

SYSTEMATICS

CITES and Cacti: A User's Guide

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This is not a book, but a PowerPoint presentation that was printed and bound regarding the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) data as applied to the cactus family. Notes to the presenter are included at the bottom of a few of the slides, but no real analysis or synthesis is provided.

The CD-ROM contains all of the images in the book, plus some other tangentially related files. The disk contains corresponding volumes on CITES and succulents, CITES and carnivorous plants, CITES and orchids, etc. This is a real bonus. However, I could not figure out how to make the CD-ROM searchable, which is regrettable given that the book lacks an index.

There are a few excellent notes on trade of various species, including method of propagation and comparisons over history, which I assume are from the CITES trade database. Some taxa have one year in which there were many more recorded exports than other years. However, I cannot discern any patterns. Are these export peak years due to fad for a taxon? Are these export peaks due to increased interdiction? It would have been nice to know which export numbers were for legally versus illegally exported plants.

Perusal of this book/slides surprisingly indicates that from 1998–2008 my home (Canada) was the world's leading exporter of most Appendix II cacti, such as *Astrophytum*, *Copiapoa*, *Echinocactus*,

Echinocereus, *Eriosyce*, *Escobaria*, *Ferocactus*, *Frailea*, *Leuchtenbergia*, *Mammillaria*, *Matucana*, *Melocactus*, *Neolloydia*, *Parodia*, *Rebutia*, and *Thelocactus*. The book/slides also states that Canada was one of the three leading exporters of Appendix I cacti from 1998–2008. [Thanks to Catherine Rutherford who verified that the CITES trade database shows that Canada was indeed a huge exporter of cacti.] I have hardly ever seen cacti commercially grown or sold in Canada, so am shocked. Canadian climates are not conducive for growing cacti (Gorelick et al., 2015). As I write this, it is -25°C outside (without wind chill), and I am only 100 km north of the U.S. border. Who in Canada was doing the exporting? Was it legal or illegal? Did it vary from year to year? Can we see the import, export, and re-export data, as was done by McCarthy (1987)? The data are tantalizing, but narrative and explanation are desperately needed.

All cacti are native to the Americas except for one species, yet the authors are solely European. Local knowledge matters (Kimmerer, 2013; Demaio and Chiapella, 2014), with lack of local knowledge frequently to the authors' detriment. Maps in this book/slides fail to include Alaska as part of the United States. The authors describe how cultivated *Pachycereus militaris* cuttings of reproductive shoots "cease to grow as cuttings start to branch with time below the cephalium. The plant then directs all resources to the new shoots and the cephalium withers." Well, that is also exactly what happens on perfectly healthy attached shoots of plants in the wild, in which mature cephalia naturally abscise (Mauseth et al., 2005). European bias also shows in the assertion that, "Until recently there was some confusion over boundaries between *Coryphantha* and related genera." Judging from the vigorous debates between Europeans and North Americans about whether *Escobaria* is a genus versus subgenus or section of *Coryphantha* (Gorelick, 2015), it is disingenuous to claim that the confusion is resolved. The authors also seem to entirely disregard the raging debate about whether *Trichocereus* is a valid genus, separate from *Echinopsis* (Albesiano and Kiesling, 2012). While usually the name game is not important, it is important to know synonyms when looking for illegally exported plants, especially because *Trichocereus* and *Eulychnia* are the main sources for rainsticks.

Having maps with a resolution only to country is probably appropriate for a political document such as this, but can be misleading. The map

of global abundance of cacti herein has a huge number of African countries and Sri Lanka with the same number of species of cacti (here 1–75), as do countries in Central America and northern South America. Yet Africa and Sri Lanka only have one native cactus species, *Rhipsalis baccifera*. Similarly, distribution of the narrow endemic *Astrophytum asterias* is shown as all of Mexico and the United States, which could needlessly minimize conservation concerns.

This book/slides contains outdated nomenclature, such as *Opuntia ursina*, which is almost universally considered a shaggy-spined form of *Opuntia polyacantha* (Pinkava, 2003). There are old notions about *Pereskia*, which probably should be segregated into the two separate genera *Pereskia* and *Leuenbergera* (Edwards et al., 2005), and old notions about *Maihuenia*, whose two species probably deserve their own subfamily, *Maihuenioideae* (Parfitt and Gibson, 2003). Equally curiously, the page/slide on leaf-bearing cacti mentions *Pereskia*, *Quiabentia*, and *Peresklopsis*, but not *Maihuenia*.

The second page/slide lists the bullet point, "AP vs. wild," where we later learn that "AP" stands for "artificially propagated." For one taxon, we read, "All trade is recorded as artificially propagated and is mainly in seeds." What exactly is artificial about propagation by seed? In the taxon-specific slides, the dichotomy is sometimes instead couched as "wild vs. propagated," sometimes as "habitat vs. propagated," and sometimes with all three designations ("wild, habitat, propagated"). Another false dichotomy occurs in the bar charts for exports, for which data are given for both "live" and "seeds." I assume "live" means "live shoots," even though seeds are also alive. That said, in Appendix II slides for a small minority of the taxa presented, bar charts for exports instead provide the more reasonable dichotomy of "stems vs. seeds."

This may make for a decent slide show, but more editing and reviewing should have occurred. For example, the specific epithet is inadvertently capitalized in *Matucana madisoniorum*. We read the nonsensical sentence, "Recently there has been some concern expressed by experts that there may be some element of detriment in the trade" of rainsticks. The authors state that *Strombocactus* is monotypic and *Peleciphora* contains two species, but then seem genuinely surprised that only one species of *Strombocactus* and two species of *Peleciphora* are listed in the CITES trade records. Some statements are utterly antithetical,

such as that *Blossfeldia* is endemic to Bolivia and northwestern Argentina, but that all wild collected plants are exported from Peru, not from either of its native countries.

Because this is a user's guide of PowerPoint slides, a revision could be published with relative ease. There is a genuine need for such multimedia presentations on CITES and cacti. Several experts from the Americas would undoubtedly be willing to help.

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