

**Botanic Gardens Conservation International**  
*The world's largest plant conservation network*



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**Linking conservation prioritisation and practical action –  
Saving the world's most threatened magnolias**

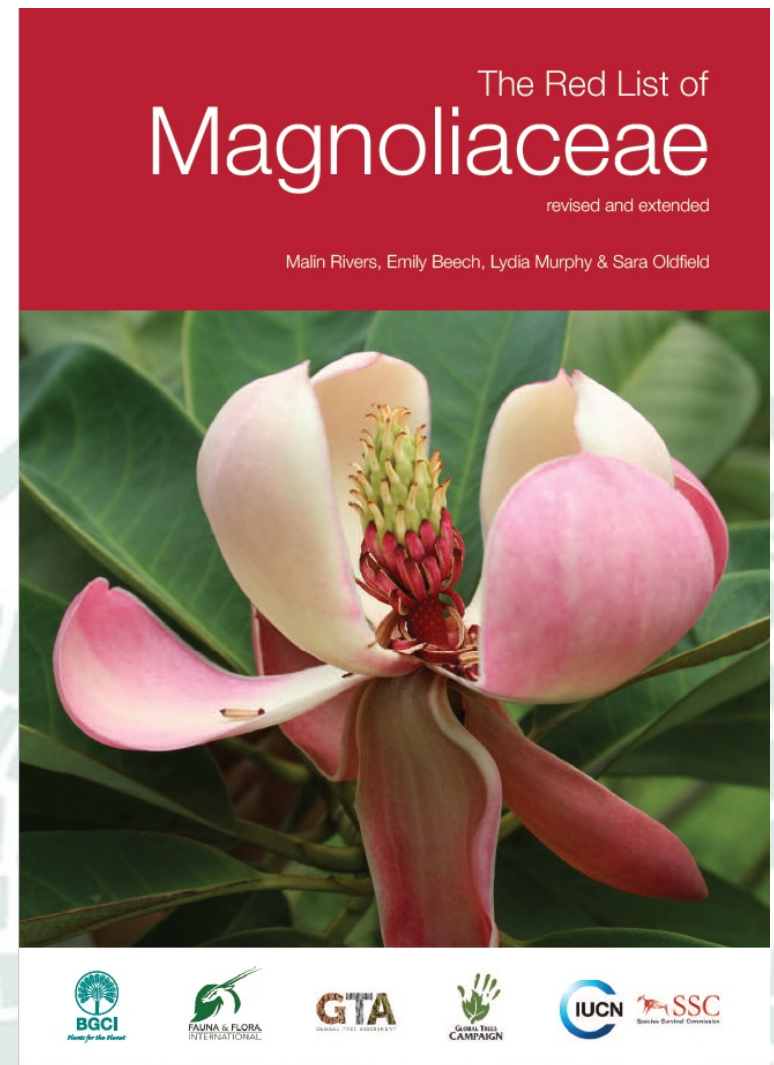
Joachim Gratzfeld & Malin Rivers  
Regional Programmes' Director & Red List Manager

Botanic Gardens Conservation International



# Setting the scene...

- New Red List of Magnoliaceae published March 2016
- 304 species (Magnolia and Liriodendron)



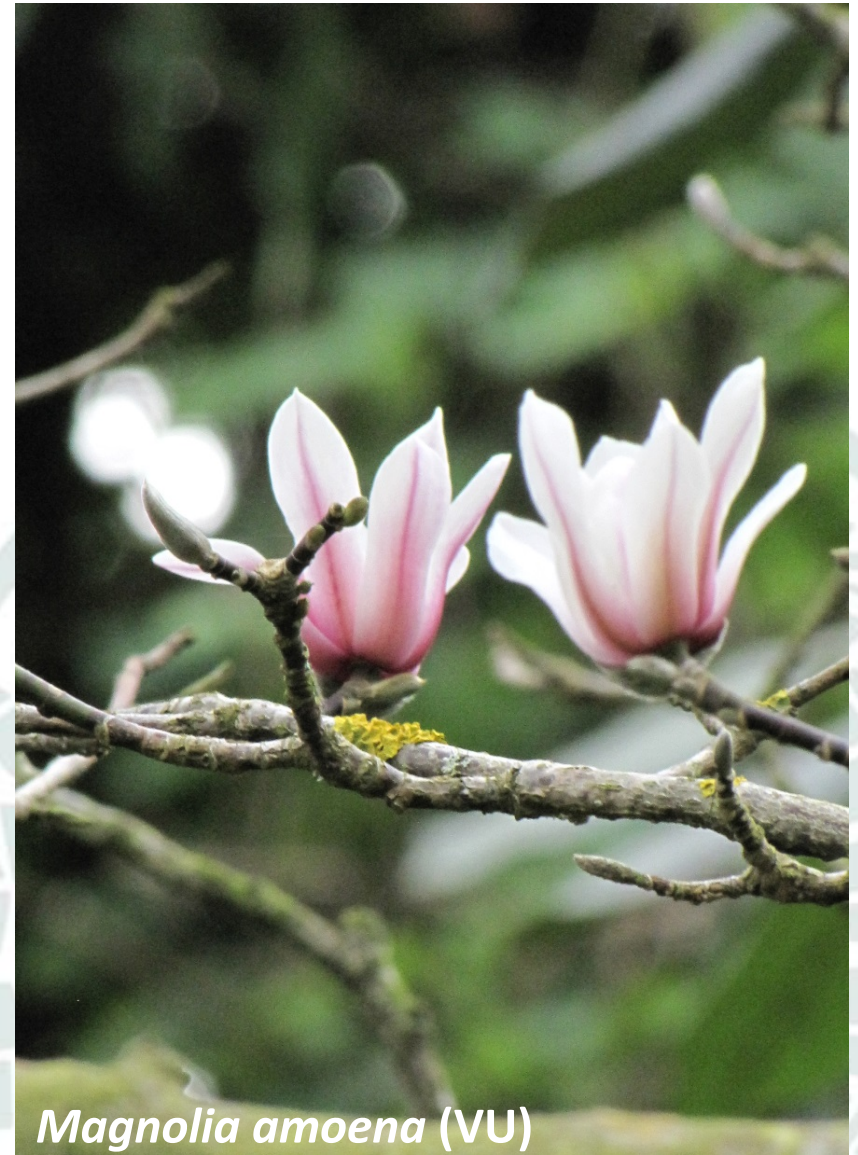
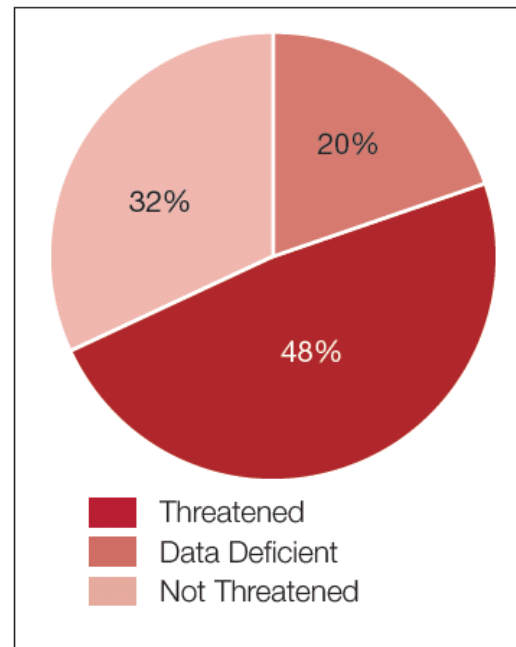
# Overall findings



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Nearly half – 48% – of the species classified as threatened:

- Critically Endangered
- Endangered
- Vulnerable



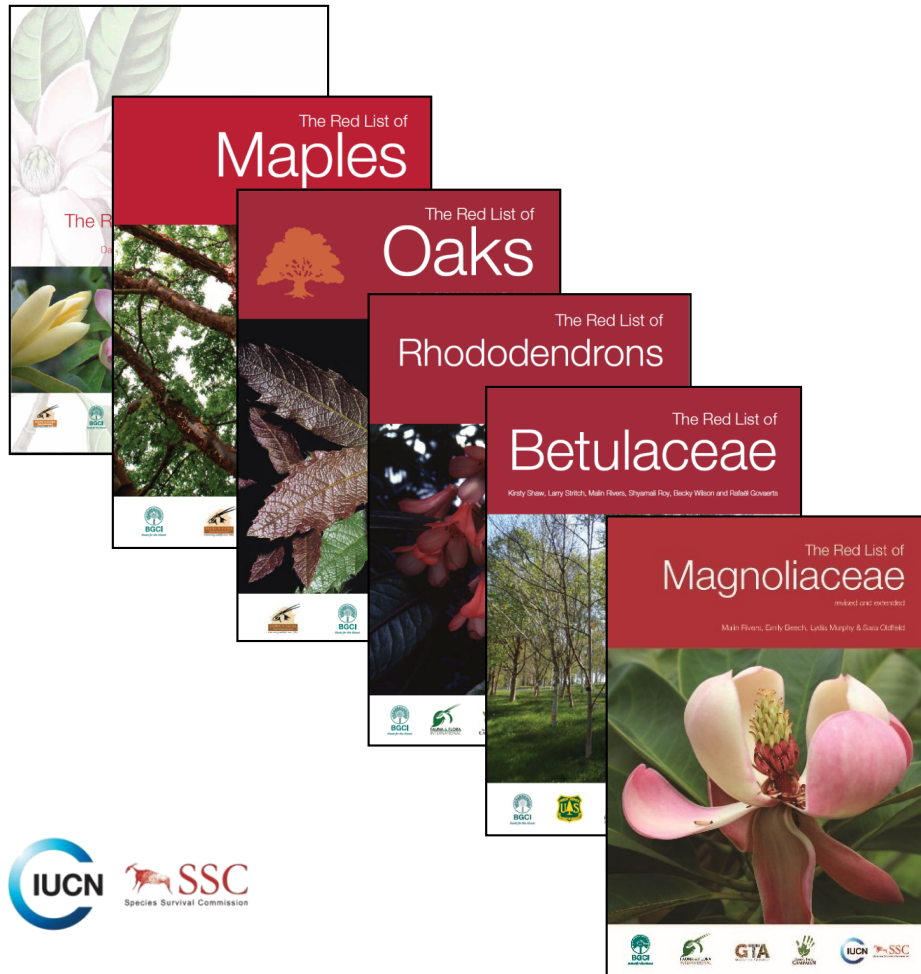
*Magnolia amoena* (VU)

# Tree Red Lists



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## Red Lists of Global Trees

(percentage threatened taxa)

Magnolias

48%

Maples

28%

Rhododendron

27%

Oaks

27%

Betulaceae

7%



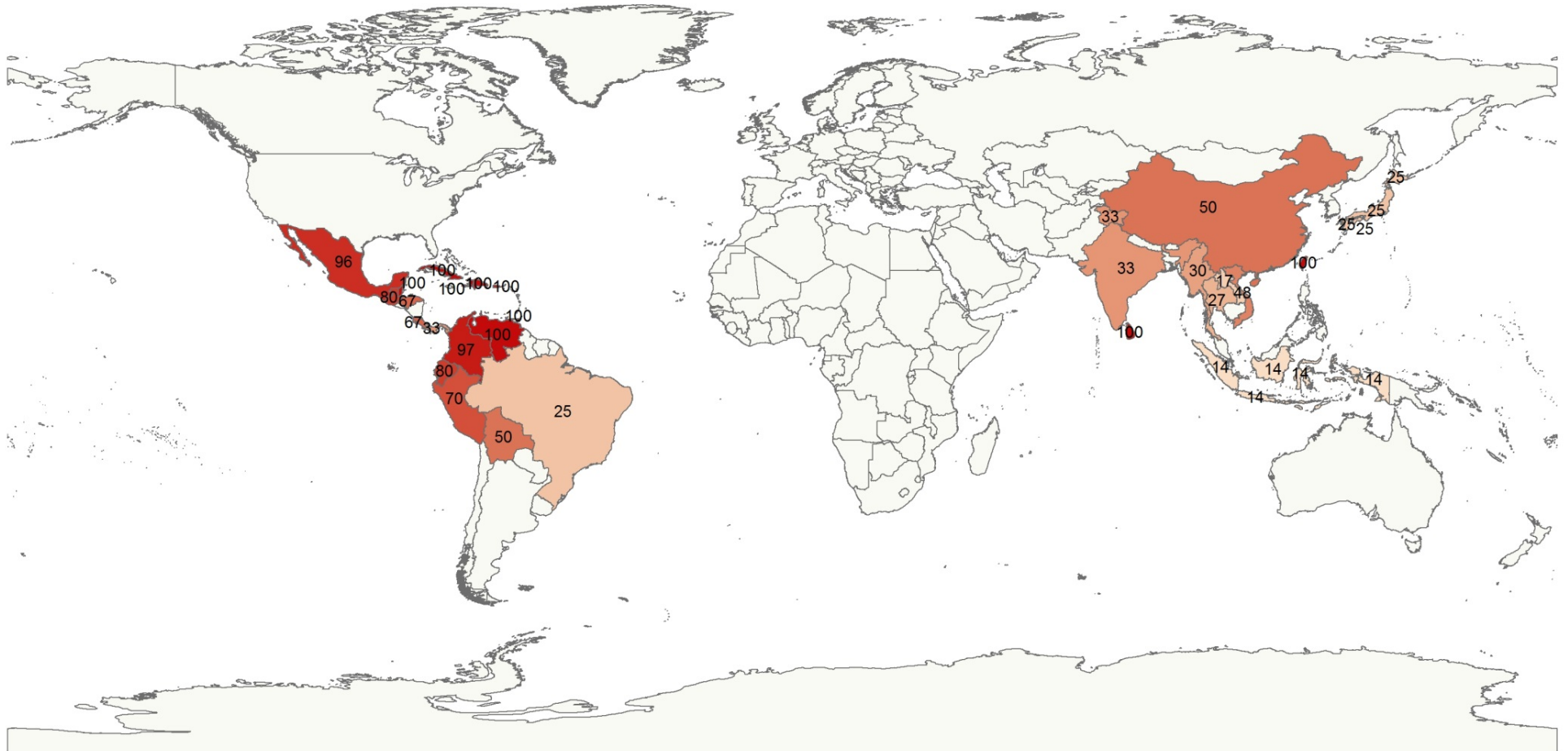


# Percentage of threatened species per country



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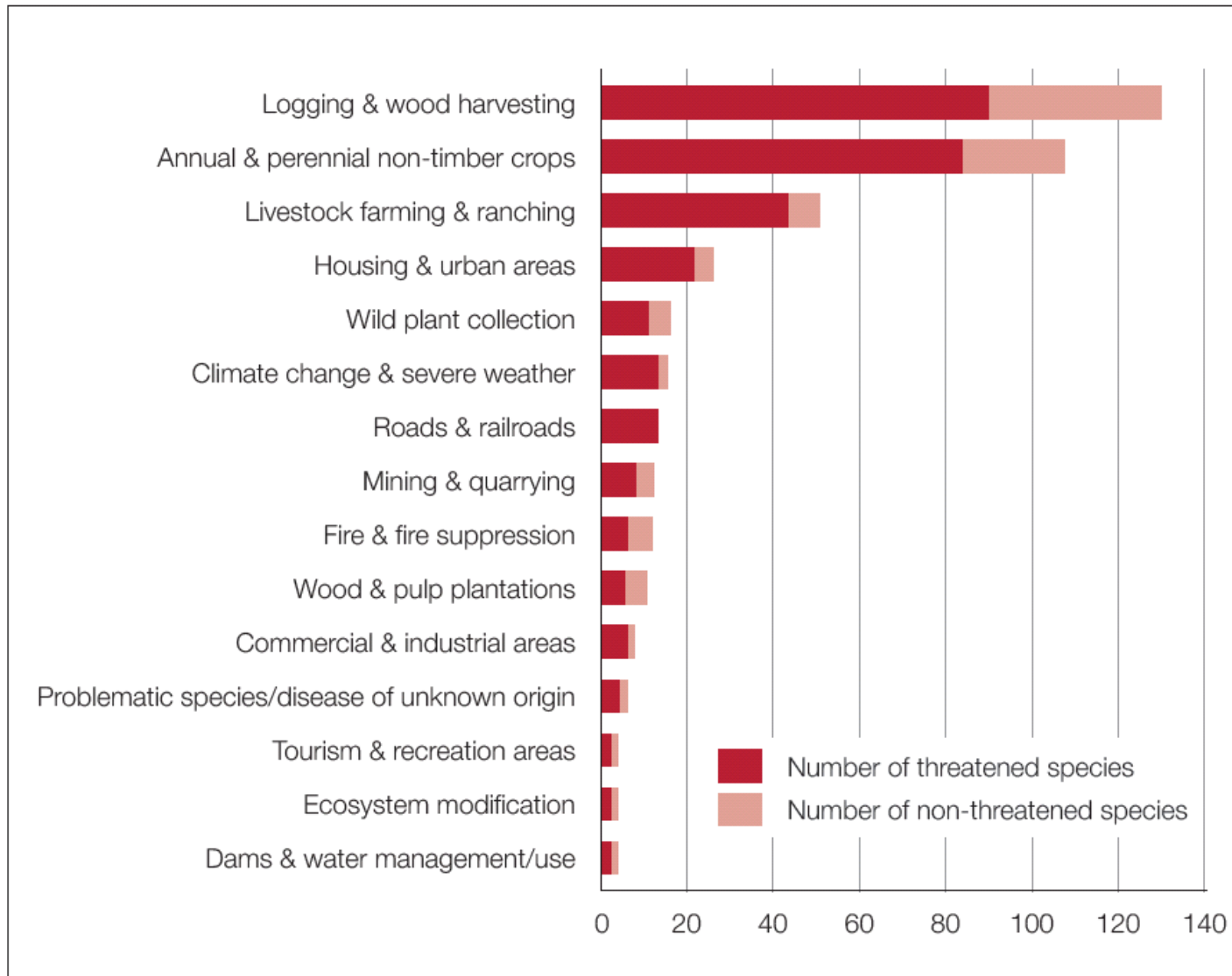
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# Major risk factors to Magnoliaceae using the IUCN threat classification system



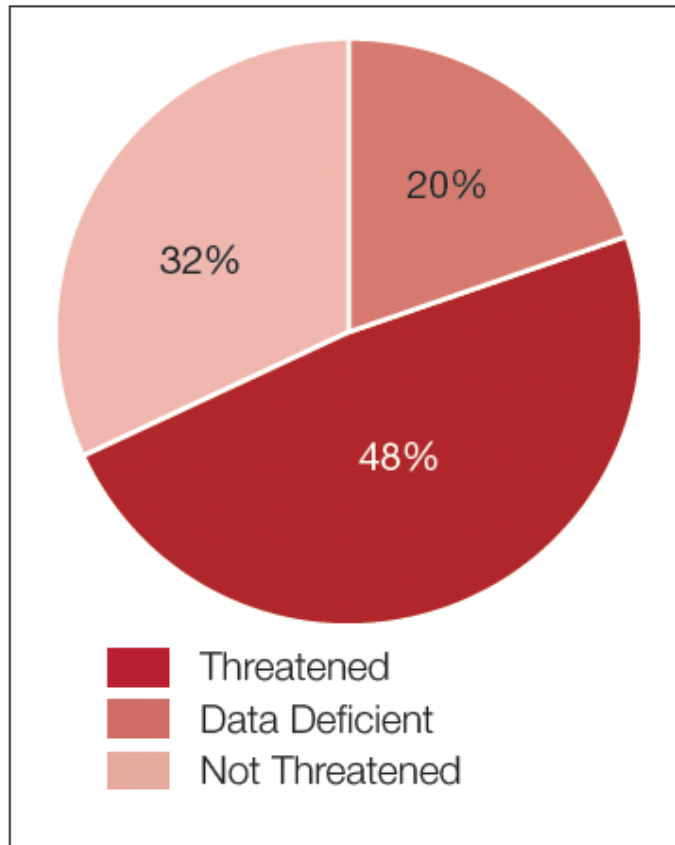
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# Data deficiency remains a big problem



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1 in 5 species are still considered Data Deficient (DD)



*Magnolia zamorana* (DD)



# Magnoliaceae *ex situ* survey



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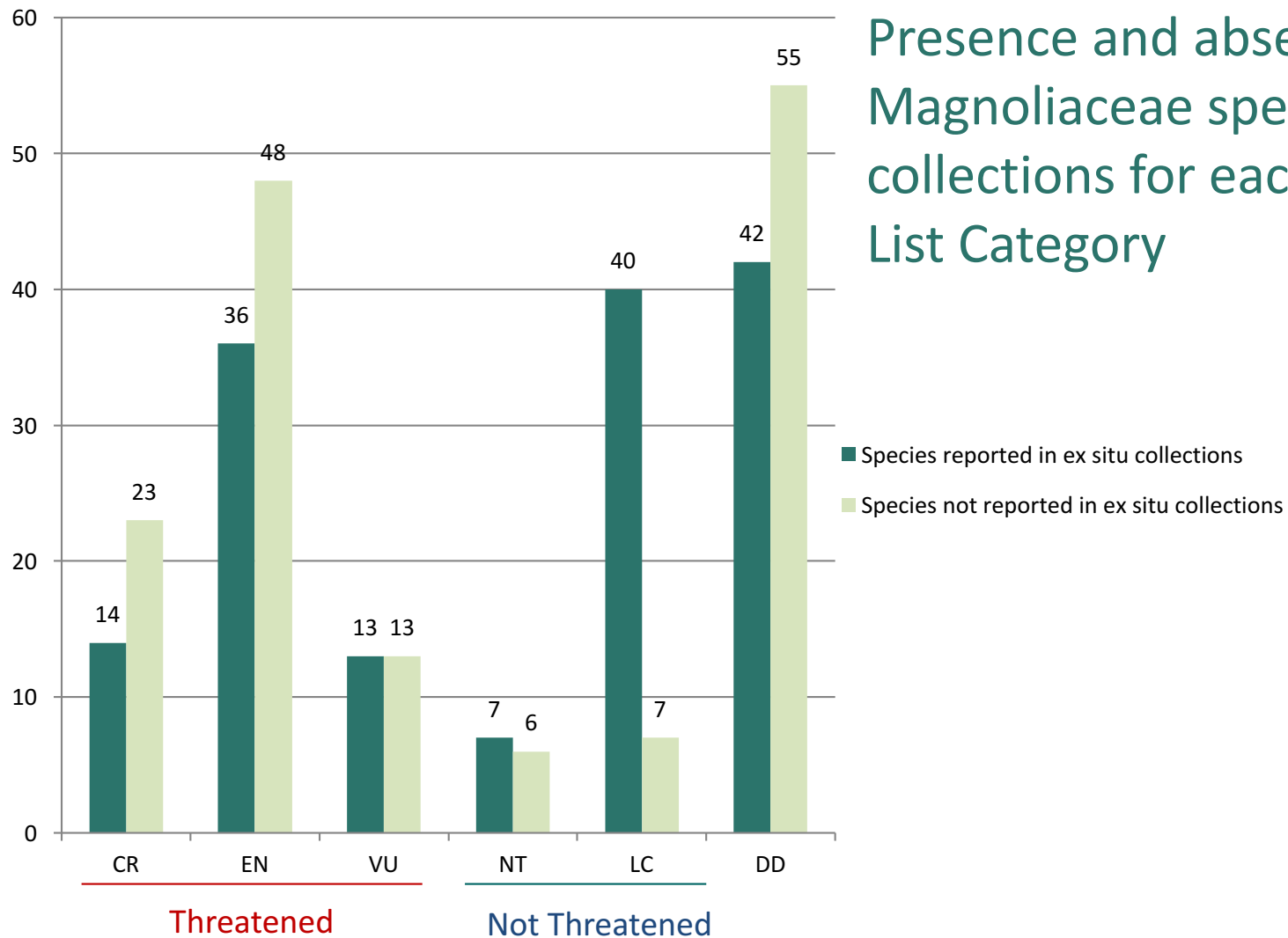
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The results from the 2016 *ex situ* survey of Magnoliaceae are based on **9918 records** from **490 institutions** in **61 countries**

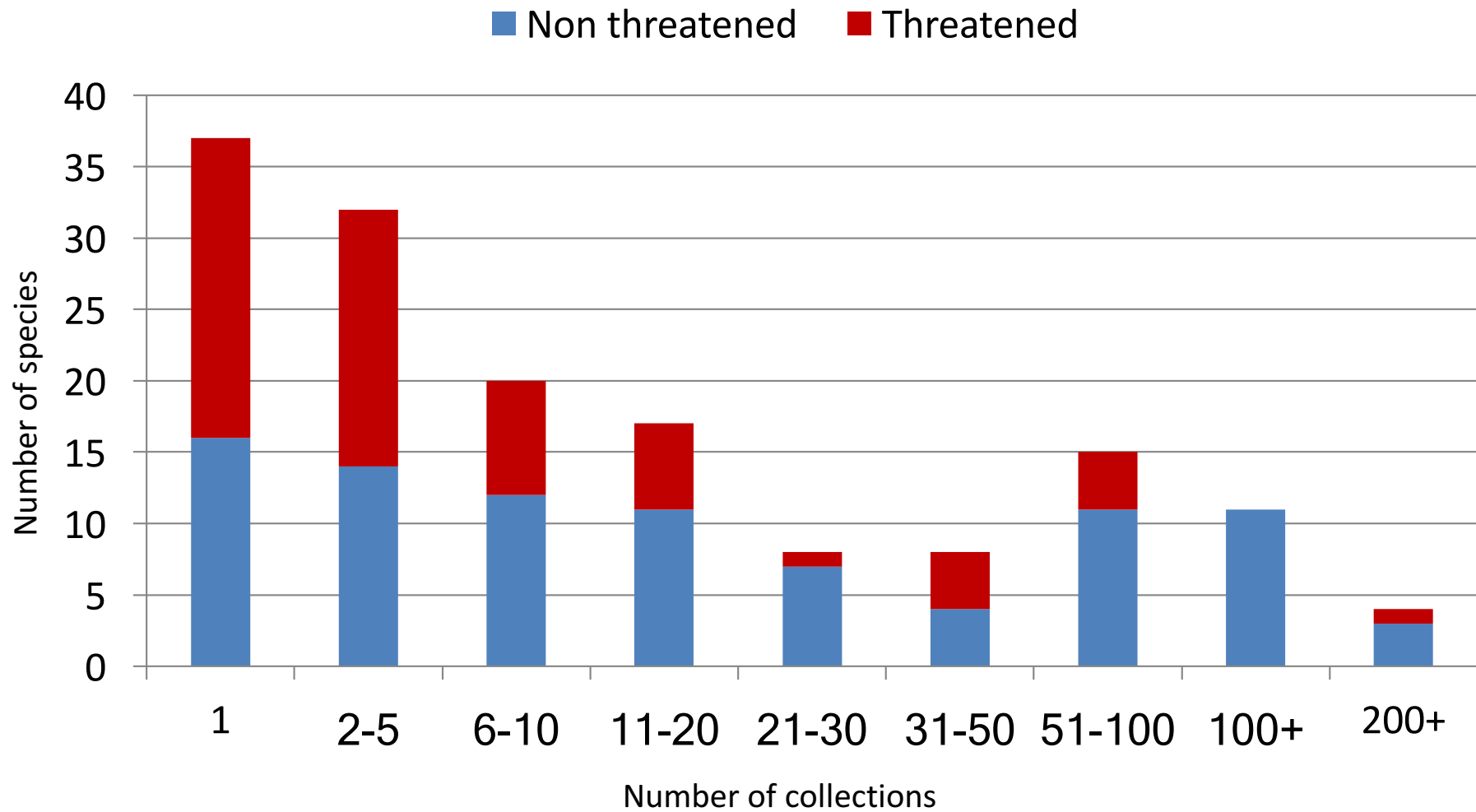


*Magnolia nitida* (VU)

# Magnoliaceae species found in and absent from *ex situ* collections



# Number of collections of Magnoliaceae species




# Global Trees Campaign – GTC



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*The Red List of Magnoliaceae* aims to stimulate conservation action for *Magnolia* species under threat. The aim is for these conservation assessments to guide conservation action and policy decisions for the very rare and threatened species.

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## Saving the World's Threatened Trees


Over 9,600 tree species are threatened with extinction. Help us secure their future.

[Support us](#) →




### Threatened Oaks

Read our recent blog on Mexico's incredible threatened oaks



### Apply for Funding

Small grant available for tree conservation projects



### Tree Conservation Guides

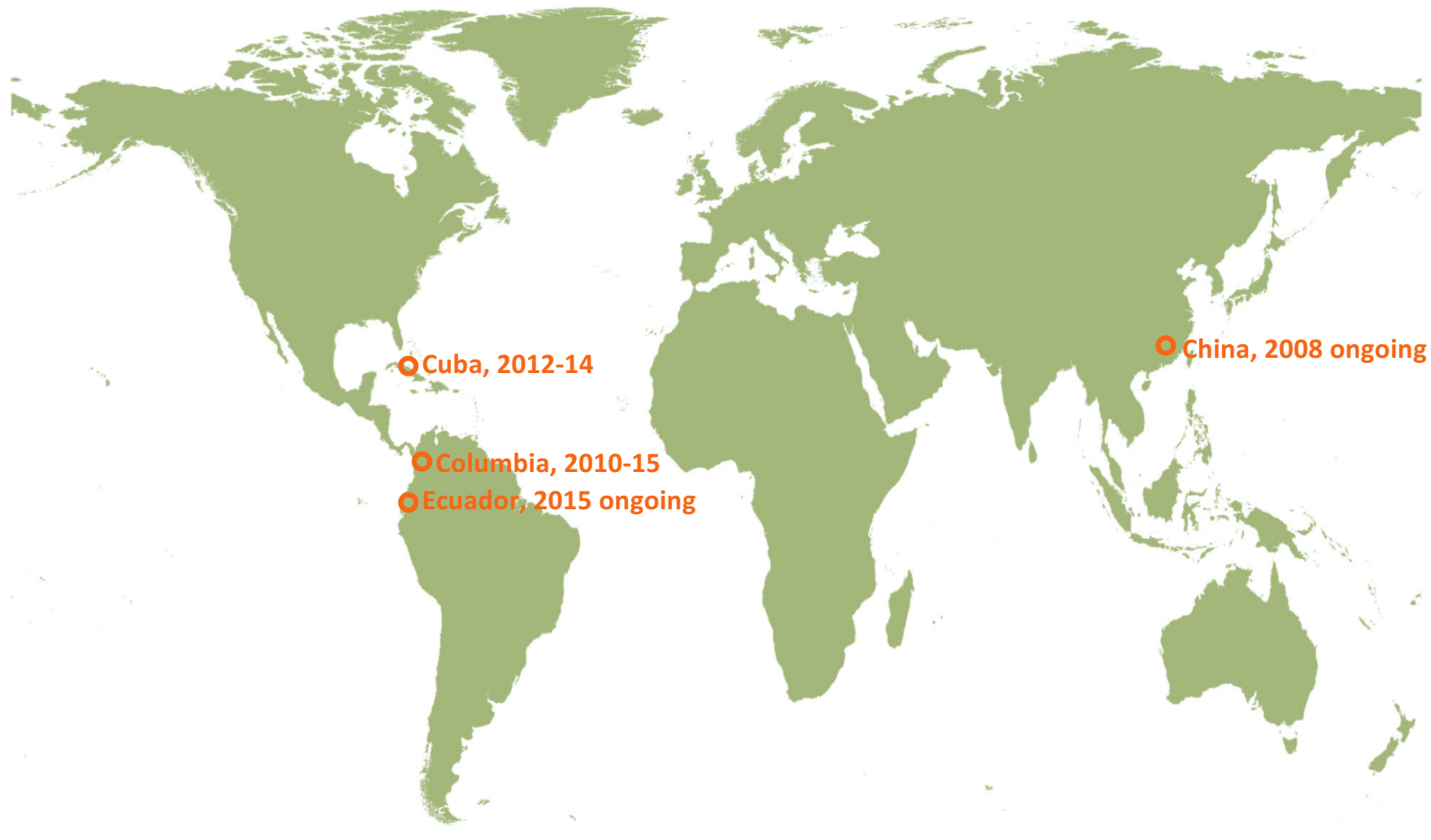
Ahora Disponible en Español

# Past and ongoing magnolia conservation projects supported by BGCI



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○ Cuba, 2012-14

○ Columbia, 2010-15

○ Ecuador, 2015 ongoing

○ China, 2008 ongoing

# General project implementation approach



- Selection of target species and habitats based on *in* and *ex situ* conservation status assessments, local priorities and needs
- Collection of propagule material
- Development of propagation techniques and establishment of stocks of saplings for conservation collections and *in situ* population reinforcements in pilot plots
- Public outreach and training in various aspects of plant conservation
- Monitoring and evaluation

# Challenges



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- Engaging local communities and authorities
- Localisation of target species and access
- Limited availability of propagation material, limited viability of seed material, limited propagation success, limited genetic representativeness in *ex situ* collections
- Maintenance of saplings – impacts of climate change
- Sustainability once project funding has ceased

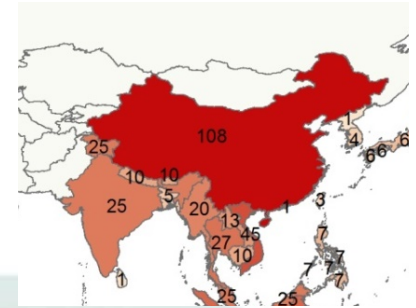
# Case studies – China



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- 108 species, 57 endemic
- 33 species are threatened and a further 41 are data deficient
- As in other areas of high magnolia diversity, increased deforestation, logging, habitat destruction and limited reproduction in the wild pose a major threat to the species' survival



*M. cathcartii* (LC)  
Tengchong, Yunnan



# Case study – *Magnolia sinostellata*, China

## Integrated conservation of *Magnolia sinostellata* – initiated in 2015

- Endemic to southern Zhejiang
- Known from 4 locations
- Endangered (EN B1ab(iii, v))
- Threats: habitat loss / deforestation, collection



# Case study – *Magnolia sinostellata*, China

## Expected project outcomes:

- Enhanced propagation techniques to produce significant numbers of individuals
- Secured in *ex situ* collections and improved conservation status in the wild
- Local communities in the target areas actively engaged in the propagation and cultivation of *M. sinostellata* as well as conservation work



## Project interventions:

- Field surveys
- Research (molecular analyses) and collection of propagation material
- *Ex situ* multiplication – to date some 2,800 saplings established



# Case study – *Magnolia sinostellata*, China

Ultimately, population reinforcement plantings *in situ* with plants generated from local provenance propagules



Flowering *M. sinostellata* individual  
Yangdangshan population, southeast Zhejiang

# Case study – *Magnolia omeiensis*, China

## Integrated conservation of *Magnolia omeiensis* – initiated in 2016



- Endemic to southern Sichuan
- Known from 2 locations
- ~100 individuals
- Critically Endangered (CR C2a(i))
- Threats: habitat loss / logging / limited seed production and low germination rates



# Case study – *Magnolia omeiensis*, China

## Expected project outcomes:

- Significant stock of saplings (several thousands) available for conservation collections at Emeishan Botanic Garden and for restoration
- Population reinforcements trialled with some 1000 saplings planted *in situ*.
- Survival of the species is greater as result of environmental sensitization work, *ex situ* conservation collections and population reinforcement programmes

## Project interventions this year:

- Field surveys
- Artificial pollination trials
- Collection of research (molecular analyses) and propagation material



# Case study – Ecuador



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- Ecuador is a particularly striking example of new magnolia species discoveries
- Since 2010, a further ten new species have been recorded, bringing the number of endemic magnolias to 11 out of a current total of 18
- As in other areas of high magnolia diversity, increased deforestation, logging, habitat destruction and limited reproduction in the wild pose a major threat to the species' survival
- 12 of the Ecuadorian magnolias assessed have been evaluated as threatened



*Magnolia bankardiorum* (VU)  
southern Ecuador

# Case study – *Magnolia* spp., Ecuador

Propagation and *ex situ* conservation of eight threatened magnolias, with restoration and *in situ* conservation of three species in the Río Zuñac reserve, Tungurahua province, central Ecuador – initiated in 2015

- *Magnolia bankardiorum*; *M. canandeanana*; *M. chiguila*; *M. kichuana*; *M. llanganatensis*; *M. mercedesiarum* ined.; *M. mindoensis* and *M. vargasiana*
- Expected outcomes:
  - Best practice for *ex situ* propagation of Ecuadorian magnolias available and accessible
  - Steadily growing *ex situ* conservation collections at botanical institutions in the country
  - Population reinforcements plantings initiated with introduced plants establishing in their native habitats



# Case study – *Magnolia* spp., Ecuador



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## Activities

- Equipment of facilities for *in vitro* propagation trials and collection of plant material in high canopy trees > 25 m
- *In vitro* seed propagation tests with *M. napoensis* (ined.) initiated which will inform the propagation trials for the project species as material becomes available



*In vitro* seed propagation of *M. napoensis* (ined.)



*M. ilanganatensis*



# Global Tree Assessment – GTA



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The **Global Tree Assessment** aims to provide conservation assessments of all the world's tree species by 2020.

The assessment will identify those tree species that are at greatest risk of extinction. The **Global Tree Assessment** will provide prioritization information to ensure that conservation efforts are directed at the right species to that no tree species becomes extinct



GLOBAL TREE ASSESSMENT

# GTA workflow



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# Contribute to the GTA



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- Contributions are needed from a variety of sources: conservation organisations and NGOs, botanic gardens and arboreta, botanists, students, individuals and funders.
- Taxonomic experts on certain species, genera, families are currently recruited to contribute.
- Updates to existing assessments (including the Magnoliaceae) are also essential, to keep information current and up-to-date.
- For more information on how to contribute to the GTA, please get in touch!

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# Global Tree Assessment



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Our goal is to have a conservation assessment for all of the world's tree species by 2020.



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*Connecting People • Sharing Knowledge • Saving Plants*

Our Mission is to mobilise botanic gardens and engage partners in securing plant diversity for the well-being of people and the planet

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