de los recintos, como parte de la ambientación de estos.
- Deseo que con este taller se logre generar información importante, para incluir más plantas nativas y disminuir o eliminar las plantas exóticas en diversos lugares, tanto en FUNDAZOO como fuera de este.
- Lograr aportar tanto como entender la flora nativa.

Question 2: What do you want to contribute to this workshop?

- Desde el conocimiento que he generado durante estos años.
- Con ideas acerca de la utilización de las plantas nativas con potencial ornamental.
- Darme a conocer como proveedor de especies nativas de Costa Rica a nivel nacional.
- El compartir experiencias.
- Experiencia-recomendaciones. A partir de ideas.
- En la difusión del uso de plantas nativas.
- Conocimientos.
- Con la información que está a mi disposición.
- Brindar ideas del uso y reproducción de especies.
- Con conocimientos de clasificación de ecosistemas.
- Con mi experiencia y visión crítica.
- Con todo el esfuerzo y conocimiento para la consolidación de la base de datos.
- Participación, proponer a apoyar lineamientos en la dirección del uso de plantas nativas.
- Conocimiento.
- Con mis humildes conocimientos.
- Podría contribuir con mis pocos conocimientos en plantas, así como el cultivo o prácticas de cultivo.
- Nombres de plantas, organización de la información.
- Mi contribución será más bien posterior al taller por medio del uso de nativas y compartir el conocimiento que adquiriera.
- Experiencia con plantas nativas.
- Establecer poblaciones creando un banco genético sólido, sostenible en el tiempo.
- Con conocimiento técnico, científico y empírico sobre la flora de Costa Rica.
- Mi conocimiento sobre ecología.
- Con mi experiencia a través de los años y el contacto con especies nativas.
- Diseño del paisaje.

- Con las iniciativas de la Municipalidad.
- Con conocimiento y apoyo.
- Aportar todo lo que se pueda para que del producto del taller se utilice en Educación Ambiental.
- Aporte de experiencia.
- Experiencia, material, propagación.
- Construir una ruta de trabajo en los resultados con la parte técnica y legal que establece la LVS y su reglamento.
- Quiero contribuir con mi experiencia en municipalidades.
- Con la experiencia que hemos tenido en los procesos de rehabilitación ecológica.
- Recomendaciones de uso.
- Con todo lo que pueda a la comunidad y empresa.
- Con lo poquito que conozco sobre la ecología urbana y la realidad con que convivimos, en el tema de la trama verde.
- Conocimiento especialmente de la región de Monteverde y experiencia Pro-Nativas.
- Aportar en el uso exitoso y sustitución de especies exóticas en jardines en zonas residenciales.

Question 3: What would be the ideal status of native plant populations with *in situ* and *ex situ* ornamental potential, as well as their use in gardening and landscaping over the next 25 years?

-El estado ideal sería sin ningún riesgo o vulnerabilidad *ex situ*. Que la mayoría de los viveros debería de iniciar con la propagación de estas para así asegurar su estado sin ninguna amenaza.

-Que haya buenos ejemplos en los jardines (cómo se puede usar). Que haya más viveros produciendo plantas nativas. Menos plantas invasoras.

-El que en los viveros ornamentales y forestales hubiese disponibilidad y variedad de estas plantas nativas. Además, que, como país en la parte ambiental, de rehabilitación y de ornamentación. Se le diera prioridad a lo nativo que tenemos.

-Bueno, eso depende del uso, mantenimiento y provecho que le demos a nuestras plantas lógicamente.

-Las poblaciones de plantas nativas deberían estar categorizadas según su zona de origen y adaptación, además de estar presente en viveros municipales y comerciales. Adicionalmente estar incorporadas en programas educativos multidisciplinarios en los diferentes ciclos.

-El estado ideal sería por lo menos tener un 80% de especies nativas.

-Deberán de predominar los jardines costarricenses.

-Identificar bajo criterio técnico las posibles especies, poblaciones, etc. Conocer las líneas base de estas especies nativas con potencial ornamental. Generación de los estudios de línea de la priorización de estas especies.

-Que se sigan propagando de manera natural. Que se desarrollen de manera óptima y encuentren todavía su hábitat idóneo, incluyendo polinizadores.

-Taxonomía y nomenclatura clara. Listados fenológicos actualizados. Conocimiento de su ciclo.

-Que sean poblaciones estables, tanto *in situ* como *ex situ*, para poder ser usadas en sitios urbanos.

-Un aumento significativo de ellas para lograr equilibrar su baja cantidad y para mejorar el ecosistema, así como era antes.

-Que se extienda y normalice su uso en todo espacio posible.

-Reconocimiento y visualización de parte de la población profesional y la comunidad.

- Lograr que tanto profesionales como productores y compradores comprendan la importancia del uso de las plantas.
- Un uso sostenible ornamental y mayor conocimiento de la población.
- El potencial de plantas nativas para uso ornamental es enorme. Espero que exista paulatinamente un recambio de las especies exóticas, que lamentablemente dominan en las ciudades del país, por nativas.
- Incrementar su población de manera que su aprovechamiento no disminuya su potencial.
- Que todos los viveros tuvieran un espacio para las nativas, y gente que las aprecie.
- Pienso que realmente *in situ*, pero bajo las condiciones apropiadas se puede realizar *ex situ*.
- En todo caso considero preferible las nativas *ex situ* que exóticas.
- Conocerlas mejor para poder usarlas de la forma apropiada.
- El estado de conservación sea bueno siempre y cuando se establezcan como especies importantes para la conservación y se siga promoviendo su uso como plantas ornamentales y de servicio.
- Ojalá que las plantas nativas se usen cada vez más en los jardines ya que son aulas abiertas de enseñanza y aprendizaje.
- Debido al cambio climático muchas especies se van a ver afectadas y entrarán en un estado crítico.
- Los Jardines Botánicos son instituciones que representan sitios para la conservación y el uso sostenible de los recursos naturales al servicio del ser humano.
- Plantas nativas usándose en jardines sustituyendo la mayoría de las plantas exóticas posibles.
- La tendencia es rehabilitación de ecosistemas considerando la vegetación nativa en aumento por lo que el uso y reconocimiento de este tipo de vegetación también, por lo anterior será más común su utilización en diferentes contextos.
- Poblaciones estables, mapeadas con su base genética registrada.
- Programa horticultural de nativas. Desarrollar un programa que permita investigación en la reproducción y el uso de las plantas nativas.
- Idealmente las poblaciones deberían estar protegidas y estables, y el uso en jardinería debería ser mucho más generalizado que ahora, al punto de que las plantas nativas sean la mayoría de las plantas utilizadas en jardinería y paisajismo.
- El estado ideal sería que puedan crecer y reproducirse.
- Sería que se usaran en más del 80% de los trabajos.

-Uso extendido.

-Mantenerlas en su estado de origen, conservarlas y tener un control adecuado de su uso en la jardinería y paisajismo.

-Lo ideal sería que tengan un buen estado y que cumplan con los métodos de reproducción para no alterar la extracción de estas plantas de los bosques.

-Que en todos los jardines y áreas verdes en general se utilicen. Aumentar el conocimiento a nivel nacional de estas plantas.

-Que la mayoría de las plantas en los viveros, las que se utilicen en paisajismo y jardinería, fueran en su mayoría nativas, para conservar la flora costarricense, disminuyendo o erradicando las plantas exóticas.

-Es importante entender las características y usos para así poder de forma más armónica entre la relación del ser humano con la naturaleza.

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Section III

Agenda

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Agenda

Thursday 14

- 8:00 am Participant registration.
- 8:30 am Welcome by Yolanda Matamoros. Fundación Pro Zoológicos (Fundazoo)/Conservation Planning Specialists Group (CPSG-Mesoamerica IUCN SSC)
- 8:40 am Introduction of participants.
- 8:50 am Break.
- 9:00 am Presentation: La belleza de las plantas nativas ornamentales de Costa Rica y el peligro de algunas invasoras, Willow Zuchowski, ProNativas.
- 9:20 am Methodology explanation. Yolanda Matamoros. CPSG Mesoamérica/Fundazoo
- 9:30 am Discussion of species in plenary.
- 12:30 pm Lunch.
- 1:00 pm Discussion of species in plenary.
- 5:00 pm Conclusions of the day.

Friday 15

- 8:00 am Discussion of species in plenary.
- 9:00 am Break.
- 9:15 am Discussion of species in plenary.
- 12:30 pm Lunch.
- 1:00 pm Discussion of species in plenary.
- 5:00 pm General conclusions of the workshop.

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**Section IV
Methodology**

Methodology

In this analysis, different elements of the Integrated Collection Assessment and Planning (ICAP) were adapted and suggestions from Kathy Traylor-Holzer of CPSG, one of the creators of ICAP, who helped with the adaptation of different elements for the plant species in this analysis. The methodology consists of seven steps to collect information on natural history and nursery management, for each of the species to be analyzed and to be able to give a guide for its use as an ornamental species in different urban and rural situations. These steps range from the identification of the natural history of the species to the analysis of the viability and the risks that must be kept in mind when recommending or not its reproduction in nurseries and its use in gardens or parks. Prior to the workshop, the organizers elaborated an initial list of species that was sent to different specialists so they could enter information on these and suggest new species to assess during the workshop. Based on the information provided by the specialists, 105 species were selected from a first list of 232. The data included for each plant in their respective taxon sheet was obtained from the information provided by the specialists prior to the workshop, as well as the knowledge of the participants during the workshop and a bibliographic review by the editors. It is subject to additions, improvements, and corrections as the knowledge of each species increases from both *in situ* and *ex situ* studies. An effort was made to include all possible information for each species, but in some of them it was not possible to find it or it did not apply, in these cases it was simply not mentioned in the results.

1. Identification of the suggested species

- 1.1 Scientific name
- 1.2 Botanical family
- 1.3 Common name
- 1.4 If it is endemic
- 1.5 Photo

2. Description of the species

- 2.1 General distribution
- 2.2 Locality or reference site
- 2.3 Habit
 - Aquatic plant
 - Acaulescent herb (without visible stem e.g. in rosette)
 - Herb
 - Creeping herb
 - Tussock herb
 - Climbing herb
 - Scandent herb or shrub
 - Vine or woody climbing plant
 - Suffrutex
 - Shrub
 - Other
- 2.4 Structure of interest
- 2.5 Flowering season or months

2.6 Fruiting season or months

3. Associated potential ecological functions

3.1 Broad function

- Gardens, urban parks or similar
- Ecological restoration
- Interiors

3.2 Fauna associated with fruits or seeds (e.g. birds, mammals, reptiles)

3.3 Fauna associated with floral syndrome (e.g. honeybees, meliponid bees, butterflies, hummingbirds)

3.4 Is it a butterfly larvae host (if species genus is known please indicate)?

3.5 Is it a pioneer species?

4. Services potentially associated with the human being

- Fruits for the human being
- It has medicinal uses
- It has culinary uses
- It has industrial uses
- Works as a repellent or insecticide
- Others

5. Functions in gardens, urban parks or similar

- Live fence
- Hedge
- Visual barrier
- Improves soil condition
- Securing of slopes
- Securing and protection of riverbanks
- Prevents soil erosion

6. *Ex situ* management information

6.1 Difficulty to put in a nursery

- Low
- High
- It is not known

6.2 Place/Facility where the species is found

6.3 Known reproduction type

- Seeds
- Cuttings
- Rhizomes
- Tubercles
- Bulbs
- Stolons
- Corms

- Grafts
 - Layer
 - Budding
 - Tissue culture
 - Other
- 6.4 Pre-germinative treatment
- 6.5 Light conditions
- Full sunlight
 - Partial shade
 - Shade
 - Darkness
- 6.6 Type of substrate required
- 6.7 Garden pruning tolerance
- Supported
 - Required
 - Necessary
 - Indispensable
 - Does not apply
- 6.8 Need for moisture in soil (Irrigation frequency)
- High (more than 5 days a week)
 - Medium (3 days a week)
 - Low (1 days a week)
 - Does not require
- 6.8.1 Known pests or conditions (e.g. herbivory, seed predation...)
- 6.8.2 Level of aggressiveness in the field (Invasive potential)
- High
 - Medium
 - Low
 - Does not apply
- 6.8.3 Risks of taking it to a nursery and places like gardens and parks: High / Medium / Low (degree of aggressiveness in the field, level of maintenance in the field, risks to human health and safety, introduction of species outside their historical distribution, legally how easy is to extract founding individuals from the field ...)

7. *Ex situ* conservation benefits for the species

- Secure the population
- Germplasm/seed bank
- Plants for reintroduction
- Population research to determine conservation needs
- How to successfully bring the species to a nursery and probably reducing the impact from wildlife harvesting
- Does not apply

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**Section V
Taxon sheets**



***Aphelandra golfodulcensis* (Acanthaceae)**

Species description

Common name: Pavón rojo.

General distribution: This species is found mainly in the wet lowlands of the Golfo Dulce region in the province of Puntarenas. It is also found in low areas and medium elevations in Alajuela and Guanacaste, where local conditions provide similar wet habitats.

Habit: Shrub.

Structure of interest: Red inflorescence.

Flowering season or months: December-March, July.

Fruiting season or months: March, June.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with pollination syndrome: Hummingbirds and butterflies.

Butterfly larvae host: Yes.

It is probably a pioneer species since it is a forest edge species.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: Guardián del Bosque.

Known reproduction type: Cuttings.

Light conditions: Shade.

Garden pruning tolerance: High.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



***Aphelandra leonardii* (Acanthaceae)**

Species description

Common name: Pavoncillo.

General distribution: It is found in mature lowland tropical forest of southwest part of the country, mainly in the lowlands of the Golfo Dulce. It has also been collected at higher elevations in San Vito.

Habit: Shrub.

Structure of interest: Red inflorescence.

Flowering season or months: January, November-December.

Fruiting season or months: February.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with pollination syndrome: Hummingbirds and butterflies.

Butterfly larvae host: Yes.

It is probably a pioneer species, since it is a forest edge species.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: Jardín Botánico Wilson, Centro de Conservación Santa Ana, it has been brought to the nursery by FUNDAZOO.

Known reproduction type: Cuttings.

Light conditions: Shade.

Type of substrate required: Organic and drained soil.

Garden pruning tolerance: High.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



***Aphelandra scabra* (Acanthaceae)**

Species description

Common name: Pavoncillo.

General distribution: Low and medium elevations. Mainly of seasonal dry forests of the Pacific, but also in wet forest and very wet forests (0-1,750 m asl). It is found in areas of Guanacaste, Pacífico Central, Cordillera Volcánica Central, Central Valley and Huetar Norte.

Habit: Shrub.

Structure of interest: Red inflorescence.

Flowering season or months: It can bloom throughout the year.

Fruiting season or months: It can produce fruits all year long.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with pollination syndrome: Hummingbirds and butterflies.

Butterfly larvae host: Yes.

It is probably a pioneer species, because it is found in drier places than other species of the genus.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: P.N. Caño Negro, R.N.A Cabo Blanco, Parque Zoológico y Jardín Botánico Nacional Simón Bolívar, Centro de Conservación Santa Ana, it has been brought to the nursery by FUNDAZOO.

Known reproduction type: Cuttings.

Light conditions: Partial shade.

Type of substrate required: Organic and drained soil.

Garden pruning tolerance: High.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



***Barleria oenotheroides* (Acanthaceae)**

Species description

Common name: Camarón amarillo.

General distribution: In Costa Rica, the species is almost entirely restricted to dry tropical forest, from northern Guanacaste to the province of Puntarenas (0-1,300 m asl). It has also been observed on the forested banks of the Torres River at the height of the Simón Bolívar National Zoo and Botanical Garden.

Habit: Herb.

Structure of interest: Yellow inflorescence.

Flowering season or months: Dry season.

Fruiting season or months: Dry season.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with pollination syndrome: Butterflies, hummingbirds (genus *Amazilia*) and probably bees.

It is probably a pioneer species, since it is a forest edge species.

Functions in gardens, urban parks or similar

It works as a hedge, but it does not necessarily perform well because it does not close completely.

It is probable that functions in securing of slopes, riverbanks, or erosion.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: Museo Nacional, E.B. La Selva, P.N. Palo Verde, Parque Zoológico y Jardín Botánico Nacional Simón Bolívar, Centro de Conservación Santa Ana, it has been brought to the nursery by FUNDAZOO.

Known reproduction type: Cuttings, seeds, stolons.

Light conditions: Full sunlight/Partial shade.

Garden pruning tolerance: Does not require. Except if there is a goal in mind.

Need for moisture in soil: Low.

Level of aggressiveness in the field (Invasive potential): High.

Risks of taking it to a nursery and places like gardens and parks: Keep in mind that it needs management. It escapes in the same nursery. Still, it is recommended to replace “pingo de oro” (*Duranta erecta*).



***Justicia deaurata* (Acanthaceae)**

Endemic

Species description

Common name: Camarón amarillo.

General distribution: It is found in very wet tropical forest of Golfo Dulce (50-500 m asl).

Habit: Shrub.

Structure of interest: Yellow flower.

Flowering season or months: November and December.

Fruiting season or months: Dry season.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with pollination syndrome: Hummingbirds.

Services potentially associated with the human being

It has emollient properties.

***Ex situ* management information**

Difficulty to put in a nursery: Medium.

Place/Facility where the species is found: R.F. Golfo Dulce.

Known reproduction type: Seeds and cuttings.

Light conditions: Shade.

Type of substrate required: Clay soil.

Garden pruning tolerance: Yes.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

Secure the population: Yes.

Germplasm/seed bank: Yes.

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



***Justicia oerstedii* (Acanthaceae)**

Species description

Common name: Justicia salmón.

General distribution: This species can be abundant when it is found in rain forest and cloud forest, in humid and shady places, along streams and trails (500 to 1,800 m asl). It is found mainly in the Pacific slope of all Cordilleras from Panama to Cordillera de Guanacaste.

Habit: Shrub.

Structure of interest: Salmon-colored inflorescence.

Flowering season or months: December-April.

Fruiting season or months: March.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with pollination syndrome: Hummingbirds.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: Monteverde, Cerros de Turrubares, Cerros de Escazú.

Known reproduction type: Seeds, cuttings, and individual division

Light conditions: Partial shade to shade.

Garden pruning tolerance: Yes.

Need for moisture in soil: Medium.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Justicia urophylla* (Acanthaceae)**

Species description

General distribution: It is found in tropical forest from sea level to approximately 1,100 m asl. Most of the records of different collections are from San Ramón de Alajuela and near areas.

Habit: Shrub.

Structure of interest: White flower.

Flowering season or months: February-March.

Fruiting season or months: Dry season.

Associated potential ecological functions

Broad function: Gardens and parks.

Functions in gardens, urban parks or similar

It works as a hedge and barriers.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: P.N. Carara, R.I. Boruca.

Known reproduction type: Seeds and cuttings.

Light conditions: Full to partial light.

Garden pruning tolerance: It does not require but it tolerates.

Need for moisture in soil: Medium.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



Odontonema tubaeforme
(Acanthaceae)

Species description

Common name: Coral, diente de perro, colmillo rojo, camarón rojo

General distribution: Wet forest, very wet forest, and rain forest (0-1,700 m asl). It is found on both sides of the Cordillera Volcánica Central, Talamanca and Tilarán; in the Caribbean slope it is found in Llanuras de

San Carlos and Tortuguero, Baja Talamanca; while on the Pacific slope in Cordillera de Guanacaste, Central Valley, Pacífico Central, Peninsulas de Osa and Nicoya.

Habit: Shrub.

Structure of interest: Red flowers.

Flowering season or months: January-June, August-September, November-December.

Fruiting season or months: Most of the year.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with pollination syndrome: Hummingbirds, butterflies.

Butterfly larvae host: Yes.

It is probably a pioneer species.

Functions in gardens, urban parks or similar

It works as a live fence and hedge.

***Ex situ* management information**

Difficulty to put in a nursery: High, due to low seed availability. Although it can reproduce vegetative, the decrease in genetic diversity could be a problem.

Place/Facility where the species is found: Vivero El Ron ron, Vivero Central la Garita, E.B. La Selva, Parque Zoológico y Jardín Botánico Nacional Simón Bolívar, Centro de

Conservación Santa Ana, it has been brought to the nursery by FUNDAZOO.

Known reproduction type: Cuttings.

Light conditions: Full sunlight a Partial shade.

Type of substrate required: Volcanic soil associated with water courses.

Garden pruning tolerance: It tolerates.

Need for moisture in soil: Medium.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

Increase the knowledge of how to bring it to a nursery, especially on issues related to seed germination, and be able to recommend it for use in urban environments.



Stenostephanus leiorachis **(Acanthaceae)**

Species description

Common name: Pavón de montaña.

General distribution: Wide distribution in Costa Rica, within its elevation range (0-1,800 m asl) but with few records in dry or seasonally dry forests.

Habit: Shrub.

Structure of interest: Red inflorescence.

Flowering season or months: January-April, July, December.

Fruiting season or months: Most of the year.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with pollination syndrome: Hummingbirds.

***Ex situ* management information**

Difficulty to put in a nursery: Not known.

Place/Facility where the species is found: E.B. La Selva, R.F. Golfo Dulce, Z.P. Las Tablas, P.N. Tapantí.

Known reproduction type: Seeds, cuttings.

Light conditions: Partial shade.

Garden pruning tolerance: It is likely that tolerates.

Need for moisture in soil: Medium.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



***Ruellia geminiflora* (Acanthaceae)**

Species description

General distribution: A rare species found in the lowlands of the Pacific slope in the provinces of Alajuela and Guanacaste, often in secondary succession after burning (150-500 m asl).

Habit: Herb with woody stem bases.

Structure of interest: Purple inflorescence.

Flowering season or months: January-March, May, and June.

Fruiting season or months: Different months of dry and rainy season.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with pollination syndrome: Bees.

It is probably a pioneer species.

Functions in gardens, urban parks or similar

It covers the ground, but it is not its strength.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: Cerro Rayos, región de Turruabares, P.N. Rincón de la Vieja.

Known reproduction type: Cuttings.

Light conditions: Full light.

Garden pruning tolerance: No.

Need for moisture in soil: Medium.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Ruellia jussieuoides* (Acanthaceae)**

Species description

General distribution: Central Valley species (500-2,700 m asl). It has been collected mainly in clearings and along trails of tropical forests around the provinces of San José and Cartago, and in the vicinity of San Isidro in the province of Puntarenas.

Habit: Herb.

Structure of interest: Lilac or white flower.

Flowering season or months: Generally, in dry season (November-April).

Fruiting season or months: Dry season.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with pollination syndrome: Hummingbirds, butterflies.

Garden pruning tolerance: Yes.

Need for moisture in soil: Medium.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found:

Species that is easily found in the Central Valley, R.I. Ujarrás.

Known reproduction type: Seeds, cuttings, it reproduces itself.

Light conditions: Partial shade.



Spathacanthus hoffmannii
(Acanthaceae)
Endemic

Species description

General distribution: Species of open areas and along trails in the tropical forests of the Central Valley and slopes of the Cordillera Volcánica Central (400-2,300 m asl), extending to the Pacific to the

Cordillera de Tilarán and lowlands such as Carara and San Isidro.

Habit: Shrub.

Structure of interest: Large white inflorescence.

Flowering season or months: November-April.

Fruiting season or months: January, March, May, December.

Associated potential ecological functions

Broad function: Shady gardens and parks, close to body of water.

Fauna associated with pollination syndrome: Bees.

Functions in gardens, urban parks or similar

It helps in the conservation of riverbanks.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: Poás de Alajuela, Monteverde, Carara.

Known reproduction type: Cuttings.

Light conditions: Full light and shade.

Garden pruning tolerance: Yes.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Crinum erubescens* (Amaryllidaceae)**

Species description

Common name: Lirio.

General distribution: Swamps, estuaries, and streams of dry forest, wet forest, and very wet forest (0-300 (-1,300+) m asl). On the Caribbean side it is found in the Cordillera Volcánica Central and in Llanuras de San Carlos and Llanuras de Tortuguero, as well as in Baja Talamanca. On the Pacific side, they are on the Guanacaste plains, Península de Nicoya, Central Valley and from Grande de Tárcoles River to the south.

Habit: Herb.

Structure of interest: White inflorescence.

Flowering season or months: January-March, May-December.

Fruiting season or months: Most of the year.

Associated potential ecological functions

Broad function: Building interiors.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: Campus of Universidad de Costa Rica (UCR), Montes de Oca, it is a widely cultivated species.

Known reproduction type: Bulb division.

Light conditions: Shade.

Garden pruning tolerance: It does not require.

Need for moisture in soil: Medium.

Level of aggressiveness in the field (Invasive potential): Low to medium.

Risks of taking it to a nursery and places like gardens and parks: Low to medium.

***Ex situ* conservation benefits for the species**

It is recommended to research the possible presence of alkaloids and their use.



Phaedranassa carmiolii
(Amaryllidaceae)
Endemic

Species description

Common name: Liriecillo.
 General distribution: Mountains and slopes in Santa María de Dota, San Marcos de Tarrazú, and San Pablo de León Cortés (1,400–1,800 m asl). It grows on the rocky bank of the Pirris River, and along roadsides and often

around agricultural plots, such as coffee plantations. It can be considered an Endangered species according to the IUCN criterion B2ab (i, ii, iii, iv)].

Habit: Bulb with 10 cm long leaf.

Structure of interest: Pink flowers with green.

Flowering season or months: December-March, it is an annual flower.

Fruiting season or months: Dry season.

Associated potential ecological functions

Broad function: Gardens and parks (in pots).

Fauna associated with pollination syndrome: Hummingbirds and bees.

It is probably a pioneer species, since it is a ruderal species, that is, it grows on roadsides, abandoned cultivated fields or urban areas.

Services potentially associated with the human being

Aromatic bulbs.

***Ex situ* management information**

Difficulty to put in a nursery: Low, it seems easy to reproduce.

Place/Facility where the species is found: San Marcos de Tarrazú, San Pablo de León Cortés.

Known reproduction type: Bulb division.

Light conditions: Full sunlight.

Garden pruning tolerance: It does not require.

Need for moisture in soil: Low.

Pests or conditions: Slugs and orthoptera.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

Secure the population: Yes.

Germplasm/seed bank: Yes.

Plants for reintroduction: Yes.

Research on genetics in nurseries is recommended.



***Mandevilla hirsuta*
(Apocynaceae)**

Species description

General distribution: Species with wide distribution in the country within its elevation range (0-1,800 m asl).

Habit: Vine.

Structure of interest: Yellow and red flowers.

Flowering season or months: Practically all year.

Fruiting season or months: Practically all year.

Associated potential ecological functions

Broad function: Gardens, pergolas and parks.
Fauna associated with pollination syndrome: Butterflies.
Butterfly larvae host: Yes.
It is a pioneer species.

Services potentially associated with the human being

The human being consumes its flowers, but it is not recommended because it may have some degree of toxicity.

Functions in gardens, urban parks or similar

It works as a visual barrier associated with meshes, but does not cover the surface too tight.

***Ex situ* management information**

Difficulty to put in a nursery: It is not known.

Place/Facility where the species is found: Monteverde, P.N. La Cangreja, R.I. Boruca, Z.P. Las Tablas.

Known reproduction type: Seeds, parts of the stem.

Light conditions: Full sunlight.

Garden pruning tolerance: Yes.

Need for moisture in soil: Medium.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments, and possible management to improve its function as a visual barrier.



***Anthurium cubense* (Araceae)**

Species description

Common name: Tabacón, flor de piedra.

General distribution: Wet forests (0-700 m asl) in the northwest of the Caribbean slope and the Pacific slope. P.N. Carara, P.N. Manuel Antonio.

Habit: Epiphytic herb.

Structure of interest: Large attractive leaves and the spadix.

Flowering season or months: January-December.

Fruiting season or months: All year.

Associated potential ecological functions

Broad function: Ecological restoration.

Fauna associated with fruits or seeds: Birds.

Fauna associated with pollination syndrome: Bees, beetles.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found:

Species cultivated in different places.

Known reproduction type: Seeds.

Light conditions: Shade.

Type of substrate required: Organic and drained soil.

Garden pruning tolerance: It does not require.

Need for moisture in soil: High, although it is found in the wild in relatively dry regions.

Pests or conditions: Orthoptera, fungi.

Level of aggressiveness in the field (Invasive potential): None.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

Secure the population: Yes.

Plants for reintroduction: Yes.

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



***Anthurium hoffmannii* (Araceae)**

Species description

Common name: Anturio.

General distribution: Very wet forest and rain forest (0-1,750 (-2,000) m asl). Uncommon in the Caribbean slope, with populations in the eastern part of the Cordillera de Talamanca. In the Pacific slope it is more common, where it can be seen in humid places including the Central Valley.

Habit: Epiphytic or terrestrial herb.

Structure of interest: The whole plant.

Flowering season or months: All year.

Fruiting season or months: All year.

Associated potential ecological functions

Broad function: Ecological restoration.

Fauna associated with fruits or seeds: Birds.

Fauna associated with pollination syndrome: Bees.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found:

Species cultivated in different places.

Known reproduction type: Seeds.

Light conditions: It requires a lot of shade.

Type of substrate required: Organic and drained soil.

Garden pruning tolerance: It does not require.

Need for moisture in soil: High.

Pests or conditions: Orthoptera, fungi.

Level of aggressiveness in the field (Invasive potential): None.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

Secure the population: Yes.

Plants for reintroduction: Yes.

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



***Anthurium ochranthum* (Araceae)**

Species description

Common name: Aleta de raya.

General distribution: Wet forest and very wet forest, (0-1,000 (-1,200+ m asl)). It is found along the Caribbean slope, and in certain locations on the Pacific slope, including the Cordillera de Guanacaste and from Central Valley (Alajuela and near places) and P.N. Carara to the south.

Habit: Terrestrial herb.

Structure of interest: The whole plant, very nice yellow spadices.

Flowering season or months: January-December.

Fruiting season or months: All year.

Associated potential ecological functions

Broad function: Ecological restoration.

Fauna associated with fruits or seeds: Birds.

Fauna associated with pollination syndrome:

Bees associated with orchids.

Need for moisture in soil: High.

Pests or conditions: Orthoptera, fungi.

Level of aggressiveness in the field (Invasive potential): None.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found:

Species cultivated in different places.

Known reproduction type: Seeds.

Light conditions: Medium level of shade.

Type of substrate required: Organic and drained soil.

Garden pruning tolerance: It does not require.

***Ex situ* conservation benefits for the species**

Secure the population: Yes.

Plants for reintroduction: Yes.

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



***Anthurium ranchoanum* (Araceae)**

Species description

Common name: Tabacón.

General distribution: Rain forest, cloud forest and oak forest (1,000-2,800 m asl). It is found on both slopes, with populations in the Cordillera Volcánica Central, Cordillera de Talamanca (Caribbean), Cordillera de Tilarán and Montes del Aguacate (Pacific).

Habit: Epiphytic or terrestrial herb.

Structure of interest: The whole plant, purple to green spathe, purple spadix, coriaceous, wavy and showy leaves.

Flowering season or months: All year.

Fruiting season or months: All year.

Associated potential ecological functions

Broad function: Ecological restoration.

Fauna associated with fruits or seeds: Birds.

Fauna associated with pollination syndrome: Flies and bees.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found:

Species cultivated in different places.

Known reproduction type: Seeds.

Light conditions: Medium level of shade.

Type of substrate required: Organic and drained soil.

Garden pruning tolerance: It does not require.

Need for moisture in soil: High.

Pests or conditions: Orthoptera, fungi.

Level of aggressiveness in the field (Invasive potential): None.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

Secure the population: Yes.

Plants for reintroduction: Yes.

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



Anthurium watermaliense **(Araceae)**

Species description

Common name: Anturio negro.

General distribution: Rain forest, cloud forest and oak forest (1,000-2,800 m asl). It is found on both slopes, with populations in Cordillera Volcánica Central and Cordillera de Talamanca (Caribbean), Tilarán and Montes del Aguacate (Pacific). Species found only in Costa Rica and

western Panama.

Habit: Terrestrial or occasionally epiphytic herb.

Structure of interest: Dark purple or maroon spathe, occasionally green.

Flowering season or months: January-April, July-September, November.

Fruiting season or months: Most of the year.

Associated potential ecological functions

Broad function: Ecological restoration.

Fauna associated with fruits or seeds: Birds.

Fauna associated with pollination syndrome: Flies and bees.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found:

Species cultivated in different places.

Known reproduction type: Seeds.

Light conditions: Medium level of shade.

Type of substrate required: Organic and drained soil.

Garden pruning tolerance: It does not require.

Need for moisture in soil: High.

Pests or conditions: Orthoptera, fungi.

Level of aggressiveness in the field (Invasive potential): None.

Risks of taking it to a nursery and places like gardens and parks: None.

***Ex situ* conservation benefits for the species**

Secure the population: Yes.

Plants for reintroduction: Yes.

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



Philodendron auriculatum
(Araceae)
Endemic

Species description

Common name: Tabacón imperial.

General distribution: Species of very wet forest on the Pacific slope, from the central Pacific to the south.

Habit: Epiphytic vine.

Structure of interest: Bright green leaf blades, bright orange fruit.

Flowering season or months: January-March, September-November.

Fruiting season or months: January, rainy season.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with fruits or seeds: Birds.

Fauna associated with pollination syndrome: Beetles.

Functions in gardens, urban parks or similar

It works as a visual barrier.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: P.N. Carara, Golfo Dulce, P.N. La Cangreja.

Known reproduction type: Seeds, root pieces.

Light conditions: Partial shade.

Garden pruning tolerance: It does not require.

Need for moisture in soil: Medium.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Chamaedorea tepejilote* (Arecaceae)**

Species description

Common name: Pacaya.

General distribution: An understory species of wet forest, very wet forest, pluvial forest, and cloud forest (0-1,600 m asl). On the Caribbean slope and near the Continental Division, it has been found in Cordillera de Tilarán, Cordillera Volcánica Central and Cordillera de Talamanca, in addition to Llanuras de Tortuguero. It is also found on both sides of Cordillera de Guanacaste. On the Pacific slope, it is located on the south part of Península de Nicoya (R.N.A. Cabo Blanco; R.N.V.S. Curú) and from Cerro Turrubares and P.N. Carara to the south.

Habit: Palm.

Structure of interest: Contrasting green foliage with an infructescence of black fruits.

Flowering season or months: January-June, August, September, and December.

Fruiting season or months: Practically all year.



Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with fruits or seeds: Birds.

Fauna associated with pollination syndrome: Thrips (Thysanoptera).

Butterfly larvae host: It is probable.

It is probably a pioneer species, being on the banks of forests and understory with organic matter.

Services potentially associated with the human being

Fruit and Unopened male inflorescences are used as a cough suppressant.

***Ex situ* management information**

Difficulty to put in a nursery: Low, but it is a slow-growing species.

Place/Facility where the species is found: R.N.A. Cabo Blanco; R.N.V.S. Curú and P.N. Carara, Parque Zoológico and Jardín Botánico Nacional Simón Bolívar, it has been brought to the nursery by FUNDAZOO.

Known reproduction type: Seeds.

Light conditions: Partial shade.

Type of substrate required: No.

Garden pruning tolerance: It does not require.

Need for moisture in soil: Medium.

Level of aggressiveness in the field (Invasive potential): Medium.

Risks of taking it to a nursery and places like gardens and parks: Low.



Reinhardtia gracilis
(Arecaceae)

Species description

Common name: Palma ventanita.
 General distribution: Lowlands (0-850 m asl). On the Caribbean side it is found in Llanuras de Tortuguero and on medium elevations of all the main mountain ranges. On the Pacific side it is very rare, but it is observed in the northern part of the Cordillera de Talamanca (Tarrazú region).
 Habit: Dwarf palm.
 Structure of interest: Foliage and foliage shape. Leaves divided into 4 sections, presents grouping of leaves that resemble "small windows".
 Flowering season or months: January-February, May-December.
 Fruiting season or months: Almost all year.



Associated potential ecological functions

Broad function: Mainly indoor species, but can be planted in gardens and parks, with shade and moist soil.
 Fauna associated with fruits or seeds: Probably understory birds.
 Fauna associated with pollination syndrome: Probably bees.

***Ex situ* management information**

Difficulty to put in a nursery: Medium, they are slow growing.

Place/Facility where the species is found: Vivero El Ron ron, E.B. La Selva, Centro de Conservación Santa Ana, it has been brought to the nursery by FUNDAZOO.
 Known reproduction type: By rhizomes.
 Light conditions: Shade, it is an understory species.
 Type of substrate required: Organic and drained soil.
 Garden pruning tolerance: It does not require.
 Need for moisture in soil: High.
 Level of aggressiveness in the field (Invasive potential): Low.
 Risks of taking it to a nursery and places like gardens and parks: Low.



***Aristolochia gorgona*
(Aristolochiaceae)**

Species description

Common name: Carraquito.

General distribution: Lowlands of wet forests of the Caribbean slope (0-900 m asl) of Cordillera de Tilarán, Cordillera Volcánica Central, Cordillera de Talamanca; Llanuras de San Carlos and Baja Talamanca.

Habit: Creeper.

Structure of interest: Brick color inflorescence.

Flowering season or months: All year, especially in January, June-July and September.

Fruiting season or months: March, April and July.

Associated potential ecological functions

Broad function: Gardens and parks (open sites).

Fauna associated with fruits or seeds: No, seeds dispersed by water.

Fauna associated with pollination syndrome: Flies.

It is a pioneer species.

Functions in gardens, urban parks or similar

It works as visual barrier.

***Ex situ* management information**

Difficulty to put in a nursery: Medium to high.

Place/Facility where the species is found: E.B. La Selva, CATIE.

Known reproduction type: Seeds, cuttings of creeping stems.

Pre-germinative treatment: Scarification.

Light conditions: Partial shade.

Garden pruning tolerance: Yes.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low (check toxicity).

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



***Eremosis triflosculosa* (Asteraceae)**

Species description

Common name: Tuete, tubú negro.

General distribution: Common species of secondary forests, thickets, and riverbanks in deciduous forests of the Guanacaste and Tilarán mountain ranges, as well as in localities of Puriscal, Fila Bustamante de Acosta and Central Valley (500-1,500 m asl).

Habit: Shrub.

Structure of interest: Foliage.

Flowering season or months: February to June.

Fruiting season or months: March, dry season.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with fruits or seeds: No, seeds dispersed by wind.

Fauna associated with pollination syndrome: Bees.

It is a pioneer species.

Services potentially associated with the human being

In the past it was used for firewood. Species used to attract apiary bees.

Functions in gardens, urban parks or similar

It works as a live fence.

It functions in securing of slopes, riverbanks, or protecting the soil against erosion, but it is not its strength.

***Ex situ* management information**

Difficulty to put in a nursery: It is not known.

Place/Facility where the species is found: P.N. Santa Rosa, P.N. Rincón de la Vieja, R.B. Monteverde, Z.P. La Carpintera, Centro de Conservación Santa Ana, it has been brought to the nursery by FUNDAZOO

Known reproduction type: Seeds.

Pre-germinative treatment: Scarification.

Light conditions: Full light to partial shade.

Garden pruning tolerance: Yes.

Need for moisture in soil: Low.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: It is not known.

***Ex situ* conservation benefits for the species**

Secure the population: Yes, in its distribution.

Germplasm/seed bank: Yes.

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



***Lasianthaea fruticosa*
(Asteraceae)**

Species description

Common name: Quitirrí, chiquiza.
 General distribution: General distribution: Wet forest, very wet forest, rain forest and dry forest (50-1,800 m asl). On the Caribbean slope it is observed in the Cordillera Volcánica Central and Cordillera de Guanacaste, Llanuras de San Carlos and Llanuras de Tortuguero. On the

Pacific slope it is found in Cordillera de Guanacaste, Cordillera de Talamanca and Cordillera de Tilarán, Central Valley, Pacífico Central, Llanuras de Guanacaste and Península de Nicoya. The only species of this genus in Costa Rica.

Structure of interest: Yellow inflorescence.

Flowering season or months: All year, especially in August-January.

Fruiting season or months: January, August-September.

Associated potential ecological functions

Broad function: Gardens and parks.
 Fauna associated with pollination syndrome: Bees, recommended by CINAT-UNA to attract meliponid bees.
 It is a pioneer species.

Services potentially associated with the human being

It is used for firewood.

Functions in gardens, urban parks or similar

It works as a live fence.
 It works in securing of slopes, riverbanks, or protecting the soil against erosion.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: E.B. La Selva, R.N.A. Cabo Blanco, Z.P. El Rodeo, P.N. La Cangreja, Monteverde, Parque Zoológico y Jardín Botánico Nacional Simón Bolívar, Centro de Conservación Santa Ana.
 Known reproduction type: Seeds but have low germination.

Pre-germinative treatment: Scarification.

Light conditions: Full sunlight.

Garden pruning tolerance: Yes.

Need for moisture in soil: Low.

Level of aggressiveness in the field (Invasive potential): It is not known.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



Pseudogynoxys cummingii
(Asteraceae)

Species description

Common name: San Rafael.

General distribution: Species that grows on borders of very wet forest, premontane wet forest and very wet premontane forest in different locations on the Pacific side including Corcovado, Rincón de Osa, Cordillera de Tilarán, Cordillera de Guanacaste and in the Central Valley

in Santa Ana and Puriscal ((150) 700-2,100 m asl).

Habit: Scandent vine.

Structure of interest: Reddish orange inflorescence.

Flowering season or months: January-March, May, December.

Fruiting season or months: May, dry season.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with pollination syndrome: Bees.

It is a pioneer species.

Services potentially associated with the human being

Selling flowers, leaves are used to wrap objects.

Functions in gardens, urban parks or similar

It works as a visual barrier on meshes, but only in dry season.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: P.N. Rincón de la Vieja, R.F. Golfo Dulce, Z. P. El Rodeo, Campus of TEC, Cartago, P.N. Guanacaste, sector Cerro El Hacha.

Known reproduction type: Seeds and rhizomes.

Pre-germinative treatment: Scarification.

Light conditions: Full sunlight.

Garden pruning tolerance: It is not known.

Need for moisture in soil: Low.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Sinclairia polyantha* (Asteraceae)**

Species description

Common name: Cofalillo, hoja de pasmo, limoncillo.

General distribution: It is found on both versants in wet forests, very wet forests, and rain forests (0-3,000 m asl).

Habit: Scandent shrub.

Structure of interest: Two-colored leaves, yellow inflorescences.

Flowering season or months: January-April.

Fruiting season or months: Most of the year.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with pollination syndrome: Bees.

It is a pioneer species.

Light conditions: Full sunlight.

Garden pruning tolerance: It is not known.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): It is not known.

Risks of taking it to a nursery and places like gardens and parks: It is not known.

***Ex situ* management information**

Known reproduction type: Seeds, maybe cuttings.

Place/Facility where the species is found: Monteverde, P.N. Carara, Cerros de Turrubares, Cantón de Flores.

Pre-germinative treatment: Scarification.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



***Tagetes tenuifolia* (Asteraceae)**

Species description

Common name: Anicillo.

General distribution: Species of wet forests and premontane wet forest, wet forest transition to premontane and very wet premontane forest (750-1,160 m asl). It is found on the Pacific slope in mountain range with wet habitats such as Cordillera de Tilarán.

Habit: Annual ruderal grass.

Structure of interest: Yellow orange flower.

Flowering season or months: January, November, and December.

Fruiting season or months: March, rainy season.

Associated potential ecological functions

Broad function: It could be used in gardens and parks, always remembering that its flowers are annual, and the plant can grow more than 1.5 m tall.

Fauna associated with pollination syndrome: Bees.

It is probably a pioneer species, since it is a ruderal species.

Services potentially associated with the human being

Species that repels nematodes.

Functions in gardens, urban parks or similar

Improves soil condition: Because the species helps repel nematodes, people plant them between crops.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: P.N. La Cangreja, El Coyol, Santa Ana.

Known reproduction type: Seeds.

Light conditions: Full sunlight.

Garden pruning tolerance: It does not require.

Need for moisture in soil: Low.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Begonia conchifolia* (Begoniaceae)**

Species description

Common name: Begonia.

General distribution: Species of wet premontane forest. It has been collected on the Cordillera de Tilarán, Cordillera Volcánica Central and Central Valley (700-1,800 m asl).

Habit: Herb.

Structure of interest: Pink inflorescence.

Flowering season or months: Dry season.

Fruiting season or months: April, dry season.

Associated potential ecological functions

Broad function: Indoors near light sources (e.g. windows).

Fauna associated with fruits or seeds: No, seeds dispersed by wind.

Fauna associated with pollination syndrome: Bees.

Services potentially associated with the human being

The flowers are consumed, but it is not recommended because they could have some level of toxicity.

Functions in gardens, urban parks or similar

It works as a visual barrier when used in shaded vertical gardens.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: It is found in many commercial nurseries.

Known reproduction type: Leaf cuttings, rhizomes, cuttings, seeds.

Light conditions: Shade.

Garden pruning tolerance: It does not require.

Need for moisture in soil: High.

Pests or conditions: Snails.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low



Begonia involuocrata
(Begoniaceae)

Species description

Common name: Begonia.

General distribution: Medium elevations of different mountain ranges on the Pacific slope (750-2,700 m asl). Generally, above 1,500 m asl.

Habit: Herb.

Structure of interest: White to pink

inflorescence.

Flowering season or months: January, February, July-April, November, December.

Fruiting season or months: Most of the year.

Associated potential ecological functions

Broad function: Indoors near light sources (e.g. windows).

Fauna associated with fruits or seeds: No, seeds dispersed by wind.

Fauna associated with pollination syndrome: Bees.

Services potentially associated with the human being

The flowers are consumed, but it is not recommended because they could have some level of toxicity.

Functions in gardens, urban parks or similar

It works as a visual barrier when used in shaded vertical gardens.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: P.N. Guanacaste, Monteverde, but also in many commercial nurseries.

Known reproduction type: Rhizomes, cuttings, seeds.

Light conditions: Partial shade to shade.

Garden pruning tolerance: It does not require.

Need for moisture in soil: High.

Pests or conditions: Snails.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Dolichandra unguis-cati* (Bignoniaceae)**

Species description

Common name: Uña de gato, uña de murciélago.

General distribution: Lowlands of humid to seasonally dry forests (0-1,400 m asl). Abundant on the Pacific slope.

Habit: Liana.

Structure of interest: Yellow flowers.

Flowering season or months: January, March-July.

Fruiting season or months: March, May-July, October.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with fruits or seeds: Seeds dispersed by the wind, but it is not known if there is fauna that consumes its fruits or seeds.

Fauna associated with pollination syndrome: Probably bees.

Services potentially associated with the human being

It has anti-inflammatory properties.

Functions in gardens, urban parks or similar

It works as a visual barrier.

***Ex situ* management information**

Difficulty to put in a nursery: It is not known.

Place/Facility where the species is found: Z.P. El Rodeo, P.N. Carara, P.N. Corcovado, Mal País.

Known reproduction type: Seeds, cuttings, layering.

Light conditions: Full light, juveniles are associated with trees.

Garden pruning tolerance: It is not known.

Need for moisture in soil: Medium.

Level of aggressiveness in the field (Invasive potential): It is not known.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments. Also, more research on its anti-inflammatory properties is needed.



***Blechnum occidentale* (Blechnaceae)**

Species description

Common name: Fern.

General distribution: Slopes and roadsides of wet forest and very wet forest (0-2,300 m asl). It is found on different parts of the Pacific slope in Guanacaste, Pacífico Central, Pacífico Sur and Talamanca. On the Caribbean slope in the lowlands of the Zona Norte, as

well as in Talamanca. Also, in the Central Valley and Cocos Island.

Habit: Fern.

Structure of interest: Foliage, reddish shoots.

Associated potential ecological functions

Broad function: Ground cover in gardens, parks and on walls.

Services potentially associated with the human being

It has anti-inflammatory properties.

Functions in gardens, urban parks or similar

It works in securing of slopes, riverbanks, or protecting the soil against erosion.

***Ex situ* management information**

Difficulty to put in a nursery: Medium-high.

One must learn to manage the spores.

Place/Facility where the species is found:

Banks of Torres River, P.N. Guanacaste, Z.P.

Las Tablas.

Known reproduction type: Pieces, propagules.

Light conditions: Partial shade.

Garden pruning tolerance: It is not known.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments. Also, more research on its anti-inflammatory properties is needed.



Werauhia sanguinolenta **(Bromeliaceae)**

Species description

Common name: Bromelia.

General distribution: Wet and very wet forest (0-700 (-1,000) m asl). On the Caribbean side it is found in the Cordillera de Guanacaste and Cordillera de Tilarán, the Sapoá River basin, as well as Llanuras de Los Guatusos and Llanuras de Tortuguero. In the Pacific from P.N. Carara to the south.
Habit: Epiphytic herb.

Structure of interest: The entire plant. It has white flowers.

Flowering season or months: June-September.

Fruiting season or months: February, July, October, December.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with fruits or seeds: No, seeds dispersed by wind.

Fauna associated with pollination syndrome: Probably bats.

***Ex situ* management information**

Difficulty to put in a nursery: It is not known.

Uncommon species in nurseries.

Place/Facility where the species is found: P.N. Carara, P.N. Tortuguero, R.V.S. Caño Negro, R.I. Boruca.

Known reproduction type: Probably by seeds.

Light conditions: Full sunlight to partial light conditions.

Garden pruning tolerance: It does not require.

Need for moisture in soil: It is not known.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



***Lobelia laxiflora* (Campanulaceae)**

Species description

Common name: Caragallo, aretitos.

General distribution: Altered areas such as grasslands, roadsides or ravines of the Central Valley, Cordillera de Talamanca, and Cordillera de Tilarán (1,000-2,600 m asl).

Habit: Shrub.

Structure of interest: Orange and yellow flowers.

Flowering season or months: Throughout the year, especially in the dry season.

Fruiting season or months: Throughout the year, especially in the dry season.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with pollination syndrome: Hummingbirds.

It is probably a pioneer species, since it grows in forest edges.

Services potentially associated with the human being

It has anti-inflammatory properties.

Functions in gardens, urban parks or similar

It works in securing of slopes, riverbanks, or protecting the soil against erosion.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: Z.P. El Rodeo, P.N. La Cangreja, Parque Zoológico and Jardín Botánico Nacional Simón Bolívar, Centro de Conservación Santa Ana, it has been brought to the nursery by FUNDAZOO.

Light conditions: Full sunlight.

Garden pruning tolerance: It does not require.

Need for moisture in soil: Medium.

Pests or conditions: Leaf miners.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Cochliostema odoratissimum*
(Commelinaceae)**

Species description

Common name: Príncipe azul.

General distribution: It is found in the canopy of primary forests of wet forest and very wet forest (0-250 m asl). On the Caribbean side it is found in places such as Cordillera Volcánica Central, Baja Talamanca, Llanuras de Tortuguero and Llanuras de Santa Clara. In the southern part of the Pacific slope and the Osa

Peninsula.

Habit: Epiphytic herb.

Structure of interest: Lilac or sometimes white flower.

Flowering season or months: January-April, June, October.

Fruiting season or months: Late dry season, rainy season.

Associated potential ecological functions

Broad Function: Indoors, rather than exotic bromeliads.

Fauna associated with fruits or seeds: No, capsules probably dispersed by water.

Fauna associated with pollination syndrome: Probably bees.

Services potentially associated with the human being

It is used in the regulation of the menstrual cycle (traditional medicine).

***Ex situ* management information**

Difficulty to put in a nursery: High.

Place/Facility where the species is found: E.B. La Selva, CATIE. It is reproduced in San

Ramón. There seems to be another variety of purple leaves.

Known reproduction type: Rhizomes, seeds.

Light conditions: Shade.

Type of substrate required: Wet substrate.

Garden pruning tolerance: It does not require.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): None.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



***Dichorisandra amabilis* (Commelinaceae)**

Species description

General distribution: It is found on forest margins and along the edges of dry forest, wet forest, very wet forest, rain forest and cloud forests (0-1,000 (-1,800) m asl). On the Caribbean side it is found on the slopes of the Cordillera Volcánica Central, on the Llanuras de Los Guatusos, Llanuras de Tortuguero, Llanuras de Santa Clara and in Baja Talamasca. On the Pacific slope it is observed on the slopes of Cordillera Guanacaste, Fila Costeña, and at Sitio Barranca, from the Central Valley and the Barranca River basin to the south. Also, on both sides, on slopes of Cordillera de Tilarán and Cordillera de Talamasca.

Habit: Shrub.

Structure of interest: White to pale blue flowers.

Flowering season or months: February-December.

Fruiting season or months: Practically all year.

Associated potential ecological functions

Broad function: Indoors, to replace *D. thyrsiflora*, a species from Brazil.

Fauna associated with fruits or seeds: Birds.

Fauna associated with pollination syndrome: Bees.

Known reproduction type: It is not known.

Light conditions: Shade.

Garden pruning tolerance: It does not need.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* management information**

Difficulty to put in a nursery: It is not known.

Place/Facility where the species is found: P.N.

Tortuguero. It is a relatively easy species to find on forest edges within its distribution.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



***Ipomoea clavata* (Convolvulaceae)**

Species description

Common name: Churristate.

General distribution: Thickets of wet forest (500–800 m asl) on the Pacific slope, where it has been reported in the north of Península de Nicoya and in the Central Valley.

Habit: Vine.

Structure of interest: White or bluish flower, very aromatic.

Flowering season or months: September–November.

Fruiting season or months: November–January.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with pollination syndrome: Bees.

It is probably a pioneer species.

Functions in gardens, urban parks or similar

It works as a barrier on meshes. However, there are times of the year when they lose the leaves.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: P.N. Diría. It is cultivated in certain places.

Known reproduction type: Seeds, pieces.

Light conditions: Full sunlight to partial shade.

Garden pruning tolerance: It requires.

Need for moisture in soil: Medium.

Level of aggressiveness in the field (Invasive potential): Medium, requires pruning.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

Secure the population: Yes.

Germplasm/seed bank: Yes.

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



Carludovica drudei
(Cyclanthaceae)

Species description

Common name: Estococa.

General distribution: Very wet forest, rain forest and cloud forest (0-1,700 m asl). On the Caribbean side in lowlands such as Llanuras de San Carlos. It is found on both slopes of the Cordillera de Tilarán but has been seen only on the Pacific slope in the Cordillera Volcánica Central and Cordillera de Talamanca, Montes del Aguacate, Fila

Costeña. In the Pacific lowlands it is observed in Sitio Barranca and from Central Valley (Z.P. El Rodeo) and P.N. Carara to the south.

Habit: Robust acaulescent plant (without stem) that resembles a palm tree.

Structure of interest: Red infructescence, striking green foliage.

Flowering season or months: January-March, December.

Fruiting season or months: Practically all year.

Associated potential ecological functions

Broad function: Gardens, parks and interiors.

Fauna associated with fruits or seeds: Birds.

Fauna associated with pollination syndrome: Beetles.

It is a pioneer species.

Other: Foliage shelters bats (tents), bees steal pollen from its inflorescences.

Services potentially associated with the human being

Foliage is used for house roofs, other uses include having edible parts (hearts of palm and staminodes), as fibrous material and for medicinal use.

Functions in gardens, urban parks or similar

It works as a visual barrier.

It works in securing of slopes, riverbanks, or protecting the soil against erosion. It is common in ravines.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: It is found in different commercial nurseries.

Known reproduction type: Rhizomes, pieces, seeds.

Light conditions: Full sunlight, partial shade.

Garden pruning tolerance: Yes, for foliage maintenance.

Need for moisture in soil: Medium to high.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Medium. The species needs a certain level of management.



***Carludovica rotundifolia* (Cyclanthaceae)**

Species description

Common name: Estococa, pita.

General distribution: Forest border species found in very wet forest, rain forest and cloud forest (0-1,600 m asl) on both slopes.

Habit: Robust acaulescent plant (without stem) that resembles a palm tree.

Structure of interest: Red-green infructescence, striking green foliage.

Flowering season or months: January, February, June, July, September, October, December.

Fruiting season or months: Most of the year.

Associated potential ecological functions

Broad function: Gardens, parks, and interiors.

Fauna associated with fruits or seeds: Birds.

Fauna associated with pollination syndrome: Beetles.

It is a pioneer species.

Other: Foliage shelters bats (tents), bees steal pollen from its inflorescences.

Services potentially associated with the human being

The pseudostem (heart of palm) and staminodes are edible.

Functions in gardens, urban parks or similar

It works as a visual barrier.

It works in securing of slopes, riverbanks, or protecting the soil against erosion. It is common in ravines.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: It is found in different commercial nurseries.

Known reproduction type: Rhizomes, pieces, seeds.

Light conditions: Full sunlight, Partial shade.

Garden pruning tolerance: Yes, for foliage maintenance.

Need for moisture in soil: Medium to high.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Medium. The species needs a certain level of management.



***Cavendishia capitulata* (Ericaceae)**

Species description

Common name:

General distribution: Altered areas of very wet forest, rain forest, cloud forest and oak forest, (400) -600–2,700 m asl). It is found on both slopes of all the main mountain ranges.

Habit: epiphytic shrub.

Structure of interest: It is a beautiful shrub with a pink

inflorescence.

Flowering season or months: January-December.

Fruiting season or months: All year.

Associated potential ecological functions

Broad function: Humid gardens and parks above 1,600 m asl.

Fauna associated with fruits or seeds: Birds.

Fauna associated with pollination syndrome: Hummingbirds.

Services potentially associated with the human being

The fruits may be edible.

***Ex situ* management information**

Difficulty to put in a nursery: Medium.

Place/Facility where the species is found: Monteverde.

Known reproduction type: Cuttings.

Light conditions: Full sunlight and partial shade.

Type of substrate required: Rotten wood or sawdust and high humidity.

Garden pruning tolerance: It does not require.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.

***Cavendishia melastomoides* (Ericaceae)**

Species description

General distribution: Altered areas and margins of roads of very wet forest, rain forest, cloud forest and oak forests (800–2,200 (–2,700) m asl). It is found on both slopes in the Cordillera de Tilarán and Cordillera Volcánica Central, as well as the northern part of Cordillera de Talamanca. On the Pacific side it is in El Tablazo.

Habit: Epiphytic shrub.

Structure of interest: Pink to pale green inflorescences.

Flowering season or months: February., April–October, December.

Fruiting season or months: Most of the year.

Associated potential ecological functions

Broad function: Humid gardens and parks above 1,600 m asl.

Fauna associated with fruits or seeds: Birds.

Fauna associated with pollination syndrome: Hummingbirds.

Services potentially associated with the human being

The fruits may be edible.

***Ex situ* management information**

Difficulty to put in a nursery: Medium.

Place/Facility where the species is found: Monteverde.

Known reproduction type: Cuttings.

Light conditions: Full sunlight and partial shade.

Type of substrate required: Rotten wood or sawdust and high humidity.

Garden pruning tolerance: It does not require.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



Dalechampia tiliifolia
(Euphorbiaceae)

Species description

Common name: Huevos de gato, mala, lazo.

General distribution: Wet forest and very wet forest (0–500 m asl). On the Caribbean slope it is observed on the Cordillera de Guanacaste, while on the Pacific slope it is found on the northern part of the Cordillera de Talamanca and in the Fila Costeña,

while in lower lands it is on the Guanacaste plains towards the south to Esparza and near areas, in P.N. Carara, Jacó, General Valley, Dominical, Golfo Dulce region.

Habit: Creeping herb or vine.

Structure of interest: Cream inflorescence.

Flowering season or months: January-February, November-December.

Fruiting season or months: January-March.

Associated potential ecological functions

Broad function: Gardens and parks, pergolas.

Fauna associated with pollination syndrome: Butterflies, bees.

Butterfly larvae host: Yes, approximately 18 species of butterflies.

It is probably a pioneer species, since it is observed in secondary environments.

Services potentially associated with the human being

Urticaceus species.

Functions in gardens, urban parks or similar

It works as a barrier if placed on walls or meshes.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: P.N. Carara, Dominical.

Known reproduction type: Seeds.

Light conditions: Adult individuals need full sunlight.

Garden pruning tolerance: It tolerates.

Need for moisture in soil: Low-medium.

Pests or conditions: Probably the butterfly larvae that it host (i.e. *Hamadryas*).

Level of aggressiveness in the field (Invasive potential): Medium-high.

Risks of taking it to a nursery and places like gardens and parks: Medium-high.

***Ex situ* conservation benefits for the species**

More research on the effect of *Hamadryas* butterflies on the plant is needed before giving a recommendation to bring it to a nursery.



Erythroxylum havanense **(Erythroxylaceae)**

Species description

Common name: Piedrilla, chilillo.

General distribution: Species that is often associated with water courses in dry forest and wet forest, deciduous forests, and adjacent savannas, (0–300 (–650) m asl). On the Pacific slope it can be found in Cordillera de Guanacaste, going down to the

Guanacaste plains and south to the surroundings of Tivives and Tárcoles, Grande de Candelaria River basin, Grande de Térraba River canyon. It is also found on Península de Santa Elena including Isla San José and Península de Nicoya with the Caballo and San Lucas islands.

Habit: Shrub.

Structure of interest: White flower, red fruit, bicolor leaves shaped obovate to elliptical.

Flowering season or months: February-May.

Fruiting season or months: February-August.

Associated potential ecological functions

Broad function: Gardens and parks. Ecological restoration, it is a species recommended by IUCN for this end.

Fauna associated with fruits or seeds: Birds.

Fauna associated with pollination syndrome: Probably insects.

Butterfly larvae host: Yes, larvae of *Agrias amydon*.

Services potentially associated with the human being

It is used as firewood and the fruits are edible. It also has properties for the treatment of tumors.

Functions in gardens, urban parks or similar

It is a potential species used for hedges and bonsai.

It works in stabilizing riverbanks and protection of aquifers.

***Ex situ* management information**

Difficulty to put in a nursery: High. It is a plant that grows slowly and is difficult to reproduce with seeds and cuttings.

Place/Facility where the species is found: Palo Verde, P.N. Diríá, P.N. Santa Rosa.

Known reproduction type: Seeds and cuttings.

Light conditions: Partial shade.

Type of substrate required: Rocky soils, in its habitat it has been seen on rocky substrates near the sea, leading to the question if it needs a specific pH range.

Garden pruning tolerance: Yes.

Need for moisture in soil: Low, can withstand a lot of dryness.

Plagues or conditions: Probably the butterfly larvae that it host (*Agrias amydon*).

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: It is not known.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



Fruiting season or months: Dry and rainy season.

Associated potential ecological functions

Broad function: Gardens, parks, and ecological restoration.

Fauna associated with pollination syndrome: Hummingbirds.

It is a pioneer species.

Functions in gardens, urban parks or similar

It works as a visual barrier on meshes. It is a plant that does not need help to wrap itself in the meshes.

It is a nitrogen fixing plant.

It works in securing of slopes, riverbanks, or protecting the soil against erosion. It has been observed on slopes with poor (red) soils.

Ex situ management information

Difficulty to put in a nursery: It is probably low.

***Barbieria pinnata* (Fabaceae)**

Species description

General distribution: Wet and very wet forest, (100–800 (–1,100) m asl) on the Pacific slope. It found in the east part of the Cordillera de Talamanca, north of the Fila Costeña (Fila Retinto), Valle de General, in the canyon of the Grande de Térraba River and Valle de Coto Brus.

Habit: Climbing vine or liana.

Structure of interest: Red inflorescence.

Flowering season or months: January, February, November, December.

Place/Facility where the species is found: Las Cruces, Jardín Lankester.

Known reproduction type: Layering, cuttings, seeds.

Light conditions: Full sunlight, partial shade.

Garden pruning tolerance: It tolerates.

Need for moisture in soil: It is not known.

Level of aggressiveness in the field (Invasive potential): It is not known.

Risks of taking it to a nursery and places like gardens and parks: It is not known.

Ex situ conservation benefits for the species

Secure the population: Yes, it has a restricted distribution.

Germplasm/seed bank: Yes.

Plants for reintroduction: Yes.

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



***Indigofera costaricensis* (Fabaceae)**

Species description

Common name: Añil.

General distribution: Wet forest and very wet forest (700–2,200 m asl). On the Caribbean side it is found in Cordillera Volcánica Central and north of the Cordillera de Talamanca. On the Pacific side, it can be seen in Cordillera de Tilarán, Cerros de La Carpintera and Escazú, and the Central Valley. It is found only in Costa Rica and Panama.

Habit: Shrub.

Structure of interest: Salmon-colored flower.

Flowering season or months: January, June, August, September, November, December.

Fruiting season or months: All year.

Associated potential ecological functions

Broad function: Gardens and parks, excellent for the Central Valley because of its distribution.

Fauna associated with pollination syndrome: Bees.

It is a pioneer species.

Functions in gardens, urban parks or similar

Improves the condition of the soil: It is a nitrogen fixer.

***Ex situ* management information**

Difficulty to put in a nursery: High.

Place/Facility where the species is found: Parque del Prado, Curridabat.

Known reproduction type: Seeds.

Light conditions: Full sunlight.

Garden pruning tolerance: It tolerates.

Need for moisture in soil: Medium to high, depending on the site.

Level of aggressiveness in the field (Invasive potential): It is not known.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Vigna caracalla* (Fabaceae)**

Species description

Common name: Caracolito.

General distribution: Humid and very humid forest (0–100 (–1,150) m asl). On the Caribbean side it is found in Cordillera Volcánica Central (E.B. La Selva), Baja Talamanca (R.N.V.S. Gandoca-Manzanillo), while on the Pacific side it is cultivated in the Central Valley, for example in Ciudad Colón.

Habit: Liana.

Structure of interest: Greenish flower with white, cream, and purple hues. As they age, the flowers turn orange.

Flowering season or months: October and November.

Fruiting season or months: Late rainy season and early dry season.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with pollination syndrome: Bees.

Functions in gardens, urban parks or similar

It works as a visual barrier on meshes.

The family is characterized for fixing nitrogen.

***Ex situ* management information**

Difficulty to put in a nursery: It is not known.

Place/Facility where the species is found: E.B. La Selva, Parque Zoológico y Jardín Botánico Nacional Simón Bolívar, it has been brought to the nursery by FUNDAZOO.

Known reproduction type: Seeds.

Pre-germination treatment: Does not needed.

Light conditions: Full sunlight.

Garden pruning tolerance: Yes, it tolerates.

Need for moisture in soil: Medium to low.

Level of aggressiveness in the field (Invasive potential): It is not known.

Risks of taking it to a nursery and places like gardens and parks: Medium, it needs some management.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



Gasteranthus osaensis
(Gesneriaceae)
Endemic

Species description

General distribution: Species found on stream banks in very wet forest (0–700+ m asl) on the southern part of the Pacific slope, including the northern part of Fila

Costeña (Fila Retinto) and Golfo Dulce region.

Habit: Herb to sub-shrub.

Structure of interest: Yellow inflorescence.

Flowering season or months: March–August, October, December.

Fruiting season or months: Most of the year.

Associated potential ecological functions

Broad function: Ecological restoration.

Vertical gardens, very humid and dark places.

Fauna associated with pollination syndrome:

Probably hummingbirds.

***Ex situ* management information**

Difficulty to put in a nursery: High.

Place/Facility where the species is found:

Rancho Quemado, Osa.

Known reproduction type: It is not known.

Light conditions: Lots of shade.

Type of substrate required: Wet drained soils.

Garden pruning tolerance: It is not known.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): It is not known.

Risks of taking it to a nursery and places like gardens and parks: None.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



***Gloxinia erinoides* (Gesneriaceae)**

Species description

Common name: Gotas de plata.

General distribution: Species that is observed in stones and slopes of dry forest, wet forest and very wet forest (0–1,300 (–1,600+) m asl) on the Pacific slope. It is found in the Cordillera de Guanacaste and Cordillera de Tilarán, in the east of the Cordillera de Talamanca, Cerro Caraigres, Guanacaste plains, Península de Santa Elena, north of Península de Nicoya, Isla San Lucas, lower basin of the Barranca River, Central Valley and lower basin of the Grande de Tárcoles River, basin of the Grande de Candelaria River, Parrita and near areas, south of Valle de General and the canyon of Grande de Térraba River.

Habit: Herb.

Structure of interest: Pink inflorescence and dark foliage with white spots.

Flowering season or months: January, May, July–December.

Fruiting season or months: Most of the year.

Associated potential ecological functions

Broad function: Interiors, like a violet (*Saintpaulia ionantha*), to mix with other plants.

Fauna associated with pollination syndrome: Bees.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: It is common in different wild areas.

Known reproduction type: Rhizomes.

Light conditions: Shade to full sunlight.

Type of substrate required: Although in its habitat it is observed on stones, it is not a necessary element.

Garden pruning tolerance: It does not require.

Need for moisture in soil: Medium.

Pests or conditions: Probably slugs.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



Kohleria spicata
(Gesneriaceae)

Species description

Common name: Kohleria.

General distribution: Species of open areas, forest edges, roadsides and slopes of wet forest, very wet forest, rain forest and oak forest (0–1,800 (–2,700) m asl). In Cordillera de Guanacaste it is located on the Caribbean slope and near the Continental Division, Llanuras de Santa Clara, Puerto Limón and near areas, Baja Talamanca

(R.N.V.S. Gandoca-Manzanillo). Also, on both slopes of the Cordillera de Tilarán, Cordillera Volcánica Central and Cordillera de Talamanca. On the Pacific slope, it is also observed in Cerros de Escazú, Cerro Carraigres, Turrubares and Puriscal regions, Parrita and near areas, north of Valle del General, Dominical and near areas, Golfo Dulce region. At the island level it is found in Isla del Caño and Cocos Island.

Habit: Herb to Shrub.

Structure of interest: Red inflorescence.

Flowering season or months: January–April, June–December.

Fruiting season or months: Most of the year.

Associated potential ecological functions

Broad function: Gardens and parks. In the dry season it loses the aerial part.

Fauna associated with pollination syndrome: Hummingbirds.

It is probably a pioneer species.

Services potentially associated with the human being

It has properties against digestive problems and nausea.

***Ex situ* management information**

Difficulty to put in a nursery: Medium.

Place/Facility where the species is found: Widely distributed species.

Known reproduction type: Rhizomes.

Light conditions: Partial shade in full sunlight.

Garden pruning tolerance: It does not require.

Need for moisture in soil: Medium.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Gunnera insignis* (Gunneraceae)**

Species description

Common name: Sombrilla de pobre, higuera, mano de tigre.

General distribution: Species of disturbed areas, landslides and riverbanks in very wet forest, rain forest, cloud forest, oak forest, and dwarf forest (800–2,600 (–3,200) m asl). On the Caribbean slope and near the Continental Division it is observed in the Cordillera de Guanacaste and Cordillera de Tilarán. It is found on both slopes of Cordillera Volcánica Central and Cordillera de Talamanca, in Cerros de Escazú it is only observed on the Pacific slope.

Habit: Herb.

Structure of interest: Reddish inflorescences and large leaves.

Flowering season or months: January–June, August, November.

Fruiting season or months: Most of the year.

Associated potential ecological functions

Broad function: Gardens and parks, always close to water sources.

It is a pioneer species.

Functions in gardens, urban parks or similar

It works in securing of slopes, riverbanks, or protecting the soil against erosion.

***Ex situ* management information**

Difficulty to put in a nursery: High for requiring elevated areas.

Place/Facility where the species is found: P.N. Volcán Poás, P.N. Braulio Carrillo, and nearby areas.

Known reproduction type: Seedling transplant and probably rhizomes.

Light conditions: Full sunlight.

Garden pruning tolerance: It does not require.

Need for moisture in soil: High to very high.

Pests or conditions: High levels of herbivory have been seen in the field, but the species that causes it is unknown.

Level of aggressiveness in the field (Invasive potential): No.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Xiphidium caeruleum* (Haemodoraceae)**
Monospecific family

Species description

Common name: Cola de gallo, espadaña, palma bruja.

General distribution: Common and frequently locally abundant species in edges and thickets of wet forest, very wet forest, and rain forest (0-1,400 m asl). On the Caribbean slope, it can be seen on the on Cordillera de Guanacaste and Volcánica Central, as well as on Llanuras de Tortuguero and Llanuras de Santa Clara, Baja Talamanca. Also, on Cordillera de Tilarán and Cordillera de Talamanca on both slopes. While on the Pacific slope it is found in Península de Nicoya, the Barranca River basin, Central Valley, P.N. Carara, Puriscal region (P. N. La Cangreja), Grande de Térraba River canyon, Golfo Dulce region, etc.

Habit: Herb.

Structure of interest: The entire plant, its leaves are arranged like a fan and has a terminal inflorescence with a scorpion shape.

Flowering season or months: January, March, May-December.

Fruiting season or months: Most of the year.



Associated potential ecological functions

Broad function: Gardens and parks, ground cover in gardens and parks, green walls.

Fauna associated with pollination syndrome: Probably bees.

Functions in gardens, urban parks or similar

It is a ground cover species.

It helps protecting the soil against erosion, being a ground cover species.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: Península de Osa.

Known reproduction type: Vegetative.

Light conditions: Partial shade.

Garden pruning tolerance: For thinning control.

Need for moisture in soil: Medium to high.

Level of aggressiveness in the field (Invasive potential): Medium.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Heliconia imbricata* (Heliconiaceae)**

Species description

Common name: Heliconia, platanilla.

General distribution: Disturbed or open sites in very wet forest (0-700 m asl). On the Caribbean slope in Cordillera Volcánica Central and Cordillera de Talamanca. On the Pacific slope from P.N. to the south.

Habit: Herb.

Structure of interest: The whole plant.

Flowering season or months: January-October.

Fruiting season or months: Most of the year.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with fruits or seeds: Birds, mammals.

Fauna associated with pollination syndrome: Hummingbirds.

It is a pioneer species.

***Ex situ* management information**

Difficulty to put in a nursery: High outside its distribution. Medium in its distribution. In windy places, the leaves tend to tear.

Place/Facility where the species is found: Azul de Turrialba.

Known reproduction type: Rhizomes, seeds.

Light conditions: Shade.

Type of substrate required: Responds to a germinating plastic bag.

Garden pruning tolerance: For maintenance. It can grow up to 6 m.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Heliconia longiflora* (Heliconiaceae)**

Species description

Common name: Heliconia, platanilla.

General distribution: Understory and forest edge species of wet forest and very wet forest (0-700 (-1,000) m asl). On the Caribbean side it is observed on slopes of Cordillera de Guanacaste and Cordillera de Tilarán, as well as Llanuras de Los Guatusos and Llanuras de San Carlos. On the Pacific side it is found on Península de Nicoya and from P.N. Carara to the south.

Habit: Herb.

Structure of interest: The whole plant.

Flowering season or months: January-November.

Fruiting season or months: Most of the year.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with fruits or seeds: Birds and mammals.

Fauna associated with pollination syndrome: Hummingbirds.

It is a pioneer species.

***Ex situ* management information**

Difficulty to put in a nursery: Medium.

Place/Facility where the species is found: Azul de Turrialba.

Known reproduction type: Rhizomes.

Light conditions: Lots of shade.

Type of substrate required: Responds to a germinating plastic bag.

Garden pruning tolerance: For maintenance. It can grow about 7 m.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Heliconia mariae* (Heliconiaceae)**

Species description

Common name: Heliconia, platanilla.

General distribution: Species of thickets and edges of very wet forest (0-500 m asl). On the Caribbean slope it is found in Cordillera de Tilarán, Cordillera Volcánica Central and Cordillera de Talamanca, in addition to Llanuras de San Carlos and Baja Talamanca. In the southern part of the Pacific slope from Dominical and near areas to the south.

Habit: Herb.

Structure of interest: The whole plant.

Flowering season or months: March, May., June, December.

Fruiting season or months: Different months of dry and rainy season.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with fruits or seeds: Birds and mammals.

Fauna associated with pollination syndrome: Hummingbirds.

It is a pioneer species.

Services potentially associated with the human being

The pseudostem (heart of palm) is edible. The Cabécar and Bríbris eat it in picadillo both cooked and raw.

***Ex situ* management information**

Difficulty to put in a nursery: Medium.

Place/Facility where the species is found: Species relatively easy to find within its distribution. P.N. Manuel Antonio, Gandoca.

Known reproduction type: Rhizomes.

Light conditions: Partial shade.

Type of substrate required: It may respond to a germinating plastic bag.

Garden pruning tolerance: For maintenance. It can grow about 7m.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): Medium, form stands.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Heliconia mathiasiae* (Heliconiaceae)**

Species description

Common name: Heliconia, platanilla.

General distribution: Species of understory and margins of very wet forest and rain forest (0-1,300+ m asl). On the Caribbean side it is observed in the Central and Talamanca Cordilleras, as well as the Llanuras de Tortuguero and Llanuras de Santa Clara. On both sides it is found in the Cordilleras of Guanacaste and Tilarán. While on the Pacific side it is in P.N. Carara and Puriscal region (P.N. La Cangreja).

Habit: Herb.

Structure of interest: The whole plant.

Flowering season or months: January-November.

Fruiting season or months: Most of the year.

Associated potential ecological functions

Broad function: Gardens and parks.
Recommended species for landscaping.

Fauna associated with fruits or seeds: Birds and mammals.

Fauna associated with pollination syndrome: Hummingbirds.

It is a pioneer species.

***Ex situ* management information**

Difficulty to put in a nursery: Medium.

Place/Facility where the species is found: P.N. Carara, P.N. Tortuguero.

Known reproduction type: Rhizomes, seeds.

Light conditions: Shade.

Type of substrate required: Responds to a germinating plastic bag.

Garden pruning tolerance: It does not require.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Heliconia metallica* (Heliconiaceae)**

Species description

Common name: Heliconia, platanilla.

General distribution: Clearings and margins of wet forest and very wet forest (0-1,200 m asl). North of the Caribbean slope in the Cordillera de Guanacaste and Llanuras de Los Guatusos. On the Pacific slope at Fila Costeña (Fila Tinamastes; near San Vito and Sitio Barranca).

Habit: Herb.

Structure of interest: Foliage.

Flowering season or months: January, April, June-December.

Fruiting season or months: Much of the year, mainly in the rainy season.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with fruits or seeds: Birds and mammals.

Fauna associated with pollination syndrome: Hummingbirds.

Butterfly larvae host: Yes (*Caligo* sp.).

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: Jardín Botánico Wilson (cultivated), Fila Tinamaste, P.N. Guanacaste, P.N. Corcovado.

Known reproduction type: Rhizomes, seeds.

Pre-germinative treatment: Scarification.

Light conditions: Partial shade.

Type of substrate required: Organic and drained soil.

Garden pruning tolerance: It does not require.

Need for moisture in soil: Medium.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Heliconia osaensis* (Heliconiaceae)**

Species description

Common name: Heliconia, platanilla.

General distribution: Forest edges and open thickets of wet forest and very wet forest (0-200 m asl). North of the Caribbean slope and Llanuras de Los Guatusos. On the Pacific slope, at Sitio Barranca and from P.N. to the south.
Habit: Herb.

Structure of interest: Foliage.

Flowering season or months: January-May, July, November, December.

Fruiting season or months: Most of the year.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with fruits or seeds: Birds and probably mammals.

Fauna associated with pollination syndrome: Hummingbirds.

Butterfly larvae host: Yes.

***Ex situ* management information**

Difficulty to put in a nursery: Low, in suitable conditions. In windy places, the leaves tend to tear.

Place/Facility where the species is found: Vivero el Ron ron.

Known reproduction type: Rhizomes, seeds.

Light conditions: Shade.

Type of substrate required: Organic and drained soil.

Garden pruning tolerance: It does not require.

Need for moisture in soil: Medium.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Orthrosanthus chimboracensis* (Iridaceae)**

Species description

General distribution: A common mountain species in very wet forest, rain forest, oak forest and paramo (1,500-3,800+ m asl). On the Caribbean versant it is observed on the slopes of Cordillera Volcánica Central (Volcán Turrialba). On both sides of the Cordillera de Talamanca. In Pacífico Central and in Cerros de Escazú.

Habit: Herb that forms clumps.

Structure of interest: Blue flowers.

Flowering season or months: January-April, June, August-November.

Fruiting season or months: March, September, October.

Associated potential ecological functions

Broad function: Gardens and parks in high areas.

***Ex situ* management information**

Difficulty to put in a nursery: High, it is a slow growing species.

Place/Facility where the species is found: P.N. Chirripó, R.F. Río Macho.

Known reproduction type: Seedling.

Light conditions: Partial shade, can tolerate brighter conditions, but not ideal.

Type of substrate required: Clay soils.

Garden pruning tolerance: It does not require.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

Yes, to be able to take it to a nursery to sites outside its distribution.



***Hyptis urticoides* (Lamiaceae)**

Species description

General distribution: Disturbed areas of wet, very wet and rain forest ((850–) 1,050–2,100 m asl). It is observed on the Caribbean slope on the Cordillera Volcánica Central and north of the Cordillera de Talamanca. On both versants it is reported in Cerros de La Carpintera and the Central Valley. In the Pacific, on the Cordillera de Tilarán and Cordillera de Talamanca, in El Tablazo and Cerros de Escazú.

Habit: Suffrutex.

Structure of interest: Set of white flowers. Also, the foliage is aromatic when squeezed.

Flowering season or months: January, February, April, September–

December.

Fruiting season or months: Most of the year.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with pollination syndrome: Bees.

It is probably a pioneer species, since it is observed in thickets.

Services potentially associated with the human being

It seems to have medicinal properties to treat respiratory diseases. Its scent is used as an insect repellent.

Functions in gardens, urban parks or similar

It works as a hedge.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: Cerros de Escazú.

Known reproduction type: Cuttings and seeds.

Light conditions: Full sunlight to partial shade.

Garden pruning tolerance: It does not require.

Need for moisture in soil: Medium-low.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

No, but further research on medicinal properties and repellent is recommended.



***Salvia colonica* (Lamiaceae)**

Species description

Common name: Salvia.

General distribution: Species of wet premontane forests, both primary and secondary, also observed along roadsides and riverbanks ((700-1,300) +2,000 m asl). In Costa Rica, this species is found on the Pacific slope in humid and very humid premontane forests, in locations such as Monteverde, Aserrí, Cangrejal, Cerro Brujo (Santa Cruz, Guanacaste).

Habit: Herb to Shrub.

Structure of interest: Blue inflorescences.

Flowering season or months: February-April, October

Fruiting season or months: February-April, May, October.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with pollination syndrome: Bees.

It is a pioneer species.

Services potentially associated with the human being

It has medicinal properties for ills related to blood circulation.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: Monteverde.

Known reproduction type: Cuttings, seeds.

Light conditions: Full sunlight.

Garden pruning tolerance: It does not require.

Need for moisture in soil: Low.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Salvia lasiantha* (Lamiaceae)**

Species description

Common name: Salvia.

General distribution: Very rare species of very wet forest (1,600–2,000 m asl). On the Caribbean slope in Cordillera Volcánica Central (Volcán Irazú). On the Pacific slope, at Cerro Carraigres.

Habit: Suffruticose herb to shrub.

Structure of interest: Purple flowers (salmon-colored corollas) larger than other salvia. Also, the foliage is considered attractive.

Flowering season or months: January, November-December.

Fruiting season or months: Dry season.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with pollination syndrome: Hummingbirds, bees.

It is a pioneer species.

Known reproduction type: Cuttings, seeds.

Light conditions: Full sunlight.

Garden pruning tolerance: Yes.

Need for moisture in soil: Low.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: P.N. Volcán Irazú, Z.P. Carraigres.



***Salvia lasiocephala* (Lamiaceae)**

Species description

Common name: Salvia.

General distribution: Species of disturbed habitats of dry forest, wet forest, and very wet forests (100–1,500 m asl) on the Pacific slope. They are observed in the Cordillera de Guanacaste, Cordillera de Tilarán and Cordillera de Talamanca, as well as in

Montes del Aguacate, Guanacaste plains, southern Península de Nicoya, Central Valley and Puriscal region (P.N. La Cangreja).

Habit: Annual herb.

Structure of interest: Purple flowers with blue, brown fruits.

Flowering season or months: January, February, April, November, December.

Fruiting season or months: Dry season.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with pollination syndrome: Hummingbirds, bees.

It is a pioneer species.

Known reproduction type: Cuttings, seeds.

Light conditions: Full sunlight.

Garden pruning tolerance: Yes.

Need for moisture in soil: Low.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: P.N. Guanacaste, P.N. La Cangreja, Montes del Aguacate.



***Salvia polystachia* (Lamiaceae)**

Species description

Common name: Chan, chirrite, jalacate.

General distribution: Disturbed areas of wet forest, very wet forest, rain forest, cloud forest and oak forests (850–2,500+ m asl). On both slopes of Cordillera Volcánica Central, north of the Cordillera de Talamanca and in the Cerros de La Carpintera. On the Pacific slope in Cordillera de Guanacaste, Cordillera de Tilarán and Cordillera de Talamanca, in Cerros de Escazú, Cerro Turrubares and Central Valley.

Habit: Perennial herb or sub shrub.

Structure of interest: Blue-violet flowers.

Flowering season or months: January, February, April, June, November,

December.

Fruiting season or months: Dry season.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with pollination syndrome:

Hummingbirds, bees, insects in general.

It is a pioneer species.

Functions in gardens, urban parks or similar

It works as a hedge.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found:
Cerros de Escazú.

Known reproduction type: Cuttings, seeds.

Light conditions: Full sunlight.

Garden pruning tolerance: Yes.

Need for moisture in soil: Low.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Salvia pteroura* (Lamiaceae)**

Species description

Common name: Salvia.

General distribution: Rare species that is observed in places with secondary growth or forest edges in very wet forest, rain forest and cloud forest (700–1,700+ m asl) of the Pacific slope where it is found in the Cordillera de Guanacaste, Cordillera de Tilarán and Cordillera de Talamanca, as well as in Valle de General.

Habit: Perennial herb or shrub.

Structure of interest: Purple or blue flowers.

Flowering season or months: January-March November, December.

Fruiting season or months: Dry season.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with pollination syndrome: Hummingbirds, bees.

It is a pioneer species.

Known reproduction type: Cuttings, seeds.

Light conditions: Full sunlight.

Garden pruning tolerance: Yes.

Need for moisture in soil: Medium.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: P.N. Guanacaste, R.V.S. Bosque Diría



***Salvia wagneriana* (Lamiaceae)**

Species description

Common name: Chan, chirrite, chirrite amargo, jalacate.

General distribution: Fences and roadsides in wet forest, very wet forest, and rain forest ((300–) 1,100–1,900 m asl). It is observed on both sides of Cordillera Volcánica Central and in Central Valley. Also, in the Pacífico Central, Cerros de Escazú, Turrubares region.

Habit: Shrub.

Structure of interest: Purple or blue flowers.

Flowering season or months: January, February, April, September-December.

Fruiting season or months: Most of the year.

Associated potential ecological functions

Broad function: Gardens and parks. It is a widely used and recommended plant.

Fauna associated with pollination syndrome: Bees.

It is a pioneer species.

Functions in gardens, urban parks or similar

It works as a hedge.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: Cerros de Escazú, Bajos del Toro, Zarcero.

Known reproduction type: Cuttings, seeds.

Light conditions: Full sunlight.

Garden pruning tolerance: Yes.

Need for moisture in soil: Medium.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Stachys costaricensis* (Lamiaceae)**

Species description

General distribution: Species from disturbed areas in wet forest, very wet forest, rain forest and oak forests (550–3,200 m asl). On the Caribbean slope it is found in the Cordillera de Tilarán, and both sides of the Cordillera Volcánica Central and Cordillera de Talamanca, Cerros de La Carpintera, Central Valley. In addition, on Pacífico Central in El Tablazo and Cerros de Escazú.

Habit: Shrub.

Structure of interest: Lilac flower.

Flowering season or months: February, March, June–October, December.

Fruiting season or months: Throughout the year.

Associated potential ecological functions

Broad function: Gardens and parks as ground covers.

Fauna associated with pollination syndrome: Bees.

It is probably a pioneer species.

Functions in gardens, urban parks or similar

It helps protecting the soil against erosion.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: Fila Bustamante, Cerros de Escazú.

Known reproduction type: Cuttings.

Light conditions: Full sunlight.

Garden pruning tolerance: Yes.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



Spigelia splendens **(Loganiaceae)**

Species description

Common name: Cresta de gallo.

General distribution: Wet forest, very wet forest and rain forest (1,150–1,800 m asl). On both sides of northern Cordillera de Talamanca (basins of Purires and Grande de Candelaria rivers), Cerros de La Carpintera, Central Valley. On Pacífico Central in Cerros de Escazú.

Habit: Herb.

Structure of interest: Very attractive annual plant with red inflorescences.

Flowering season or months: April-July.

Fruiting season or months: September. End of dry season and beginning of rainy season.

Associated potential ecological functions

Broad function: Shaded gardens and parks.

Fauna associated with pollination syndrome: Hummingbirds

***Ex situ* management information**

Difficulty to put in a nursery: Medium-high. It is a difficult plant to propagate.

Place/Facility where the species is found: Cartago (Chinchilla), Acosta, Cerros de Escazú.

Known reproduction type: Vegetative, but it is difficult because of its short rhizomes.

Light conditions: Shade.

Garden pruning tolerance: It does not require.

Need for moisture in soil: Medium-high.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: None.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



***Heteropterys brachiata* (Malpighiaceae)**

Species description

Common name: Palo de margarita.

General distribution: Species of forest clearings, forest patches and disturbed areas in wet forest and very wet forests (0–1,050+ m asl), in its cultivated form it can be observed even at higher altitudes (1,300 m asl). On the Caribbean slope it is found in the Cordillera de Guanacaste, and on the Pacific slope in the Cordillera de Tilarán, north of Fila Costeña (Boruca), Guanacaste plains (P.N. Santa Rosa), Valle del General and the canyon of Grande de Térraba River.

Habit: Liana or scandent shrub (if managed).

Structure of interest: Pink flower, winged red fruit.

Flowering season or months: January, August–December.

Fruiting season or months: Rainy season.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with pollination syndrome: Bees.

Services potentially associated with the human being

It has medicinal properties against anxiety.

Functions in gardens, urban parks or similar

It works as visual barrier on meshes.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: Monteverde, Bahía Salinas, P.N. Santa Rosa.

Known reproduction type: Seeds, seedlings.

Light conditions: When they are seedlings, partial shade and once grown, full sunlight.

Garden pruning tolerance: Yes. Responds well.

Need for moisture in soil: Medium.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

There is no need, although further research regarding its medicinal properties is recommended.



***Bakeridesia vulcanicola* (Malvaceae)**

Species description

General distribution: Thicket species along roadsides in very humid and rain forests (1,000–1,600+ m asl). On the Pacific side it is found in Cerro Caraigres and the Pirrís River basin.

Habit: Shrub or small tree.

Structure of interest: Large, orange flowers, brown fruits. The ripened fruits, when dried, open into a disk that looks like a mill in motion.

Flowering season or months: January, February, December.

Fruiting season or months: Dry season.

Associated potential ecological functions

Broad function: Gardens and parks, also for ecological restoration.

Fauna associated with pollination syndrome: Hummingbirds, insects in general.

It is a pioneer species.

Functions in gardens, urban parks or similar

Probably helps securing slopes, riverbanks, or protecting the soil from erosion.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: Cerro Caraigres.

Known reproduction type: Seeds, cuttings.

Light conditions: Full sunlight to partial shade.

Garden pruning tolerance: Yes.

Need for moisture in soil: Low, once established.

Pests or conditions: Mealybugs.

Level of aggressiveness in the field (Invasive potential): Medium-high. It reproduces very easily.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

Secure the population: Yes.

Germplasm/seed bank: Yes.

Plants for reintroduction: Within its distribution.

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments, considering that it is a plant with restricted distribution.



***Malvaviscus palmanus* (Malvaceae)**

Species description

Common name: Amapolita.

General distribution: Very wet forest, rain forest and cloud forest (550–1,900 m asl). On the Caribbean slope and near the Continental Division it is found in Cordillera de Tilarán and Cordillera Volcánica Central, while in Cordillera Guanacaste it is found on both slopes.

Habit: Shrub or small tree.

Structure of interest: Red flowers.

Flowering season or months: January, February, May–August.

Fruiting season or months: Rainy season.

Associated potential ecological functions

Broad function: Shaded gardens and parks.

Fauna associated with fruits or seeds: Birds.

Fauna associated with pollination syndrome: Hummingbirds.

Services potentially associated with the human being

The fruit (orange color) is edible.

Functions in gardens, urban parks or similar

It works as a hedge.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: Granadilla (Curridabat), P.N. La Cangreja, Upala.

Known reproduction type: Cuttings, seeds.

Light conditions: Full sunlight, partial shade.

Garden pruning tolerance: Yes.

Need for moisture in soil: High to medium.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Calathea lutea* (Marantaceae)**

Species description

Common name: Bijagua, hoja blanca, platanilla.

General distribution: Species of disturbed open areas, also in swampy places and along riverbanks, almost always in full sunlight. It is found in wet and very wet forest (0-300 (-700) m asl). On the Caribbean slope it can be seen in Cordillera Volcánica Central and Cordillera de Talamanca, as well as in Llanuras de Los Guatusos, Llanuras de Tortuguero and Llanuras de Santa Clara, in

addition to Baja Talamanca. On the Pacific slope it is found in P.N. Carara and in the Golfo Dulce region.

Habit: Herb.

Structure of interest: Green foliage with undersides of whitish waxy leaves, the inflorescence is brown yellow.

Flowering season or months: January-May, September, November.

Fruiting season or months: Dry season and early rainy season.

Associated potential ecological functions

Broad function: Ecological restoration, gardens, and parks.

Fauna associated with pollination syndrome: Euglossine bees.

Butterfly larvae host: For species of the genus *Caligo*.

It is a pioneer species.

Other: It is a species that bats use for shelter (tents).

Services potentially associated with the human being

The leaves are used as food wrap and for roofing. Wax is extracted with commercial properties.

Functions in gardens, urban parks or similar

It works as a visual barrier, is a species that forms clumps.

Improves soil condition: Yes, it grows well in wetlands.

It helps protecting the soil from erosion.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: Entrance to E.B. La Selva, CATIE, Corcovado, Osa, P.N. Carara.

Known reproduction type: Rhizomes.

Light conditions: Partial shade in full sunlight.

Garden pruning tolerance: Yes. It sprouts very fast.

Need for moisture in soil: High to medium.

Pests or conditions: Caterpillars of *Caligo* sp., the leaves are very liked by this genus.

Level of aggressiveness in the field (Invasive potential): High.

Risks of taking it to a nursery and places like gardens and parks: Medium. Where it is found, it tends to be many.

***Ex situ* conservation benefits for the species**

No, but it is an interesting plant for research with bats and for the use of its wax for products for human use.



***Calathea vinosa* (Marantaceae)
Endemic**

Species description

Common name: Bijagua, platanilla.

General distribution: Species that is usually found in the shade in very wet forest, (0-500 (-750) m asl). It is located on the Pacific slope in the north of Fila Costeña and from the P.N. Carara to the south.

Habit: Herb.

Structure of interest: Green foliage with purple underside, inflorescence is pale yellow.

Flowering season or months: July-November.

Fruiting season or months: Rainy season.

Associated potential ecological functions

Broad function: Shaded gardens and parks.

Fauna associated with pollination syndrome: Euglossine bees and probably flies.

Euglossine bees and probably flies.

Butterfly larvae host: For species of the genus *Caligo*.

Functions in gardens, urban parks or similar

It works as visual barrier, in closed places.

It helps protecting the soil from erosion.

***Ex situ* management information**

Difficulty to put in a nursery: Medium to high.

Place/Facility where the species is found: E.B. Las Cruces, P.N. Carara.

Known reproduction type: Rhizomes, stem shoots.

Light conditions: Shade.

Garden pruning tolerance: Yes, for maintenance.

Need for moisture in soil: High.

Pests or conditions: Probably caterpillars of *Caligo* sp.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments and secure its population.



***Calathea warscewiczii* (Marantaceae)**

Species description

Common name: Bijagua, platanilla.

General distribution: Very wet forest (0-700 m asl) on the Caribbean slope of Cordillera Volcánica Central and Cordillera de Talamanca, as well as in Llanuras de Los Guatusos, Llanuras de Tortuguero and Llanuras de Santa Clara.

Habit: Herb.

Structure of interest: Foliage with dark green leaves that have light green spots, the underside is purple and hairy. Inflorescence with white bracts.

Flowering season or months: January, February, June-December.

Fruiting season or months: Most of the year.



Associated potential ecological functions

Broad function: Mainly an interior plant in dry areas. Gardens and parks in wet areas.

Fauna associated with pollination syndrome: Euglossine bees.

***Ex situ* management information**

Difficulty to put in a nursery: Medium to high.

Place/Facility where the species is found: E.B. La Selva, CATIE.

Known reproduction type: Rhizomes.

Light conditions: Within its distribution it supports full sunlight, but outside it, it prefers shade.

Garden pruning tolerance: Yes. It recovers quickly.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Pleiostachya leiostachya* (Marantaceae)**

Species description

Common name: Platanilla.

General distribution: Abundant species in understory and edges in very wet forest and rain forest ((50-) 400-1,200 m asl). On the Caribbean slope it is found on Cordillera de Guanacaste, Cordillera de Tilarán and Cordillera Volcánica Central. On the Pacific slope, it is found in the south of the Fila Costeña (Fila Cruces) and in Península de Osa (Cerro Rincón). Also, on both sides of Cordillera de Talamanca.

Habit: Herb.

Structure of interest: The underside of the leaves is purple.

Flowering season or months: January, February, May-December.

Fruiting season or months: Most of the year.

Associated potential ecological functions

Broad function: Ecological restoration, gardens and parks.

Fauna associated with pollination syndrome: Bees.

Services potentially associated with the human being

Its leaves are used to wrap food.

Functions in gardens, urban parks or similar

It works as a visual barrier, although it should be noted that close their leaves overnight (prayer plant).

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found:

Butterfly garden of Museo Nacional, Monteverde, E.B. La Selva, R.F. Golfo Dulce.

Known reproduction type: Rhizome.

Light conditions: Partial shade.

Garden pruning tolerance: It does not require.

Need for moisture in soil: Low.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Blakea parasitica* (Melastomataceae)**

Species description

Common name: San Miguel.

General distribution: Very wet forest and rain forest (0–1,300 m asl). On the Caribbean slope it is found in Cordillera de Tilarán and on the Pacific slope in Cordillera de Guanacaste, south of Fila Costeña, P.N. Carara, Puriscal region (P.N. La Cangreja) and Península de Osa. In the north of the Cordillera de Talamanca it is found on

both slopes.

Habit: Shrub or small tree, often epiphytic or epilithic.

Structure of interest: Pink inflorescences, shiny leaves and purple undersides or reddish veins in some populations.

Flowering season or months: April–July, October, December.

Fruiting season or months: July, August, October.

Associated potential ecological functions

Broad function: A specific function is not set as more research on natural history, habitat and substrate requirements is required.

Fauna associated with fruits or seeds: Birds.

Fauna associated with pollination syndrome: Bees.

Services potentially associated with the human being

The flower is edible.

***Ex situ* management information**

Difficulty to put in a nursery: High, the seeds do not germinate easily, and it is a slow growing plant.

Place/Facility where the species is found:

P.N. La Cangreja, Península de Osa.

Known reproduction type: Cuttings, but more studies are needed.

Pre-germinative treatment: Not known, but very probable needs.

Light conditions: Adult plants require sunlight, while seedlings need shade and moisture.

Type of substrate required: Sawdust, decaying wood.

Garden pruning tolerance: It is not known.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): It is not known.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

Secure the population: Probably.

Plants for reintroduction: Probably.

More research needs to be done in the field to gain more information on natural history, habitats, and potential threats (e.g. climate change).



***Blakea scarlatina* (Melastomataceae)**

Species description

Common name: San Miguel.

General distribution: Very wet forest and rain forest (0–1,100 (–1,450) m asl). It is found on the Caribbean slope in Cordillera Volcánica Central and Cordillera de Talamanca, as well as on Llanuras de San Carlos and Llanuras de Tortuguero. On the Cordillera de Guanacaste and Cordillera

de Tilarán it is observed in both the Caribbean and the Pacific sides.

Habit: Shrub or small tree, often epiphytic or epilithic.

Structure of interest: Red and white inflorescences.

Flowering season or months: January, April–November.

Fruiting season or months: January, July, October–December.

Associated potential ecological functions

Broad function: A specific function is not set as more research on natural history, habitat and substrate requirements is required.

Fauna associated with fruits or seeds: Birds.

Fauna associated with pollination syndrome: Bees.

Services potentially associated with the human being

The flower is edible.

***Ex situ* management information**

Difficulty to put in a nursery: High, the seeds do not germinate easily, and it is a slow growing plant.

Place/Facility where the species is found: E.B. La Selva.

Known reproduction type: Cuttings, but more studies are needed.

Pre-germinative treatment: Not known, but very probable needs.

Light conditions: Adult plants require sunlight, while seedlings need shade and moisture.

Type of substrate required: Sawdust, decaying wood.

Garden pruning tolerance: It is not known.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): It is not known.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

Secure the population: Probably.

Plants for reintroduction: Probably.

More research needs to be done in the field to gain more information on natural history, habitats, and potential threats (e.g. climate change).



***Miconia aeruginosa* (Melastomataceae)**

Species description

Common name: Lengua de vaca, terciopelo.

General distribution: affected areas and riverbeds in wet forest, very wet forest, rain forest and oak forest ((700-)1,100-2,000+ m asl). On the Caribbean slope it is observed in Cordillera Volcánica Central, while it is found on both slopes in the north of Cordillera de Talamanca. Also, it is found in the central part of the Pacific slope in El Tablazo, Cerros de Escazú and Central Valley.

Habit: Shrub.

Structure of interest: White flowers and bluish fruits. The old leaves turn orange and the shafts of the stems are exfoliated.

Flowering season or months: February, May.

Fruiting season or months: February, July.

Associated potential ecological functions

Broad function: Ecological restoration, gardens, and parks.

Fauna associated with fruits or seeds: Birds and probably bats. Highly recommended for the number of birds that visit it.

Fauna associated with pollination syndrome: Bees.

It is a pioneer species.

Services potentially associated with the human being

The fruits are probably edible.

***Ex situ* management information**

Difficulty to put in a nursery: High.

Place/Facility where the species is found: Valle del Reventazón in El Guarco de Cartago, Cerros de Escazú.

Known reproduction type: Seeds, seedlings, and cuttings.

Light conditions: Full sunlight.

Type of substrate required: PH of the substrate must be lowered for seeds to germinate.

Garden pruning tolerance: Yes.

Need for moisture in soil: Medium.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



***Miconia affinis* (Melastomataceae)**

Species description

Common name: Lengua de vaca.

General distribution: Species of gallery forests and disturbed sites in very wet forest and rain forests, (0–700 (–1,000) m asl). On the Caribbean side it is found in Cordillera de Guanacaste, Cordillera Volcánica Central and Cordillera de Talamanca, as well as in Llanuras de Los Guatusos and Llanuras de Tortuguero.

On the Pacific side, it is found in the north of Fila Costeña, P.N. Carara, Puriscal region (P.N. La Cangreja), Valle del General and Valle de Coto Brus, Uvita and Golfo Dulce region.

Habit: Shrub.

Structure of interest: White flowers and bluish fruits.

Flowering season or months: February-May, December.

Fruiting season or months: January-September, December.

Associated potential ecological functions

Broad function: Ecological restoration, gardens, and parks.

Fauna associated with fruits or seeds: Birds and probably bats.

Fauna associated with pollination syndrome: Bees.

It is a pioneer species.

Services potentially associated with the human being

The fruits are probably edible.

Functions in gardens, urban parks or similar

It works as a live fence.

It has a function in protection of aquifers.

***Ex situ* management information**

Difficulty to put in a nursery: Medium.

Place/Facility where the species is found: CATIE, E.B. La Selva, P.N. La Cangreja.

Known reproduction type: Seeds and cuttings.

Light conditions: Full sunlight.

Type of substrate required: 50% soil, 50% sand, if there is a lot of soil, the seed rots.

Charcoal can also be applied to acidic soils.

Garden pruning tolerance: Yes.

Need for moisture in soil: Medium-high.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



Dicraspidia donnell-smithii
(Muntingiaceae)
Monospecific genus

Species description

Common name: Capulín macho.

General distribution: Wet forest and very wet forest (0–800 (–1,000) m asl). On the Caribbean slope it is found in the Cordillera de Talamanca and Baja

Talamanca, while on the Pacific slope it is observed in the north of Cordillera de Talamanca, south of Fila Costeña (Fila de Cal), P.N. Carara, Jacó and near areas, Puriscal region, Grande de Candelaria River basin, Palmar Norte and near areas, Golfo Dulce region and Valle de Coto Colorado. Only representative of the genus in the world.

Habit: Scandent shrub or tree.

Structure of interest: Yellow inflorescences.

Flowering season or months: January-December.

Fruiting season or months: All year.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with fruits or seeds: Bats.

Fauna associated with pollination syndrome: Bees.

It is a pioneer species.

Functions in gardens, urban parks or similar

It works as a physical and visual barrier, depending on age and planting density.

***Ex situ* management information**

Difficulty to put in a nursery: Medium, there is little information about reproduction and transplantation is delicate.

Place/Facility where the species is found: P.N. La Amistad, P.N. Barbilla, P.N. Corcovado, R.B. Hitoy Cerere, P.N. Carara, Campus of UCR, Montes de Oca, Centro Conservación Santa

Ana, it has been brought to the nursery by FUNDAZOO.

Known reproduction type: Seeds.

Light conditions: Full sunlight.

Type of substrate required: It has been germinated in river sand.

Garden pruning tolerance: Yes.

Need for moisture in soil: Medium.

Level of aggressiveness in the field (Invasive potential): It is not known.

Risks of taking it to a nursery and places like gardens and parks: Susceptible to a mosaic virus.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



***Fuchsia paniculata* (Onagraceae)**

Species description

Common name: Achiotillo.

General distribution: Very wet forest, cloud forest, rain forest and oak forest, ((1,300–) 1,600–2,700 (–3,400+) m asl). It is found on both sides of Cordillera Volcanica Central and Cordillera de Talamanca, and in the Pacific part of the Cordillera de Tilarán (Monteverde), Cerros de Escazú and Cerro Caraigres.

Habit: Shrub.

Structure of interest: Pink inflorescences, very dark purple fruits.

Flowering season or months: January-December.

Fruiting season or months: All year.

Associated potential ecological functions

Broad function: Parks and gardens, ecological restoration in the high parts of its distribution.

Fauna associated with fruits or seeds: Birds.

Fauna associated with pollination syndrome: Hummingbirds.

It is a pioneer species.

Services potentially associated with the human being

Dyes from the fruits, the wood is used as fuel (firewood).

Functions in gardens, urban parks or similar

It works as a hedge.

It works in securing of slopes, riverbanks, or protecting the soil against erosion.

***Ex situ* management information**

Difficulty to put in a nursery: It is not known.

Place/Facility where the species is found: Monteverde, Cerros de Escazú, Cerro Caraigres.

Known reproduction type: Probably cuttings and seeds.

Light conditions: Full sunlight.

Garden pruning tolerance: Yes.

Need for moisture in soil: Medium-high.

Level of aggressiveness in the field (Invasive potential): It is not known.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



***Passiflora auriculata* (Passifloraceae)**

Species description

Common name: Pasiflora.

General distribution: Wet forest, very wet forest and rain forest (0–1,600+ m asl). On the Caribbean slope it is found in Cordillera de Guanacaste and Cordillera Volcánica Central, as well as in Llanuras de Tortuguero and Llanuras de Santa Clara, Baja Talamanca. On the Pacific slope it is found in Grande de

Candelaria River basin and Golfo Dulce region. In Cordillera de Talamanca it is found on both slopes.

Habit: Herbaceous vine.

Structure of interest: White flowers.

Flowering season or months: January, October-December.

Fruiting season or months: May, July, October.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with fruits or seeds: Birds.

Fauna associated with pollination syndrome: Wasps (*Pepsis aquila*) and bees.

Butterfly larvae host: Larvae of the genus *Heliconius*, *Philaethria*.

It is probably a pioneer species.

Other: It has a mutualistic relationship with ants (*Ectatomma tuberculatum*). The ant feeds on the plant's nectaries in exchange for protection.

Services potentially associated with the human being

It has medicinal properties for climacteric, high blood pressure and anxiety.

Functions in gardens, urban parks or similar

It works as a barrier over meshes.

***Ex situ* management information**

Difficulty to put in a nursery: Low. In *Passiflora* sp., The fruits may be immature, and the seeds may still be viable.

Place/Facility where the species is found: P.N. Tortuguero, R.F. Golfo Dulce, Gandoca Manzanillo.

Known reproduction type: Portion of stem with bud, seeds.

Light conditions: Partial shade to full sunlight. They can withstand different levels of light, but seedlings need shade (understory).

Garden pruning tolerance: Yes.

Need for moisture in soil: Medium.

Pests or conditions: The larvae of the butterflies that it host and various species of beetles (Family Chrysomelidae).

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Passiflora megacoriacea*
(Passifloraceae)**

Species description

Common name: Ala de murciélago.

General distribution: Species that grows on shrubs or trees in secondary areas with succession states, usually near rivers, along the edges of wet tropical forests to premontane forest generally near the coast. It is found in the

premontane transition belt between the typical dry tropical forests of the Cordillera de Guanacaste and the more wet forests of medium elevations. From there it extends through dry to wet tropical forests in the interior and near the sea along the Atlantic and Pacific coasts (0-1,100 m asl).

Habit: Herbaceous vine.

Structure of interest: Yellowish green flowers without petals, dark purple fruits.

Flowering season or months: Throughout the year.

Fruiting season or months: Throughout the year.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with fruits or seeds: Birds.

Fauna associated with pollination syndrome: Bees.

Butterfly larvae host: Genus *Heliconius*.

It is probably a pioneer species.

Services potentially associated with the human being

It has medicinal properties for climacteric, high blood pressure and anxiety.

***Ex situ* management information**

Difficulty to put in a nursery: Low. In *Passiflora*, the fruits may be immature, and the seeds may still be viable.

Place/Facility where the species is found: Cahuita, P.N. Guanacaste, R.B. Hitoy Cerere.

Known reproduction type: Portion of stem with bud, seeds.

Light conditions: Partial shade to full sunlight. They can withstand different levels of light, but seedlings need shade (understory).

Garden pruning tolerance: Yes.

Need for moisture in soil: Medium-high.

Pests or conditions: The larvae of the butterflies it host (*Heliconius*).

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Phytolacca icosandra* (Phytolaccaceae)**

Species description

Common name: Jaboncillo, caladú, tinta.

General distribution: Altered areas in wet forest and very wet forest ((200–) 300–1,400 m asl). On the Caribbean side it is found in the Sapoá River basin (Cerro El Hacha). On both sides of the Central Valley and on the Pacific side, in Cordillera de Tilarán and the Península de Nicoya.

Habit: Shrub.

Structure of interest: White to pink or lilac sepals; white flowers, dark blue or dark purple fruits.

Flowering season or months: January-April, June-September.

Fruiting season or months: January- February, July, September.

Associated potential ecological functions

Broad function: Gardens and parks within its distribution.

Fauna associated with fruits or seeds: Birds.

Fauna associated with pollination syndrome: Beetles and bees.

Others: In the field it is seen with herbivory, so there is probably a host.

Services potentially associated with the human being

The plant is edible, but it has saponins.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: Monteverde, Z.P. Las Tablas, Centro de

Conservación Santa Ana, it has been brought to the nursery by FUNDAZOO.

Known reproduction type: Seeds, cuttings.

Pre-germinating treatment: The seeds must be dry before planting, as they are very wet in the fruit. Dried seeds germinate better.

Light conditions: Partial shade.

Garden pruning tolerance: Yes, and it also favors it.

Need for moisture in soil: Medium-high.

Pests or conditions: Herbivory has been observed in the field, but it has not been identified what species is responsible.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Peperomia maculosa* (Piperaceae)**

Species description

Common name: Peperomia.

General distribution: Species of primary forests, near rivers and roadsides in very wet forest and rain forest, ((300–) 700–1,950 m asl). On the Caribbean slope it is found in Cordillera Volcánica Central and on the Pacific slope it is observed in Cerros de Escazú, Cordillera de Guanacaste and Cordillera de Tilarán. While in Cordillera de Talamanca it is found on both sides.

Habit: Terrestrial, epilithic, epiphytic, creeping or scandent plant.

Structure of interest: Bright green leaves.

Flowering season or months: February, June–September.

Fruiting season or months: August, September.

Associated potential ecological functions

Broad function: Interior plant.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: Z.P. Las Tablas, R.I. Ujarrás, Cerros de Escazú.

Known reproduction type: Seeds, seedlings, clones.

Light conditions: Partial light.

Garden pruning tolerance: Maintenance.

Need for moisture in soil: Medium.

Pests or conditions: Slugs.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Piper bredemeyeri* (Piperaceae)**

Species description

Common name: Cordoncillo.

General distribution: Widely distributed species, very common in exposed areas, sometimes in live fences. It is found in wet forest, very wet forest, and rain forest (1,000–2,100 m asl). Both slopes in the Cordillera Volcánica Central and on the Pacific slope in the Cordillera de Tilarán, east of

the Cordillera de Talamanca, Cerros de Escazú and Valle Central.

Habit: Suffrutex or Shrub.

Structure of interest: Rough green leaves and grayish green fruits.

Flowering season or months: January, April–July, September.

Fruiting season or months: Rainy season.

Associated potential ecological functions

Broad function: Planted in parks, fences, solars and gardens.

Fauna associated with fruits or seeds: Birds, bats.

Fauna associated with pollination syndrome: Bees.

Services potentially associated with the human being

It has medicinal properties as analgesic and antiseptic.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: Cerros de Escazú.

Known reproduction type: Seeds, cuttings from main axis.

Light conditions: Shade.

Garden pruning tolerance: Yes, but the shrub is not very dense.

Need for moisture in soil: Medium.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Piper friedrichsthali* (Piperaceae)**

Species description

Common name: Cordoncillo.

General distribution: Scrubland, pastures and banks of streams, rivers and roadsides in wet forest and rain forest, secondary forests (0-1,700+ m asl). On the Caribbean side it is found on Cordillera de Guanacaste and Cordillera Volcánica Central, as well as Llanuras de San Carlos, Llanuras de Tortuguero and Llanuras de Santa Clara. On both sides of the Cordillera de Tilarán and Cordillera de Talamanca. In addition, on the Pacific slope of Cerro Turrubares, Fila Costeña, P.N. Carara, Puriscal region (P.N. La Cangreja), Grande de Candelaria River basin, Valle del General, Palmar Norte and near areas, Golfo Dulce region and Península

de Burica.

Habit: Suffrutex, shrubs or trees.

Structure of interest: White tail-shaped inflorescences covered in tiny flowers, leaves with reddish petioles and end in a point.

Flowering season or months: Throughout the year.

Fruiting season or months: Throughout the year.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with fruits or seeds: Birds, bats.

Fauna associated with pollination syndrome: Bees.

It is a pioneer species.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: Corcovado, R.I. Ujarrás, P.N. Carara.

Known reproduction type: Seeds, cuttings.

Light conditions: Full sunlight.

Garden pruning tolerance: Yes, although it does not need it.

Need for moisture in soil: Medium to high.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Piper umbellatum* (Piperaceae)**

Species description

Common name: Cigarrillo, hoja de estrella, pata de vaca.

General distribution: Cocoa plantations, bushy scrublands along rivers and roads in wet forest, very wet forest, rain forest and cloud forest (50-1,700+ m asl). On the Caribbean side it can be seen on Cordillera de Talamanca, Sapoá River basin (Cerro El Hacha) as well as in Llanuras de Santa Clara.

Also, on both sides of Cordillera de Guanacaste, Cordillera de Tilarán and Cordillera Volcánica Central, as well as the Central Valley. In addition, on the Pacific slope, it is found on the north of the Cordillera de Talamanca, Montes del Aguacate, Cerros de Escazú, south of Fila Costeña (Fila Cruces), Península de Nicoya and north of Valle del General.

Habit: Herb, shrub, or tree.

Structure of interest: White tail-shaped inflorescences covered in tiny flowers, large leaves.

Flowering season or months: January–July, September–December.

Fruiting season or months: Almost all year.

Associated potential ecological functions

Broad function: Ecological restoration, gardens, and parks.

Fauna associated with fruits or seeds: Birds, bats.

Fauna associated with pollination syndrome: Bees.

It is a pioneer species.

Services potentially associated with the human being

It has medicinal properties against the poison of *Bothrops* sp., gastric ulcers, and liver problems.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: E.B. La Selva, Montes del Aguate.

Known reproduction type: Cuttings and seeds.

Light conditions: Full sunlight.

Garden pruning tolerance: Yes, but it does not need it.

Need for moisture in soil: Medium-high.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Russelia sarmentosa* (Plantaginaceae)**

Species description

Common name: Coralillo.

General distribution: Dry forest, wet forest, very wet forest, rain forest and oak forest, secondary forests, savannas, charrales and pasturelands (0–1,600 (–2,100+) m asl). On the Caribbean slope it can be seen in Cordillera Volcánica Central (Turrialba and near areas), while on both slopes it is found in Cordillera de Tilarán and Cordillera de Talamanca and Central Valley. On the Pacific slope and near the Continental Division, it is observed in Cordillera

de Guanacaste, Montes del Aguacate, Cerros de Escazú, Cerro Turrubares, north of Fila Costeña, Isla Bolaños, Guanacaste plains to the south up to the vicinity of Colorado, Península de Santa Elena, Isla Murcielago, Península de Nicoya, Berrugate and San Lucas islands (and neighboring islets), Caldera and near areas, west of the Central Valley, Orotina and near areas, Turrubares region, P.N. Carara, Puriscal region, Grande de Candelaria River basin, Puerto Quepos and near areas, Valle del General, Grande de Térraba River canyon and Golfo Dulce region.

Habit: Suffrutex or Shrub.

Structure of interest: Red color inflorescences.

Flowering season or months: All year.

Fruiting season or months: All year.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with pollination syndrome:

Hummingbirds, butterflies.

Functions in gardens, urban parks or similar

It works as a hedge and barriers.

***Ex situ* management information**

Difficulty to put in a nursery: Medium.

Place/Facility where the species is found: P.N.

Carara, P.N. Corcovado, Z.P. Las Tablas.

Known reproduction type: Seeds and cuttings.

Light conditions: Full sunlight, Partial shade.

Type of substrate required: Organic, drained soil is recommended but not required.

Garden pruning tolerance: It does not require.

Need for moisture in soil: Low.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Andropogon bicornis* (Poaceae)**

Species description

Common name: Cola de venado.

General distribution: Species of rocky areas and roadsides in very wet forest and rain forest, disturbed areas, and savannas (0-1,850 m asl). It is found throughout the country.

Habit: Herb.

Structure of interest: Cream-colored inflorescences with a feathery, dense, and agglomerated shape.

Flowering season or months: January, February, April, May, July-October.

Fruiting season or months: Most of the year.

Associated potential ecological functions

Broad function: Gardens, parks, and ecological restoration.

Fauna associated with pollination syndrome: No, seeds dispersed by wind.

It is a pioneer species.

Functions in gardens, urban parks or similar

It works as a visual barrier.

It works in securing of slopes, riverbanks, or protecting the soil against erosion.

***Ex situ* management information**

Difficulty to put in a nursery: It is not known.

Place/Facility where the species is found: E.B. La Selva.

Known reproduction type: Seeds, rhizomes.

Pre-germination treatment: Yes. Responds well to refrigerating seeds at 8°C for about eight months or a solution of water with 0.2% potassium nitrate (KNO₃).

Light conditions: Full sunlight.

Type of substrate required: It is not a demanding species.

Garden pruning tolerance: Yes.

Need for moisture in soil: High.

Pests or conditions: Not known, however, it is sensitive to droughts and fires.

Level of aggressiveness in the field (Invasive potential): Medium.

Risks of taking it to a nursery and places like gardens and parks: Medium.



***Gynerium sagittatum* (Poaceae)**

Species description

Common name: Caña brava, caña blanca, caña de construcción.

General distribution: It is a characteristic species of disturbed areas near roads and rivers or beaches and swamps in humid, very humid and rain forest (0-1,600+ m asl). It is found on the entire Caribbean slope and on the Pacific slope in the south of the Nicoya Peninsula, Parrita, Península de Osa, etc.

Habit: Herb.

Structure of interest: Purple foliage and inflorescences.

Flowering season or months: February, June-December.

Fruiting season or months: Rainy season.

Associated potential ecological functions

Broad function: Species recommended for ecological restoration by IUCN. It has a great capacity to absorb mercury, and therefore can be used in phytoremediation projects for soils contaminated with this mineral.

Fauna associated with fruits or seeds: No, seeds are dispersed by the wind.

Fauna associated with pollination syndrome: No, it is pollinated by the wind.

It is a pioneer species.

Services potentially associated with the human being

Rustic ceiling and wall constructions. Formerly they were used to reinforce the walls of the bahareque houses. It is also used to make mats and fences. It has properties to treat asthma and as a diuretic.

Functions in gardens, urban parks or similar

It works as a visual barrier, windbreaks, and living fences.

It has a great capacity to absorb mercury, and therefore can be used in phytoremediation projects for soils contaminated with this mineral.

It works in securing of slopes, riverbanks, or protecting the soil against erosion.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: E.B. La Selva, Parrita, P.N. Tortuguero.

Known reproduction type: Rhizomes.

Light conditions: Full sunlight.

Garden pruning tolerance: Yes. Species that needs regular pruning.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): High.

Risks of taking it to a nursery and places like gardens and parks: With management, low.



***Acrostichum aureum* (Pteridaceae)**

Species description

Common name: Negraforra.

General distribution: Lowland species in estuarine, swampy and mangrove areas near the Caribbean and Pacific coasts. It is also found on Cocos Island (0-300 m asl).

Habit: Fern.

Structure of interest: The whole plant. Green leaves with reddish coloration when immature.

Associated potential ecological functions

Broad function: Gardens and parks, protection of ponds near the coast.

Fauna associated with fruits or seeds: No, spores dispersed by wind.

Fauna associated with floral syndrome: It has no flowers.

It is probably a pioneer species.

Functions in gardens, urban parks or similar

Provides protection to the soil and helps filter water.

It works in securing of slopes, riverbanks, or protecting the soil against erosion.

***Ex situ* management information**

Difficulty to put in a nursery: High.

Place/Facility where the species is found: Vivero el Ron ron, common in mangrove areas.

Known reproduction type: Rhizomes.

Light conditions: Full sunlight.

Garden pruning tolerance: No.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): High, it forms large stands that, if they grow too large, prevents mangrove recovery.

Risks of taking it to a nursery and places like gardens and parks: Medium, it needs constant management.



Bouvardia costaricensis
(Rubiaceae)
Endemic

Species description

General distribution: Very humid and rain forest, ((1,000–) 1,500–1,800+ m asl). It is located on the Pacific slope in the north of the Cordillera de Talamanca, Cerros de Escazú and Cerro Caraigres. Habit: Shrub or suffrutex (rare).

Structure of interest: White inflorescence.

Flowering season or months: May-July, September.

Fruiting season or months: Rainy season.

Associated potential ecological functions

Broad function: A specific function is not established as more research on natural history, habitat and substrate requirements is needed.

Fauna associated with pollination syndrome: Probably moths because of the shape of the flower.

***Ex situ* management information**

Difficulty to put in a nursery: High.

Place/Facility where the species is found: Santa María de Dota, Cerros de Escazú, Cerro Caraigres.

Known reproduction type: Cuttings.

Light conditions: Shade.

Type of substrate required: Not known, research required.

Garden pruning tolerance: It is not known.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge about its natural history and how bring it to a nursery, to be able to use it in urban environments.



***Notopleura uliginosa* (Rubiaceae)**

Species description

General distribution: Primary forest species. It is found on the banks of streams in wet forest, very wet forest, rain forest and cloud forest (0–1,600 m asl). On the Caribbean slope it is found in Cordillera Volcánica Central, Llanuras de San Carlos, Llanuras de Tortuguero and Baja Talamanca. On both sides of Cordillera de Guanacaste, Cordillera de Tilarán and Cordillera de Talamanca. While on the Pacific slope it

is observed in Cerro Turrubares, Fila Costeña, P.N. Carara, Puriscal region (P.N. La Cangreja), Valle de Coto Brus and Golfo Dulce region.

Habit: Herb or Shrub.

Structure of interest: Pink and white flowers. Red and purple/black fruits. Very shiny leaves.

Flowering season or months: All year.

Fruiting season or months: All year.

Associated potential ecological functions

Broad function: Very shady interiors, gardens, and parks.

Fauna associated with fruits or seeds: Birds.

Fauna associated with pollination syndrome:

Insects in general.

***Ex situ* management information**

Difficulty to put in a nursery: Although the seeds germinate easily, the difficulty is considered medium.

Place/Facility where the species is found: Monteverde., P.N. Carara, P.N. La Cangreja.

Known reproduction type: Seeds and probably cuttings.

Light conditions: Shade to partial shade.

Garden pruning tolerance: Does not need.

Need for moisture in soil: High.

Pests or conditions: In Monteverde, it presents herbivory due to an unidentified species larva.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



Osa pulchra (Rubiaceae)

Species description

General distribution: Very wet forest (50–250 m asl). On the Caribbean side it is in Baja Talamanca (Fila Carbón), while in the south of the Pacific side it is on Península de Osa. It is found only in Costa Rica and Panama.

Habit: Shrub or tree.

Structure of interest: Huge white flowers.

Flowering season or months: January, February, September, October.

Fruiting season or months: January, December.

Associated potential ecological functions

Broad function: Shady interiors, gardens, and parks.

Fauna associated with pollination syndrome: Night butterflies.

Ex situ management information

Difficulty to put in a nursery: High.

Place/Facility where the species is found: In Osa, where it has been brought to a nursery.

Known reproduction type: Cuttings.

Light conditions: Shade.

Type of substrate required: Drained soil.

Garden pruning tolerance: Yes.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

Ex situ conservation benefits for the species

Secure the population: Yes.

Germplasm/seed bank: Yes.

It is recommended to increase the knowledge about its natural history and how bring it to a nursery, to be able to use it in urban environments. There is a high ornamental interest in humid regions of the Caribbean.



***Palicourea guianensis* (Rubiaceae)**

Species description

Common name: Cafecillo.

General distribution: Species found in sites with secondary growth and roadsides of wet forest, very wet forest, and rain forest (0–700 (–1,100+) m asl). On the Caribbean and near the Continental Division, it is found in Cordillera de Guanacaste, Cordillera de Tilarán and Cordillera Volcánica Central, as well as in Llanuras de San

Carlos, Llanuras de Tortuguero and Llanuras de Santa Clara, also, in the vicinity of Puerto Limón and Baja Talamanca. On the Pacific it is found in the north of the Cordillera de Talamanca, Montes del Aguacate, north of Fila Costeña, south of Península de Nicoya, Central Valley (Z.P. El Rodeo), P.N. Carara, Puriscal region (P.N. La Cangreja), Puerto Quepos neighborhood, north of Valle del General, Coronado and Puerto Cortés neighborhoods, Golfo Dulce region, and Valle de Coto Colorado.

Habit: Shrub.

Structure of interest: Orange flowers, leaves with an attractive shine.

Flowering season or months: April-August.

Fruiting season or months: Fruits observed much of the year.

Associated potential ecological functions

Broad function: Gardens and parks, ecological restoration. Species recommended by IUCN for ecological restoration.

Fauna associated with fruits or seeds: Birds and insects.

Fauna associated with pollination syndrome: Hummingbirds.

Services potentially associated with the human being

It has properties to inhibit corrosion on metals. The macerated leaves are used in plasters to help heal bone fractures. The Kuna Indians (Panama) use the leaves and flowers to prepare a remedy that is used to treat snake bites.

Functions in gardens, urban parks or similar

It works as a visual barrier.

Improves the condition of the soils.

It works in securing of slopes, riverbanks, or protecting the soil against erosion.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: P.N. Carara, Z.P. El Rodeo, P.N. La Cangreja, P.N. Corcovado, E.B. La Selva.

Known reproduction type: Seeds, seedlings.

Light conditions: Full sunlight.

Garden pruning tolerance: Yes.

Need for moisture in soil: Low, it tolerates drought well.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



Palicourea padifolia
(Rubiaceae)

Species description

Common name: Cafecillo.

General distribution: Species of primary and secondary forests, forest edges, grasslands, and stream banks of very wet forest, rain forest, cloud forest and oak forest (600–2,450 m asl). On both slopes in the Cordillera de Tilarán, Cordillera Volcánica Central and Cordillera de Talamanca, and Cerros de La

Carpintera. On the Pacific side and near the Continental Division, it can be seen in the Cordillera de Guanacaste, Montes del Aguacate, Cerros de Escazú, Cerro Turrubares and Cerro Carraigres, Fila Costeña, west of the Central Valley, Puriscal region, Grande de Candelaria River basin and north of Valle del General.

Habit: Suffrutex, shrub or tree.

Structure of interest: Orange to red flowers.

Flowering season or months: Throughout the year.

Fruiting season or months: Throughout the year.

Associated potential ecological functions

Broad function: Gardens and parks, ecological restoration. Species recommended by IUCN for ecological restoration.

Fauna associated with fruits or seeds: Birds and insects.

Fauna associated with pollination syndrome: Hummingbirds.

Functions in gardens, urban parks or similar

It works as a visual barrier.

It improves the condition of the soils.

It works in securing of slopes, riverbanks, or protecting the soil against erosion.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: Cerros Escazú, Cerro Turrubares, Cerro Carraigres.

Known reproduction type: Seeds, seedlings.

Light conditions: Full sunlight and partial shade.

Garden pruning tolerance: Yes.

Need for moisture in soil: Low, it tolerates drought well.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Palicourea tetragona* (Rubiaceae)**

Species description

Common name: Cafecillo.

General distribution: Species found in primary and secondary forests, forest edges and clearings, secondary growth and riverbanks of very wet forest and rain forest (0–700 (–1,100+) m asl. On the Caribbean slope, it is found in Cordillera de Tilarán, Cordillera Volcánica Central and Cordillera de Talamanca, as well as in Llanuras de San Carlos and Llanuras de Tortuguero. On the Pacific slope in the north part of Valle del General, Golfo Dulce region and Valle de Coto Colorado.

Habit: Shrub or tree.

Structure of interest: Green inflorescences, white aromatic flowers. Fruits from purple to black.

Flowering season or months: March, May–December.

Fruiting season or months: Most of the year.

Associated potential ecological functions

Broad function: Ecological restoration.

Fauna associated with fruits or seeds: Large birds (Family Cracidae).

Fauna associated with pollination syndrome: Hummingbirds, night butterflies.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: E.B. La Selva, P.N. Tortuguero, it has been brought to the nursery by FUNDAZOO.

Known reproduction type: Seeds and probably cuttings.

Light conditions: Full sunlight and partial shade.

Garden pruning tolerance: Yes.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): Low, although the shrubs tend to make stands.

Risks of taking it to a nursery and places like gardens and parks: Low.



***Psychotria marginata* (Rubiaceae)**

Species description

Common name: Cafecillo.

General distribution: Primary and secondary forests, forest edges, bushy scrublands, grasslands and riverbanks in wet forest, very wet forest, and rain forest, (0–1,000 (–1,700) m asl). On the Caribbean slope in Cordillera de Guanacaste and Cordillera Volcánica Central, as well as in Llanuras de San Carlos, Llanuras de Tortuguero, Llanuras de Santa Clara, Puerto Limón and near areas, and Baja Talamanca. On both sides of the Cordillera de Talamanca. Also, on the Pacific slope, in Península de Nicoya, Central Valley, Turrubares region, P.N. Carara, Puriscal region (P.N. La Cangreja), Grande de Candelaria River basin, Valle del General, Dominical and near areas, Península de Osa, and Isla del Caño.

Habit: Suffrutex, shrub or small tree.

Structure of interest: Pyramidal inflorescences with small flowers, but somewhat showy, with a white to yellow corolla. The fruits of red coloring are also attractive.

Flowering season or months: All year.

Fruiting season or months: All year.

Associated potential ecological functions

Broad function: Shady gardens and parks, ecological restoration.

Fauna associated with fruits or seeds: Birds.

Fauna associated with pollination syndrome: Hummingbirds, bees.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: E.B. La Selva, P.N. Carara, P.N. La Cangreja, P.N. Corcovado.

Known reproduction type: Seeds.

Light conditions: Partial shade.

Garden pruning tolerance: Yes, but it does not require.

Need for moisture in soil: Medium.

Pests or conditions: It is affected by rust.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.



Psychotria poeppigiana
(Rubiaceae)

Species description

Common name: Labios de mujer ardiente, labios de novia, labios de puta.

General distribution: Primary and secondary forests, forest edges and grasslands of very humid forest, primary and secondary forests (0–1,700+ m asl). On the Caribbean slope it is found in Cordillera de Guanacaste and Cordillera Volcánica Central, as well as in Llanuras de Los

Guatusos (R.N.V.S. Caño Negro), Llanuras de San Carlos and Llanuras de Tortuguero. On both slopes of Cordillera de Talamanca. Also, on the Pacific slopes, in the north part of Fila Costeña, Turruabares region, P.N. Carara, Puriscal region (P.N. La Cangreja), Puerto Quepos and near areas, Valle del General and Valle de Coto Brus, and Golfo Dulce region.

Habit: Suffrutex, shrub or small tree.

Structure of interest: Red bracts and yellow flower. The dark blue fruit is also considered attractive.

Flowering season or months: All year.

Fruiting season or months: All year.

Associated potential ecological functions

Broad function: Gardens and parks in humid places.

Fauna associated with fruits or seeds: Birds.

Fauna associated with pollination syndrome: Hummingbirds, butterflies, and bees.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: P.N. Carara, R.N.V.S. Caño Negro, P.N. La Cangreja.

Known reproduction type: Seeds and probably cuttings.

Light conditions: Partial shade.

Garden pruning tolerance: Yes.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Randia loniceroides* (Rubiaceae)**

Species description

Common name: Escampa gallinas, descansa gallinas.

General distribution: Species of primary and secondary forests of very wet forest, (50–800 (–1,200?) m asl). It is found in the lowlands of the Caribbean slope in the Cordillera de Guanacaste, Cordillera de Tilarán and Cordillera Volcánica Central, as well as in Llanuras de Los Guatusos and Llanuras de San Carlos.

Habit: Suffrutex or shrub.

Structure of interest: The whole plant (natural bonsai shape), white fruits.

Flowering season or months: March-June.

Fruiting season or months: Rainy season.

Associated potential ecological functions

Broad function Interiors, gardens, and parks with partial shade.

Fauna associated with fruits or seeds: Birds.

Fauna associated with pollination syndrome: Probably butterflies.

Services potentially associated with the human being

Ornamental use because of its bonsai shape.

Functions in gardens, urban parks or similar

It has a potential use as a hedge.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: Guatuso, P.N. Volcán Tenorio, P.N. Guanacaste.

Known reproduction type: Seeds, cuttings.

Light conditions: Partial shade to shade.

Type of substrate required: Clay substrate to maintain humidity.

Garden pruning tolerance: Yes.

Need for moisture in soil: Medium.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

Securing the population: Yes, it is a rare species.

Germplasm/seed bank: Yes.

It is recommended to increase the knowledge of how bring it to a nursery and be able to use it in urban environments.



***Warszewiczia coccinea* (Rubiaceae)**

Species description

Common name: Bandera, crucero, guna, lengua de diablo, pastora, pastora de monte, sangrenaria.

General distribution: Species of forest edges and clearings, scrublands and roadsides of wet forest and very wet forests (0–600 (–800+) m asl). On the Caribbean side it is found on the slopes of Cordillera Volcánica Central and Cordillera de Talamanca, as well as on Llanuras de San Carlos and Llanuras de Tortuguero. On the Pacific side, in the eastern part of Cordillera de Talamanca, P.N. Carara, Puriscal region, Dominical and near areas, southern part of Valle del General, Puerto Cortés and near areas, Grande de Térraba River canyon, Valle de Coto Brus and

Golfo Dulce region.

Habit: Shrub or tree.

Structure of interest: Red inflorescence.

Flowering season or months: January-December.

Fruiting season or months: All year.

Associated potential ecological functions

Broad function: Lowland gardens and parks.

Fauna associated with pollination syndrome:

Bees.

***Ex situ* management information**

Difficulty to put in a nursery: Medium, not common in nurseries.

Place/Facility where the species is found: E.B. La Selva, P.N. Carara.

Known reproduction type: It is not known.

Light conditions: Full sunlight to partial shade.

Type of substrate required: Moist and well-drained soil, a little sand is recommended to drain better.

Garden pruning tolerance: It does not require.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

More research needs to be done in the field to gain more information on natural history, habitats, and soil requirements.



Solanum umbellatum
(Solanaceae)

Species description

Common name: Zorrillo.

General distribution: Species found in primary and secondary forests, forest edges, coffee plantations, scrublands, pasturelands riverbanks and trails of wet forest, very wet forest and rain forest, ((0–) 300–1,700+ m asl). On the Caribbean side it is found in Cordillera de Talamanca, Llanuras de Los Guatusos, Llanuras de San Carlos and Llanuras de

Tortuguero. On both sides of Cordillera de Guanacaste. In addition, on the Pacific slope it is found in Cordillera de Tilarán and Cordillera Volcánica Central, east of Cordillera de Talamanca, Cerro Turrubares, south of Fila Costeña (Fila Cruces), north of Guanacaste plains (P.N. Santa Rosa), and Central Valley.

Habit: Suffrutex, shrub or tree.

Structure of interest: White inflorescence.

Flowering season or months: January-September, December.

Fruiting season or months: Practically all year.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with fruits or seeds: Birds and bats.

Fauna associated with pollination syndrome: Bees.

It is a pioneer species.

Place/Facility where the species is found: P.N. Santa Rosa, P.N. Tortuguero, Monteverde.

Known reproduction type: Seeds and cuttings.

Light conditions: Full sunlight.

Garden pruning tolerance: It does not require.

Need for moisture in soil: Medium.

Level of aggressiveness in the field (Invasive potential): It is not known.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* management information**

Difficulty to put in a nursery: Low.



***Lantana velutina* (Verbenaceae)**

Species description

Common name: Cinco blanquitos, lantana blanca.

General distribution: Wet forest and very wet forest (800–1,600+ m asl). On both sides of the Central Valley. On the Pacific slope in Cordillera de Tilarán, east of Cordillera de Talamanca, Cerro Caraigres and Grande de Candelaria River basin.

Habit: Suffrutex or Shrub.

Structure of interest: White flower with yellow in the center, white fruits.

Flowering season or months: January, February, May–December. In the Central Valley it blooms practically all year.

Fruiting season or months: In the Central Valley almost all year.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with fruits or seeds: Probably birds.

Fauna associated with pollination syndrome: Butterflies, bees and other insects.

Functions in gardens, urban parks or similar

It works as a hedge.

***Ex situ* management information.**

Difficulty to put in a nursery: Medium.

Place/Facility where the species is found: Monteverde, Fila Bustamante, Z.P. Las Tablas, Cerro Caraigres.

Known reproduction type: Cuttings, although it is not as successful as desired.

Light conditions: Full sunlight to partial shade.

Garden pruning tolerance: It respond well.

Need for moisture in soil: Medium.

Pests or conditions: Whitefly.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

***Ex situ* conservation benefits for the species**

Secure the population: Yes.

Germplasm/seed bank: Yes.

It is recommended to increase the knowledge of its natural history and how to bring it to a nursery and be able to use it in urban environments, especially germination with seeds because there is no great success with cuttings.



Renealmia cernua
(Zingiberaceae)

Species description

Common name: Renealmia.

General distribution: Species of edges and thickets in wet forest, very wet forest and rain forest (0-1,600 m asl). On the Caribbean side it is found in Cordillera Volcánica Central and Llanuras de San Carlos, Llanuras de Tortuguero, Llanuras de Santa Clara, and in Baja Talamanca.

On both sides of Cordillera de Guanacaste, Cordillera de Tilarán and Cordillera de Talamanca. Also, on the Pacific slope in Montes del Aguacate, Fila Costeña, Puriscal (P.N. La Cangreja) and Golfo Dulce regions.

Habit: Herb.

Structure of interest: The whole plant, orange inflorescence.

Flowering season or months: All year.

Fruiting season or months: All year.

Associated potential ecological functions

Broad function: Gardens and parks.

Fauna associated with fruits or seeds:

Probably birds or ants, the seed has aril.

Fauna associated with pollination syndrome:

Long-billed hummingbirds.

***Ex situ* management information**

Difficulty to put in a nursery: Low.

Place/Facility where the species is found: E.B. La Selva, P.N. Tapantí.

Known reproduction type: Rhizomes and seeds.

Light conditions: Shade to partial shade.

Garden pruning tolerance: For maintenance.

Need for moisture in soil: High.

Level of aggressiveness in the field (Invasive potential): Low.

Risks of taking it to a nursery and places like gardens and parks: Low.

Abbreviations

CATIE: Tropical Agricultural Research and High Education Center.

CINAT-UNA: Tropical Beekeeping Research Center, National University.

E.B.: Biological Station.

P.N.: National Park.

R.F.: Forest Reserve.

R.I.: Indigenous Reserve.

R.N.A.: Absolute Nature Reserve.

R.N.V.S.: National Wildlife Refuge.

TEC: Costa Rica Institute of Technology.

UCR: University of Costa Rica.

Z.P.: Protective Zone.

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Conservation Assessment**

**Parque Zoológico y Jardín Botánico Nacional Simón Bolívar
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**A Selection of Native Plants of Costa Rica
with Ornamental Potential**

**Parque Zoológico y Jardín Botánico Nacional Simón Bolívar
San José, Costa Rica
14-15 February, 2019**

**Section VI
List of participants**

**A Selection of Native Plants with Ornamental Potential for Use
in Urban and Rural Habitats: An *Ex situ*
Conservation Assessment**

**Parque Zoológico y Jardín Botánico Nacional Simón Bolívar
14 y 15 de febrero 2019**

List of participants

Aguilar Montero Karina

UCR-PIOSA

8950 7163

13karigui@gmail.com

Álvarez Chavarría Paula

FUNDAZOO

2223 1790/ 8997 6416

enriquecimiento_ambiental@fundazoo.org

krotalus55@yahoo.com

Alvarado Echeverría José

El Guardián del Bosque

8832 2506

info@elguardiandelbosque.com

Alvarado López Geovanni

Jardín Botánico CATIE

2556 2700

galvarado@catie.ac.cr

geojebriira@gmail.com

Alvarado Madriz Edgar Mauricio

Jardín Botánico-CATIE

8829 7932

jardinbotanico@catie.co.cr

emau15@hotmail.com

Alvarado Vargas Daniel
101 Ingenieros y Arquitectos
7102 3359
nitoalvarado@gmail.com

Alvarenga Odio Franco
FUNDAZOO
8884 2534
velaarquitectura@gmail.com

Avalos Badilla Oscar
FUNDAZOO
2223 1790/67955535
oscaravalos1510@gmail.com

Blanco Coto Mario Alberto
Universidad de Costa Rica
2511 8667
7293 1141
mario.blancocoto@ucr.ac.cr

Brenes Roldán Rebeca
IPOMEA Jardines
2524 1520/8338 5838
ipomeajardines@gmail.com
rebebrenes@gmail.com

Briceño Elizondo Elemer
UNED
ebriceno@uned.cc.cr

Briceño Rodríguez Carlos Alonso
Río Urbano

8366 0852

riourbano.cr@gmail.com

Cabezas Pravia Fernando

FUNDAZOO

2233 6701/8355 1150

botanica@fundazoo.org

fernando_cabezas@yahoo.com

Campos Valverde Alex Mauricio

Independiente

8377 1749

alexmauriciocam@gmail.com

Cordero Vargas Carlos Alberto

Jardín Botánico del CATIE

2556 2700

ccordero@catie.ac.cr

Coto Cordero José

Jardín Botánico del CATIE

2886 2700

jardinbotanico@catie.ac.cr

Cruz Fernández Jorge Arturo

Instituto Nacional de Aprendizaje

2551 8361/6094 2854

jcruzfernandez@ina.ac.cr

jacruz212358@gmail.com

Fernández Brenes María Beatriz

Comité de Deportes y Recreación de San José

2222 0658/8994 8372

beatrizdehutt@gmail.com

beatriz@ccdsanjose.com

Fernández Rivera Daniel

Jardín Botánico CATIE

2558 2223/8630 9930

dfernandez@catie.ac.cr

Formoso Ohlsson Cristina

FUNDAZOO

8371 6619

proyectos@fundazoo.org

Gómez Oviedo Elmer

UNED- estudiante

8873 2089

gyo27@yahoo.es

Guanchez Meza Francisco

CATIE

8301 2305

franciscoguanchez@gmail.com

Hammel Barry

Missouri Botanical Gardens

barry.hammel@mobot.org

Herrera Chacón Gerardo

Vivero Ron-Ron

2643 3880/8320 5315

Jiménez Vargas José Esteban

Herbario USJ, Universidad de Costa Rica

2260 6066/8321 7906

gaiadendron.jej@gmail.com

Mata Quirós María José
Universidad de Costa Rica
8546 6738
maría.mataquiros@ucr.ac.cr
marimataquiros@gmail.com

Matamoros Hidalgo Yolanda
FUNDAZOO/CPSG
2233 6701
info@fundazoo.org
yolanda@cpsgmesoamerica.org

Molina Madrigal Pamela
Clorofila Landscape Design
2290 1713/8869 7214
info@clorofilacr.com
pamelamm30@gmail.com

Montoya Mora Samantha
Biofílica
8901 1989
samantha@biofilicacr.com
samanthamontoyam@gmail.com

Muñoz Rivera Alejandro
Municipalidad de Curridabat
2216 5223/8310 0390
alejandro.muñoz@curridabat.go.cr
alejo.maca@gmail.com

Nuñez González Rolando
ICE
8353 6047

rnunrzg@ice.go.cr
rolandochiquicga@gmail.com

Ovares Campos Lisbeth

FUNDAZOO

2256 0012

educacion@fundazoo.org

Ocampo Araya Mery

UNED-Huella verde

2202 1805/8862 1608

mocampo@uned.ac.cr

meryocampo@gmail.com

Ossenbach Claudia

Vivero Magia Verde

2288 3938/8332 8484

claudiaoss@ice.co.cr

Padilla Salas Claudia

PNUD

8783 6685

carla.padilla@undp.org

carlapadillasalas@gmail.com

Phillips León Laura

Programa Institucional Osa-

Golfo Dulce. UCR

8895 6064

lauphil98@gmail.com

Ríos Montero Yócelin

MINAE-SINAC

2522 6500/8817 6206

yocelin.rios@sinac.go.cr

yocelinrios45@gmail.com

Sánchez López Ana Cristina

UCR estudiante

8719 3682

anasanchez106@gmail.com

Sánchez Sibaja Gabriela

Municipalidad de San José

8434 2666

cuencas.msj@gmail.com

gabbirosea@yahoo.com

Salas Rodríguez María Fernanda.

8986 8928

ander2187@gmail.com

Solano Méndez Bernardita

Cialusa Jardines

2278 5455/8922 9087

8340 5757

www.cialusajardines

bernarditasolano@hotmail.com

Valle Hidalgo Danny

Municipalidad de San José

2547 6851/8860 9940

cuencas.msj@gmail.com

dhidalgo196@gmail.com

Vásquez Vargas Jesenia

FUNDAZOO

8987 3148

nutricion@fundazoo.org

jese2688@gmail.com

Zuchowski Willow

Pronativas- Monteverde

2645 5096

tropcr2@yahoo.com

Zúñiga Amador María Auxiliadora

Universidad Estatal a Distancia

2202 1904

maria.zuniga22@gmail.com

mazunigaa@uned.ac.cr

**A Selection of Native Plants with Ornamental Potential for Use in
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**Parque Zoológico y Jardín Botánico Nacional Simón Bolívar
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Section VIII

Annexes

Annex 1

Table 1: Summary of some associated potential ecological functions and endemism (Costa Rica-Panama *)

Table 1: Summary of some associated potential ecological functions and endemism (Costa Rica-Panama *). For details see taxon sheet of each species.

Botanical family	Scientific name	Fauna associated with floral syndrome	Fauna associated with fruits or seeds	Endemic
Acanthaceae	<i>Aphelandra golfodulcensis</i>	Yes	No/Not known	No
Acanthaceae	<i>Aphelandra leonardii</i>	Yes	No/Not known	No
Acanthaceae	<i>Aphelandra scabra</i>	Yes	No/Not known	No
Acanthaceae	<i>Barleria oenotheroides</i>	Yes	No/Not known	No
Acanthaceae	<i>Justicia deaurata</i>	Yes	No/Not known	Yes
Acanthaceae	<i>Justicia oerstedii</i>	Yes	No/Not known	Yes*
Acanthaceae	<i>Justicia urophylla</i>	No	No/Not known	No
Acanthaceae	<i>Odontonema tubaeforme</i>	Yes	No/Not known	No
Acanthaceae	<i>Razisea spicata</i>	Yes	No/Not known	No
Acanthaceae	<i>Ruellia geminiflora</i>	Yes	No/Not known	No
Acanthaceae	<i>Ruellia jusYeseuoides</i>	Yes	No/Not known	No
Acanthaceae	<i>Spathacanthus hoffmannii</i>	Yes	No/Not known	Yes
Amaryllidaceae	<i>Crinum erubescens</i>	No	No/Not known	No
Amaryllidaceae	<i>Phaedranassa carmiolii</i>	Yes	No/Not known	Yes
Apocynaceae	<i>Mandevilla hirsuta</i>	Yes	No/Not known	No
Araceae	<i>Anthurium cubenYess</i>	Yes	No/Not known	No
Araceae	<i>Anthurium hoffmannii</i>	Yes	Yes	No
Araceae	<i>Anthurium ochranthum</i>	Yes	Yes	No
Araceae	<i>Anthurium ranchoanum</i>	Yes	Yes	No
Araceae	<i>Anthurium watermaliense</i>	Yes	Yes	Yes*
Araceae	<i>Philodendron auriculatum</i>	Yes	Yes	Yes
Arecaceae	<i>Chamaedorea tepejilote</i>	Yes	Yes	No
Arecaceae	<i>Reinhardtia gracilis</i>	Probable	Probable	No
Aristolochiaceae	<i>Aristolochia gorgona</i>	Yes	No	No
Asteraceae	<i>Eremosis triflosculosa</i>	Yes	No/Not known	No
Asteraceae	<i>Lasianthaea fruticosa</i>	Yes	No/Not known	No
Asteraceae	<i>Pseudogynoxys cummingii</i>	Yes	No/Not known	No
Asteraeae	<i>Sinclairia polyantha</i>	Yes	No	No
Asteraeae	<i>Tagetes tenuifolia</i>	Yes	No/Not known	No

Botanical family	Scientific name	Fauna associated with floral syndrome	Fauna associated with fruits or seeds	Endemic
Begoniaceae	<i>Begonia conchifolia</i>	Yes	No	No
Begoniaceae	<i>Begonia involucrata</i>	Yes	No	No
Bignoniaceae	<i>Dolichandra unguis-cati</i>	Yes	No/Not known	No
Blechnaceae	<i>Blechnum occidentale</i>	No aplica	No aplica	No
Bromeliaceae	<i>Werauhia sanguinolenta</i>	probable	No	No
Campanulaceae	<i>Lobelia laxiflora</i>	Yes	No/Not known	No
Commelinaceae	<i>Cochliostema odoratissimum</i>	Probable	No	No
Commelinaceae	<i>Dichorisandra amabilis</i>	Yes	Yes	No
Convolvulaceae	<i>Ipomoea clavata</i>	Yes	No/Not known	No
Cyclanthaceae	<i>Carludovica drudei</i>	Yes	Yes	No
Cyclanthaceae	<i>Carludovica rotundifolia</i>	Yes	Yes	No
Ericaceae	<i>Cavendishia capitulata</i>	Yes	Yes	No
Ericaceae	<i>Cavendishia melastomoides</i>	Yes	Yes	No
Erythroxylaceae	<i>Erythroxylum havanense</i>	Probable	Yes	No
Euphorbiaceae	<i>Dalechampia tiliifolia</i>	Yes	No/Not known	No
Fabaceae	<i>Barbieria pinnata</i>	Yes	No/Not known	No
Fabaceae	<i>Indigofera costaricensis</i>	Yes	No/Not known	Yes*
Fabaceae	<i>Vigna caracalla</i>	Yes	No/Not known	No
Gesneriaceae	<i>Gasteranthus osaensis</i>	Probable	No/Not known	Yes
Gesneriaceae	<i>Gloxinia erinoides</i>	Yes	No/Not known	No
Gesneriaceae	<i>Kohleria spicata</i>	Yes	No/Not known	No
Gunneraceae	<i>Gunnera insignis</i>	No/Not known	No/Not known	No
Haemodoraceae	<i>Xiphidium caeruleum</i>	Probable	No/Not known	No
Heliconiaceae	<i>Heliconia imbricata</i>	Yes	Yes	No
Heliconiaceae	<i>Heliconia longiflora</i>	Yes	Yes	No
Heliconiaceae	<i>Heliconia mariae</i>	Yes	Yes	No
Heliconiaceae	<i>Heliconia mathiasiae</i>	Yes	Yes	No
Heliconiaceae	<i>Heliconia metalica</i>	Yes	Yes	No
Heliconiaceae	<i>Heliconia osaensis</i>	Yes	Yes	No
Iridaceae	<i>Orthrosanthus chimboracensis</i>	No/Not known	No/Not known	No
Lamiaceae	<i>Hyptis urticoides</i>	Yes	No/Not known	No
Lamiaceae	<i>Salvia colonica</i>	Yes	No/Not known	No

Botanical family	Scientific name	Fauna associated with floral syndrome	Fauna associated with fruits or seeds	Endemic
Lamiaceae	<i>Salvia lasiantha</i>	Yes	No/Not known	No
Lamiaceae	<i>Salvia lasiocephala</i>	Yes	No/Not known	No
Lamiaceae	<i>Salvia polystachia</i>	Yes	No/Not known	No
Lamiaceae	<i>Salvia pteroura</i>	Yes	No/Not known	No
Lamiaceae	<i>Salvia wagneriana</i>	Yes	No/Not known	No
Lamiaceae	<i>Stachys costaricensis</i>	Yes	No/Not known	No
Loganiaceae	<i>Spigelia splendens</i>	Yes	No/Not known	No
Malpighiaceae	<i>Heteropterys brachiata</i>	Yes	No/Not known	No
Malvaceae	<i>Bakeride Yesa vulcanicola</i>	Yes	No/Not known	No
Malvaceae	<i>Malvaviscus palmanus</i>	Yes	Yes	No
Marantaceae	<i>Calathea lutea</i>	Yes	No/Not known	No
Marantaceae	<i>Calathea vinosa</i>	Yes	No/Not known	Yes
Marantaceae	<i>Calathea warszewiczii</i>	Yes	No/Not known	No
Marantaceae	<i>Pleiochachya leiostachya</i>	Yes	No/Not known	No
Melastomataceae	<i>Blakea parasitica</i>	Yes	Yes	No
Melastomataceae	<i>Blakea scarlatina</i>	Yes	Yes	No
Melastomataceae	<i>Miconia aeruginosa</i>	Yes	Yes	No
Melastomataceae	<i>Miconia affinis</i>	Yes	Yes	No
Muntingiaceae	<i>Dicraspidia donnell-smithii</i>	Yes	Yes	No
Onagraceae	<i>Fuchsia paniculata</i>	Yes	Yes	No
Passifloraceae	<i>Passiflora auriculata</i>	Yes	Yes	No
Passifloraceae	<i>Passiflora megacoriacea</i>	Yes	Yes	No
Phytolaccaceae	<i>Phytolacca icosandra</i>	Yes	Yes	No
Piperaceae	<i>Peperomia maculosa</i>	No/Not known	No/Not known	No
Piperaceae	<i>Piper bredemeyeri</i>	Yes	Yes	No
Piperaceae	<i>Piper friedrichsthali</i>	Yes	Yes	No
Piperaceae	<i>Piper umbellatum</i>	Yes	Yes	No
Plantaginaceae	<i>Russelia sarmentosa</i>	Yes	No/Not known	No
Poaceae	<i>Andropogon bicornis</i>	No/Not known	No/Not known	No
Poaceae	<i>Gynerium sagittatum</i>	No	No	No
Pteridaceae	<i>Acrostichum aureum</i>	No aplica	No aplica	No
Rubiaceae	<i>Bouvardia costaricensis</i>	Probable	No/Not known	Yes

Botanical family	Scientific name	Fauna associated with floral syndrome	Fauna associated with fruits or seeds	Endemic
Rubiaceae	<i>Notopleura uliginosa</i>	Yes	Yes	No
Rubiaceae	<i>Osa pulchra</i>	Yes	No/Not known	Yes*
Rubiaceae	<i>Palicourea guianensis</i>	Yes	Yes	No
Rubiaceae	<i>Palicourea padifolia</i>	Yes	Yes	No
Rubiaceae	<i>Palicourea tetragona</i>	Yes	Yes	No
Rubiaceae	<i>Psychotria marginata</i>	Yes	Yes	No
Rubiaceae	<i>Psychotria poeppigiana</i>	Yes	Yes	No
Rubiaceae	<i>Randia loniceroides</i>	Probable	Yes	No
Rubiaceae	<i>Warszewiczia coccinea</i>	Yes	No/Not known	No
Solanaceae	<i>Solanum umbellatum</i>	Yes	Yes	No
Verbenaceae	<i>Lantana velutina</i>	Yes	Probable	No
Zingiberaceae	<i>Renealmia cernua</i>	Yes	Probable	No

Annex 2

Presentation: The beauty of native ornamental plants of Costa Rica and the danger of some invasive plants (in Spanish)



**La Belleza de las Plantas Nativas
Ornamentales de Costa Rica y
El Peligro de Algunas Invasoras**



2004, en Monteverde
2008-2010 Red ProNativas
- Talleres, conferencia
- Sitio web
(www.pronativascr.org)



Educar sobre la importancia, reproducción y uso de las plantas nativas ornamentales, para contribuir a la conservación de la riqueza ecológica, la belleza del paisaje y la identidad de Costa Rica.



Viveros para reproducir plantas nativas

COSTA RICA
PLANTAS NATIVAS ORNAMENTALES
DE AMPLIA DISTRIBUCION I

Al sembrar plantas nativas en nuestros jardines ahorramos agua, damos casa y alimento a la vida silvestre de nuestra región y protegemos la biodiversidad.



Alientos
Adiantum concinnum
Pteridaceae



Tabacón
Anthurium spp.
Araceae



Viborana
Asclepias curassavica
Apocynaceae



Begonia
Begonia spp.
Begoniaceae



Piñuela
Bromelia pinguin
Bromeliaceae



Estococa
Carludovica spp.
Cyclanthaceae



Caña agria
Costus spp.
Costaceae



Platanilla
Heliconia latispatha
Heliconiaceae



Calita
Spathiphyllum friedrichsthali
Araceae



Botón de oro
Sphagneticola tribolata
Asteraceae



Cola de gallo
Xiphidium caeruleum
Haemodoraceae



Guastomate
Ardisia revoluta
Myrsinaceae



Nance
Byrsonima crassifolia
Malpighiaceae



Guarumo
Cecropia spp.
Cecropiaceae



Pacaya
Chamaedorea costaricana
Arecaceae



Dama
Citharexylum donnell-smithii
Verbenaceae



Copey
Clusia rosea
Clusiaceae



Poró
Erythrina lanceolata
Fabaceae



Coralillo
Hamelia patens
Rubiaceae

Sol Sombra Media sombra

COSTA RICA
PLANTAS NATIVAS ORNAMENTALES
DE AMPLIA DISTRIBUCION II

Al sembrar plantas nativas en nuestros jardines ahorramos agua, damos casa y alimento a la vida silvestre de nuestra región y protegemos la biodiversidad.



Pavón amarillo
Justicia aurea
Acanthaceae



Cinco negritos
Lantana camara
Verbenaceae



Amapolita
Malvaviscus arboreus
Malvaceae



Coral
Odontonema tubaeforme
Acanthaceae



Candelillo
Piper spp.
Piperaceae



Fior blanca
Plumeria rubra
Apocynaceae



Guayaba de mono
Posoqueria latifolia
Rubiaceae



Carmin
Rivina humilis



Alacrancillo
Stachytarpheta spp.

s



Roble de sabana
Tabebuia rosea
Bignoniaceae



Vainillo
Tecoma stans
Bignoniaceae



Uruca
Trichilia havanensis
Meliaceae



Damiana
Turnera ulmifolia
Turneraceae



Jalapa
Allamanda cathartica
Apocynaceae



Pitahaya
Hylocereus costaricensis
Cactaceae



Churristate
Ipomoea spp.
Convolvulaceae



Mano de tigre
Monstera deliciosa
Araceae



Granadilla
Passiflora spp.
Passifloraceae



Choreque
Petrea volubilis
Verbenaceae



Filodendron
Philodendron spp.
Araceae



Garrobo
Syngonium spp.
Araceae

TAMARINDO



Cerito
Casearia corymbosa
Flacourtiaceae



Icaco
Chrysobalanus icaco
Chrysobalanaceae



Pudreoreja de árbol
Ipomoea carnea
Convolvulaceae



Siempre viva
Jacquinia nervosa
Theophrastaceae



Capulín
Muntingia calabura
Muntingiaceae



Balsa
Ochroma pyramidale
Malvaceae



Canelo
Ocotea veraguensis
Lauraceae



Candelillo
Piper tuberculatum
Piperaceae



Flor Blanca
Plumeria rubra
Apocynaceae



Guataco
Rauvolfia tetraphylla
Apocynaceae



Sardino
Thouinidium decandrum
Sapindaceae



Cardón
Stenocereus aragonii
Cactaceae

© 2010 Fotos por Tard Forsyth, Francis Faigal, Gordon Franke, William Haber, Barry Hammel, Adrian Hepworth, Kate Johnson, Natalia Vega, Willow Zuchowski

LA SELVA/SARAPIQUI



Platanilla
Heliconia wagneriana
Heliconiaceae



Mano de tigre
Philodendron radiatum
Araceae



Helecho
Phlebodium pseudoaureum
Polypodiaceae



Bijagua
Pleiotachya pruinosa
Marantaceae



Renealmia
Renealmia cernua
Zingiberaceae



Higuito
Ficus colubrinae
Moraceae



Coralillo
Hamelia patens
Rubiaceae



Lengua de vaca
Miconia longifolia
Melastomataceae



Cafecillo
Palicourea guianensis
Rubiaceae



Gavián
Pentaclethra macroloba
Fabaceae



Pastora de montaña
Warszewiczia coccinea
Rubiaceae



Granadilla de monte
Passiflora vitifolia
Passifloraceae

© 2010 Fotos por Francis Faigal, Tard Forsyth, Barry Hammel, Kate Johnson, Willow Zuchowski
• Fotos por Reinaldo Aguilar, M. Tschapka, Orlando Vargas de Flora Digital de La Sleva

Plantas nativas ornamentales



Bromelia pinguin
Piñuela



de
Garza
y
Nosara



Piper marginatum
Anisillo



Apkelandra scabra



Turnera
Damiana



Hamelia patens
Pico de pájaro, Coralillo



Heliconia latispatha
Platanilla



Stachytarpheta
Alacranillo



Combretum fruticosum
Papumiel

Poster by Willow Zuchowski, 2009



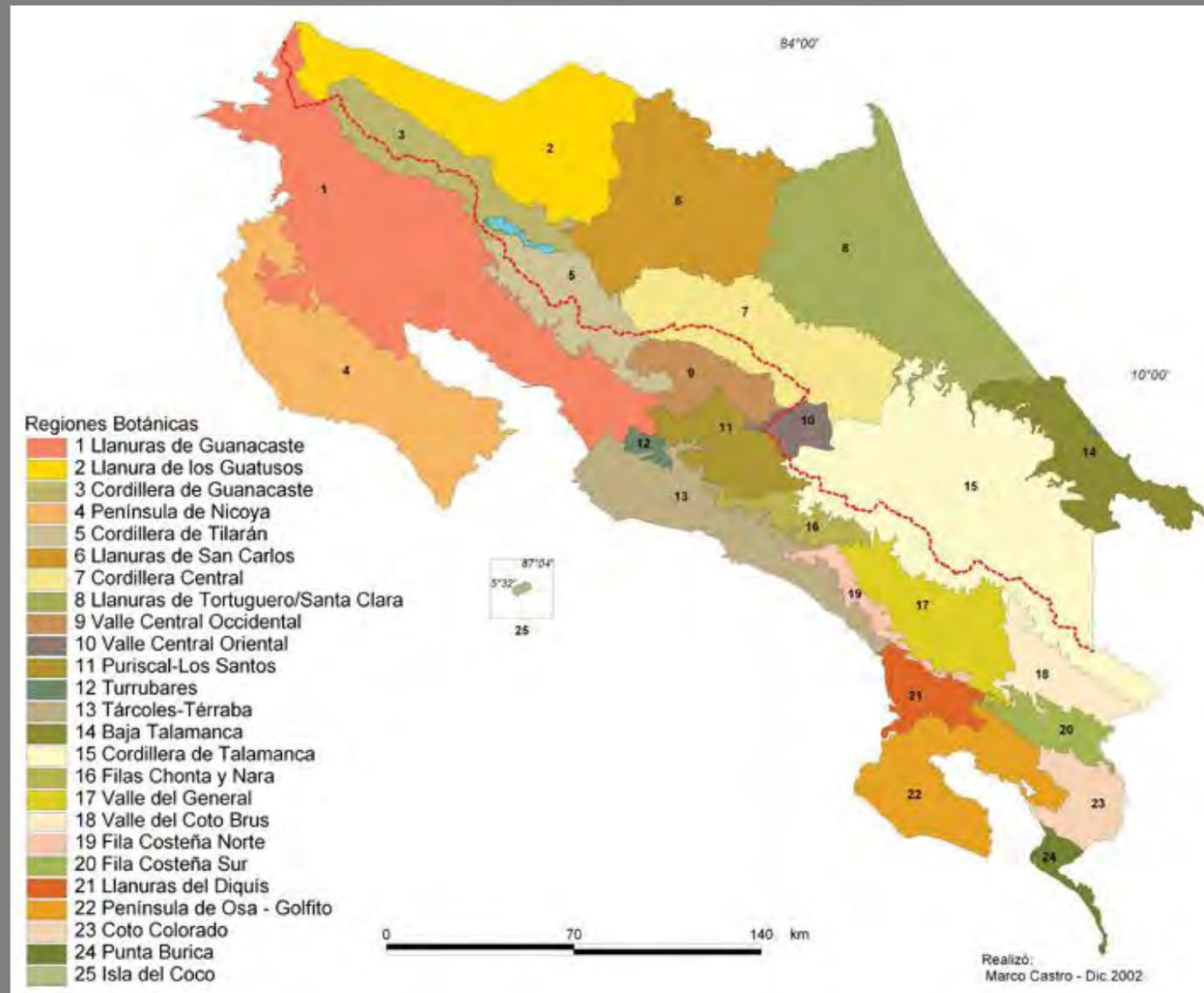


Qué es una Planta Nativa?

- Las plantas nativas son las que han crecido en un lugar determinado previo a la civilización moderna.
- Son plantas que han evolucionado para crecer y florecer basado en las condiciones particulares del clima y del suelo de un lugar específico.



Regiones botánicas de Costa Rica



¿Por qué promocionar las plantas nativas?



- A pesar de que Costa Rica alberga 5% de diversidad de plantas y animales del mundo (ca. 10,000 especies de plantas vasculares), los jardines del país están compuestos **principalmente** por plantas y árboles exóticos (no-nativas).
- Algunas ya son invasoras de áreas silvestres



Además de biodiversidad, las plantas nativas son parte nuestra cultura e identidad y tienen usos muy interesantes



La bijagua (*Calathea*)



El jícaro (*Crescentia*)



Santa Lucía (*Ageratum*)

Artesanías y Alimentos

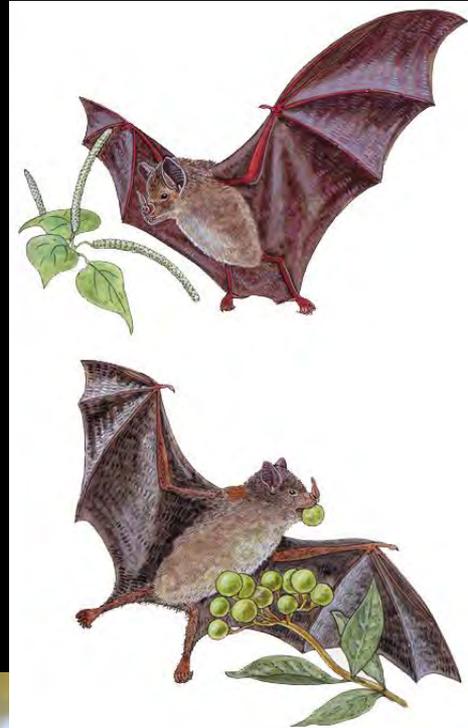


Educación

Jardines nativos ofrecen oportunidades para aprender sobre la flora y fauna de la región, son aulas abiertas.



Ahorros en agua, dinero, y mantenimiento



Hábitat para vida silvestre



**Un árbol de Guarumo
atrae muchas especies.**





Thunbergia grandiflora



Una especie invasora es...

una especie no-nativa, introducida a un ecosistema en donde no es nativa, que puede causar daño económico y/o al ambiente, o daño a la salud de seres humanos.



Solo pensar en las plantas invasoras me hace subir la presión!



Las especies invasoras son uno de los más importantes razones por la pérdida de la biodiversidad y por cambio en los servicios ambientales.

Constituyen una amenaza muy grande a los ecosistemas frágiles.

Plantas Invasoras en Monteverde

¿Qué es una planta invasora?
Una planta no nativa que crece agresivamente, se dispersa y desplaza otras plantas. Estas pueden ser dañinas para el medio ambiente ya que destruyen sus ecosistemas. El control de las plantas invasoras puede requerir un financiamiento considerable.

Las plantas invasoras más comunes en el área de Monteverde:

1. *Musa velutina* (Banano rosado)
2. *Thunbergia grandiflora* (Emperatriz)
3. *Arachis pintoi* (Manicillo)
4. *Tradescantia zebrina* (Cucaracha)
5. *Hedera helix* (Hiedra)
6. *Crocosmia X crocosmiiflora* (Lirio chispa)
7. *Hypoestes phyllostachya* (Sarapión)



Musa velutina
(Banano rosado)



Crocosmia X crocosmiiflora
(Lirio chispa)



Thunbergia grandiflora (Emperatriz)



Hedera helix (Hiedra)



Hypoestes phyllostachya
(Sarapión)



Arachis pintoi (Manicillo)



Arachis pintoi (Manicillo)

Que no hacer con plantas invasoras:
No tirar semillas u otras partes de la planta en el bosque o en el jardín. En muchos casos, estas plantas germinan donde son desechadas.



Tradescantia zebrina
(Cucaracha)

Cartel por Maggie Rios en colaboración con CIEE y ProNativas, Otoño 2010

Algunas características de plantas invasoras



- ❑ Reproducción vegetativa
- ❑ Dispersión de semillas por aves (igual por viento)
- ❑ Evasión de los animales que las comen (herbívoros)
- ❑ Habilidad de atraer polinizadores y dispersadores generalistas
- ❑ ¡Ser bella!

Cuales son los peligros de invasoras?

- ▣ Reproduccion rápida y agresiva
- ▣ Reemplazar las especies nativas
- ▣ Pueden prevenir el crecimiento natural de bosque secundario
- ▣ Pueden causar daño a los cultivos



Como 'caminan'?

escapadas



Algunas son muy difíciles a controlar

Pink Velvet Banana *Musa velutina*



Shoebutton Ardisia
Ardisia elliptica



Photo, Bruce Lyon



- Agradecemos los fotografos:

- Reinaldo Aguilar
- Barry Hammel
- Katie Johnson
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- Andrew Russell
- Orlando Vargas
- Natalia Vega
- Willow Zuchowski
- Y voluntarios de ProNativas

- Y Artistas:

- Deirdre Hyde
- Mark Wainwright

Annex 3

**Photo credits for the species assessed: A selection of native plants of
Costa Rica with ornamental potential**

Workshop species photo credits: A Selection of Native Plants with Ornamental Potential for Use in Urban and Rural Habitats: An *Ex situ* Conservation Assessment

Barry Hammel and Willow Zuchowski (Pronativas)

Aphelandra gulfodulcensis (Acanthaceae)

Aphelandra scabra (Acanthaceae)

Odontonema tubaeforme (Acanthaceae)

Ruellia jussieuoides (Acanthaceae)

Crinum erubescens (Amaryllidaceae)

Mandevilla hirsuta (Apocynaceae)

Philodendron auriculatum (Araceae)

Chamaedorea tepejilote (Arecaceae)

Begonia conchifolia (Begoniaceae)

Begonia involucrate (Begoniaceae)

Blechnum occidentale (Blechnaceae)

Werauhia sanguinolenta (Bromeliaceae)

Lobelia laxiflora (Campanulaceae)

Dichorisandra amabilis
(Commelinaceae)

Carludovica rotundifolia (Cyclanthaceae)

Kohleria spicata (Gesneriaceae)

Xiphidium caeruleum (Haemodoraceae)

Heliconia imbricata (Heliconiaceae)

Heliconia longiflora (Heliconiaceae)

Heliconia mariae (Heliconiaceae)

Heliconia mathiasiae (Heliconiaceae)

Heliconia osaensis (Heliconiaceae)

Salvia colonica (Lamiaceae)

Bakeridesia vulcanicola (Malvaceae)

Malvaviscus palmanus (Malvaceae)

Calathea lutea (Marantaceae)

Calathea warscewiczii (Marantaceae)

Peperomia maculosa (Piperaceae)

Russelia sarmentosa (Plantaginaceae)

Palicourea guianensis (Rubiaceae)

Palicourea padifolia (Rubiaceae)

Psychotria poeppigiana (Rubiaceae)

Warszewiczia coccinea (Rubiaceae)

Barry Hammel (Flickr)

Justicia deaurata (Acanthaceae)

Justicia oerstedii (Acanthaceae)

Justicia urophylla (Acanthaceae)

Ruellia geminiflora (Acanthaceae)

Phaedranassa carmiolii (Amaryllidaceae)

Anthurium hoffmannii (Araceae)

Anthurium ranchoanum (Araceae)

Pseudogynoxys cummingii (Asteraceae)

Tagetes tenuifolia (Asteraceae)

Dolichandra unguis-cati (Bignoniaceae)

Ipomoea clavata (Convolvulaceae)

Erythroxylum havanense
(Erythroxylaceae)

Xiphidium caeruleum (Haemodoraceae)

Heliconia metallica (Heliconiaceae)

Orthrosanthus chimboracensis
(Iridaceae)

Hyptis urticoides (Lamiaceae)

Salvia lasiantha (Lamiaceae)

Salvia polystachia (Lamiaceae)

Heteropterys brachiata (Malpighiaceae)

Pleiostachya leiostachya (Marantaceae)

Fuchsia paniculata (Onagraceae)

Piper friedrichsthalii (Piperaceae)

Notopleura uliginosa (Rubiaceae)

Lantana velutina (Verbenaceae)

Esteban Jiménez

Spathacanthus hoffmannii (Acanthaceae)

Anthurium cubense (Araceae)

Indigofera costaricensis (Fabaceae)

Salvia lasiocephala (Lamiaceae)

Salvia pteroura (Lamiaceae)

Spigelia splendens (Loganiaceae)

Blakea parasitica (Melastomataceae)

Miconia aeruginosa (Melastomataceae)

Reinaldo Aguilar (Flickr)

Gasteranthus osaensis (Gesneriaceae)

Osa pulchra (Rubiaceae)

Cristina Formoso

Barleria oenotheroides (Acanthaceae)

Fernando Cabezas

Pseudogynoxys cummingii (Asteraceae)

Phytolacca icosandra (Phytolaccaceae)

Pedro Juárez

Eremosis triflosculosa (Asteraceae)

Florula de la Selva

Aristolochia gorgona (Aristolochiaceae)

Palicourea tetragona (Rubiaceae)

Neotropical Flora

Stenostephanus leiorachis (Acanthaceae)

Anthurium ochranthum (Araceae)

Reinhardtia gracilis (Arecaceae)

Lasianthaea fruticosa (Asteraceae)

Cochliostema odoratissimum
(Commelinaceae)

Vigna caracalla (Fabaceae)

Blakea scarlatina (Melastomataceae)

Miconia affinis (Melastomataceae)

Piper umbellatum (Piperaceae)

Andropogon bicornis (Poaceae)

Gynerium sagittatum (Poaceae)

Psychotria marginata (Rubiaceae)

Renealmia cernua (Zingiberaceae)

Tropicos.org

Aphelandra leonardii (Acanthaceae)

Anthurium watermaliense (Araceae)

Dalechampia tiliifolia (Euphorbiaceae)

Barbieria pinnata (Fabaceae)

Gloxinia erinoides (Gesneriaceae)

Gunnera insignis (Gunneraceae)

Salvia wagneriana (Lamiaceae)

Calathea vinosa (Marantaceae)

Dicraspidiaddonell-smithii
(Muntingiaceae)

Passiflora megacoriacea (Passifloraceae)

Piper bredemeyeri (Piperaceae)

Acrostichum aureum (Pteridaceae)

Bouvardia costaricensis (Rubiaceae)

Solanum umbellatum (Solanaceae)

<https://www.botany.cz/cs/cavendishia-capitulata/>

Cavendishia capitulata (Ericaceae)

<http://johnterahsmiley.com/heliconius-passiflora-flea%20beetle/passiflora/auriculata/auriculata.html>

Passiflora auriculata (Passifloraceae)

Palmpedia.net

Reinhardtia gracilis (Arecaceae)

Carludovica drudei (Cyclanthaceae)

Wikipedia

Sinclairia polyantha (Asteraceae)