

Insect zoo and butterfly houses for public education: Importation, shipping, safety, regulatory, and environmental issues related to breeding and international trade of non-native insects

L. Saul-Gershenz

Department of Entomology and Nematology, University of California,
Davis, California, 95616, United States

E-mail: lsaulgershenz@ucdavis.edu

Summary

Informal science education institutions such as zoos, natural history museums, and botanical gardens exhibit live native and exotic insects and other arthropods to improve the general public's knowledge about these organisms and promote their conservation in nature. The purpose of this paper is to summarise the process of shipping exotic arthropods for exhibits, and the regulations that apply, and to discuss issues that affect international shipment for this type of activity, such as escapes affecting the environment and delays affecting the viability of shipped insects. The regulatory agencies that issue permits for the importation of live insects for education and exhibit are discussed. The number of butterflies flying from those exhibits surveyed at any point in time ranges from 500 specimens to a high of 15,000 specimens at the Dubai Butterfly Garden as stated in websites, though the mean is 2,711. Insect zoos and butterfly exhibits play an overwhelming positive educational role by introducing millions of children and adults to the immensely important world of insects.

Keywords

Conservation – education – Insect displays – public attitude – wild collection.

Introduction

The purpose of this paper is to summarise the regulations and the process of importing and shipping exotic arthropods for exhibits such as insect zoos and butterfly houses and to discuss issues that affect international movement of live arthropods for this type of activity. Informal science education institutions such as zoos, natural history museums, and botanical gardens exhibit live native and exotic insects and other arthropods to improve the general public's knowledge about these organisms and promote their conservation in nature (1, 2). There are many institutions which focus on exhibiting native species of insects and arthropods found within the institution's geographical region, however these are not the focus of this paper.

Live exotic insects and other arthropods are obtained globally from diverse ecosystems from commercial insect breeders, farmers or ranchers in tropical rainforests or other ecosystems and shipped by these breeders via commercial airlines or international shippers such as FedEx™ to formal and informal science education exhibits around the world. These live animals are used for four primary purposes: 1) public education; 2) conservation programmes; 3) feature to increase visits to the institution; and 4) research in some institutions. There are two general types of live insect exhibits: 1) insect zoos or insectariums which maintain species in individual glass or plexiglass enclosures of containment of various sizes, and 2) butterfly exhibits or butterfly houses in which butterflies and moths are contained within a free-flight lepidoptery made of glass, plexiglass or sometimes screening material that the public can walk through. Many of the insects are difficult or expensive to rear by the institutions. and so there is a need for regular replenishment and introduction of new examples to provide continual displays. Individual collectors and producers may ship butterfly pupae and other species to individual users or often ship batches of live insects to experienced aggregators in receiving countries who then redistribute smaller numbers domestically. While details about local production versus domestic or international shipping are not known, Table I presents a range of such institutions from throughout the world, by region. This information was collected through a google search and is

only representative of the range of operating facilities. (The COVID-19 pandemic has caused the temporary closing of some facilities at this time.)

[INSERT TABLE I HERE]

Issues

Source of live insect collections for exhibits

Different institutions sustain their living exhibits in a range of ways. Insectariums such as the Bugs Alive in Melbourne, Australia, the Montreal Insectarium in Canada, and the San Francisco Insect Zoo maintain their exhibit collection by choosing a combination of species that are long-lived such as tenebrionid beetles, tarantulas, scorpions; easy to breed species such as parthenogenic phasmids (walking sticks); social insect colonies including leaf-cutter ants, honey bees and bumble bees; and other species which are also easy to breed such as aquatic belostomatids (giant water bugs), diving beetles, mosquitoes, assassin bugs, burying beetles (*Nicrophorus* spp.), and tettigoniids (katydid); locally common native species which can be collected seasonally; and other more challenging taxa depending on the expertise of the staff. Some colonies can be maintained for decades without inbreeding problems. Butterfly exhibits, whether they exhibit native or exotic species of butterflies and moths, primarily purchase pupae from suppliers, many of whom have overseas sources. There are exceptions. The Butterfly Conservatory in Niagara Falls, Canada, the Cockrell Butterfly Center in Houston in the United States of America, and the Butterfly Pavilion at the Artis Amsterdam Royal Zoo in The Netherlands all breed a proportion of the species they exhibit on-site. Other facilities purchase and import 100% of their exhibit collection.

Regulatory process examples

All countries have import regulations that cover animals, which may be differentiated by taxonomic groups and source countries. For example, in the United Kingdom, the Animal and Plant Health Agency (APHA) (www.gov.uk/guidance/importing-non-native-animals) issues licenses

for the importation of non-native insects. For imports from European Union (EU) countries, (<http://apha.defra.gov.uk/documents/bip/iin/bllv-9.pdf>) the rules covering insects are grouped along with reptiles, amphibians, and other invertebrates but treat honeybees and bumble bees separately from other insects. The rules are directed at ensuring conservation of endangered species at source, preventing the importation of potential invasive species, and protecting plant and animal health. Pre-notification of shipments (between 1 and 30 days prior to planned arrival) is required and helps authorities to plan for inspection needs. At the port of entry (ports with appropriate facilities are specified), such as London Heathrow Airport, they may be checked by government vets before being released from inspection. Across the EU, regulations and process are similar except for a few countries.

In the United States, the US Department of Agriculture (USDA) assesses permit applications for the importation of non-native insects. The assessment includes an evaluation of the species of insect, its classification of risk to United States agriculture, floriculture, and other commercial products and to native ecosystems; the containment capabilities of the facility applying for the permit, and their 'Operation Protocol Manual' which describes all the operational procedures for the facility that will maintain containment of all non-native insects listed on the permits. Information includes training of personnel, emergency procedures, how waste material is handled and procedures that assist in preventing movement or escape of live non-native material from the facility including pathogens, parasites, and parasitoids. The facilities which maintain permits for non-native insects in the United States are generally inspected by a USDA representative annually.

In the USA, the United States Fish and Wildlife Services (USFWS) has a list of 'designated ports' where international shipments can be received and inspected before they are permitted to enter. They are generally on either of the coasts or border perimeter of the USA with a few exceptions. The closest airports that would cover shipments from both Asia and Latin America would be Los Angeles and San Francisco in California. Pupae from outside the USA are shipped counter-to-

counter air cargo, however occasionally FedEx™ or UPS™ is used for the import stage, but this is not preferred due to potential delays. The fee for USFWS inspection of a shipment of a species not covered by the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) was US\$ 186 in 2014 (3) and US\$ 200 per shipment as of 2021 (<http://lpsimports.com>). This does not include domestic shipping. For exhibit facilities in the USA, copies of their USDA Interstate Movement permits are required along with invoices for the ‘livestock’ purchases. Currently, 90% of pupae ordered in the USA for butterfly exhibits are ordered directly through LPS LLC (<https://www.lpsimports.com/>), a company that aggregates most US and some Canadian butterfly exhibit weekly orders into a break bulk pallet so that there is only one ‘shipment item’ to be inspected at the port and hence only one inspection fee from USFWS. After inspection and clearing customs, a broker then ships this on to the LPS facility at Denver, Colorado where the box is split up from the break bulk pallet and sorted into sub-shipments to the individual butterfly exhibit facilities. Any diseased and parasitised pupae are removed at this time as well. This process allows import shipments to be turned around quickly and they are shipped out via FedEx™ to arrive the next day. This system allows US exhibitors to order from multiple butterfly farms in the same shipment due to the coordination of shipping and port inspection. At the same time, shipping and inspection fees are shared. LPS handles all the necessary documents such as Declaration for Importation (www.fws.gov/le/pdf/3177.pdf).

Within the European Union, movement of live insect shipments is more easily accomplished than across less connected borders, with the appropriate documents. Different regions of the EU can function as importation hubs for insect suppliers (primarily for pupae) from Latin America, Asia, and Africa, and receive aggregated bulk shipments which then are dispersed to individual butterfly exhibits. Amsterdam, The Netherlands, and Frankfurt, Germany, are two such hubs where personnel are located to receive air freight packages with regulatory documentation and these ports have the appropriate veterinary services to perform inspections to process the shipments efficiently.

The destination facilities may require licenses and regulatory inspections in some countries. In the UK, exhibit facilities are inspected every three years and there is also a fee charged for this inspection (~£300) and a pre-inspection audit. Some facilities are registered with a local council to operate as a zoo and so they receive a health and safety inspection along with the zoo license check. UK facilities may export pupae to the EU and other countries. However, each country has its own set of document requirements.

Experience demonstrates that regular shipments from frequent suppliers through specialized aggregators at established ports of entry, with prior notification, can ensure relatively rapid transfer from exotic sources to the domestic recipient. Where recipients are recognized receivers of live insects, there may be further opportunities to streamline the process.

Other conservation regulations

Shipments of live insects are governed by some specific conservation agreements and regulations to protect biodiversity in source areas. There is a suite of internationally recognized classifications that protect insects from over collection. These include the International Union for Conservation of Nature (IUCN) Red List of Threatened Species (4) which assesses species' conservation status, checking to see if a species is endangered in its country of origin. There is a European equivalent list (5) and the IUCN Red List of Ecosystems (6). The species should be checked to see if it is listed under CITES:

‘Appendix I (includes species threatened with extinction. Trade in specimens of these species is permitted only in exceptional circumstances, Appendix II (export permit required), Appendix III contains species that are protected in at least one country, which has asked other CITES Parties for assistance in controlling the trade. A foreign Certificate of Origin with all required information or CITES Export or Re-export Permit is required’ (7).

In addition, species are assessed by the risk of their ecosystem collapse, the reduction in geographic distribution, and some quantitative thresholds including: Critically Endangered, Endangered, Threatened and Vulnerable.

Trogonoptera brookiana and *Troides amphrysus* (Fig. 1) are listed in Appendix II of CITES, which states that any trade of the specimens must be controlled to avoid overexploitation of the resources (8). As a result, similar but less endangered species are now used for education exhibits to promote public awareness and interest in conservation of biodiversity of insects and wildlife ecosystems which support biodiversity.

[Place Fig. 1 here]

Country regulations have changed over the past several decades due to changes in species population numbers and changes in human attitudes towards insects. In Malaysia, one of the sources of live butterfly pupae for butterfly houses, the Malaysian Wildlife Conservation Act 2010 lists eight species as protected (*Trogonoptera brookiana*, *Troides amphrysus*, *Idea stollii*, *Zeuxidia aurelius*, *Agatasa calydonia*, *Charaxes durnfordi*, *Charaxes solon* and *Prothoe franck* Fig. 1). They are vulnerable to illegal trade because of their great aesthetic appeal, and some had been harvested and exported globally (9). However, it is illegal in Malaysia to harvest, keep or trade specimens of the protected species without a license including for research purposes (10). The Malaysia giant tree nymph, *Idea lynceus*, is now also protected due to its large size and favoured status among hobbyists (Fig. 1) but *Idea leuconoe* is exhibited instead (2) in some facilities.

Scale of the industry

The number of insectariums and butterfly house exhibits changes over time (1) (Fig. 2). The numbers in Fig. 2 are based on a rapid online survey, thus underestimates the actual number of butterfly houses and insect zoos in the UK, EU, and perhaps other areas of the world due to the author's survey bias and limited resources to mount a full correspondence-response survey. The highest proportion of regular

(weekly) non-native insect importation is conducted on behalf of butterfly house exhibits which are exhibiting exotic butterflies and moths in free-flight lepidopterics. Each facility orders between 250-400 pupae per week depending on the size of the free-flight area (Table I) and the financial resources of the facility. Some facilities are open year-round, and others are open seasonally. The number of butterflies flying in an exhibit range from around 500 to a high of 15,000 specimens at the Dubai Butterfly Garden, as stated in websites. The mean from the survey results is 2,711 ($n = 22$). If the outlier of 15,000 is removed the mean is 2,126 ($n = 21$).

[Place Fig. 2 here]

Butterfly houses typically receive pupa shipments of lepidopteran species (butterflies and moths) weekly from Asia, Latin America, and Africa. Issues of rising transportation fees is increasingly becoming a barrier to operations. Attendance to public education institutions during the recent COVID-19 pandemic has been restricted resulting in financial hardship for museums, zoos, botanical gardens, and other science education facilities, and for the groups which supply live insects to these exhibits.

Risk of importation and mitigation of risks

The various permitting or licensing agencies of each country assess the risk of each species application prior to approving importation. The risks of importation of non-native insects for exhibits are based on the possibility that the species imported may escape from the containment facility. Along with that species, the risk of importing a suite of pathogens (bacteria, viruses, and protozoa), parasites and parasitoids is also evaluated, and this risk should be addressed and eliminated completely if possible. In addition, facilities are inspected routinely by their licensing agency.

Both insect zoos and butterfly house facilities mitigate risks by the design of their facilities which are based on 'performance standards'. Each facility may look different, but they must all 'perform' to contain the species that they exhibit. Examples of features are double door

entrances, or a combination of double doors, fans, lights, and mirrors; fine screening on all air vents and sink drains; emergence cages with sleeves to contain parasites which may emerge from pupae; and light traps to catch parasitoids in rearing areas. In the author's experience, and from commentaries by other operators, the most important component of facility performance is personnel training, the importance of which cannot be overstated. This ensures understanding and commitment to the goals of containment and reduces human error. Institutional accreditation for these institutions and personnel training is annually available through various professional groups such as the Terrestrial Invertebrate Taxon Advisory Group of the Association of Zoos and Aquariums (TITAG, AZA), the International Conference of Butterfly Exhibitors and Suppliers (ICBES) and the European Association of Zoos and Aquaria (EAZA).

In some facilities all soil and waste material including eggs and specimens are incinerated, in other facilities it is double bagged and frozen, while in other facilities it is autoclaved. Sterilising agents such as diluted solutions of sodium hypochlorite are used to clean equipment, rearing enclosures, and working surfaces to continually manage the risk of pathogens.

Because the vast majority of organisms have more or less restricted natural ranges due to the interaction of their ecology and now the increased fragmentation of ecosystems, the biological basis of the threat is the potential for establishment without their associated predators, parasites, or parasitoids. If released from their historically limited ranges by translocation to new environments, exotic insects may find suitable climatic conditions and host plants that allow them to become established (11) or bring a pathogen or parasitoid with them if they escape containment. The key is to prevent the imported organisms from escaping from the containment facilities or during transport.

Importing country authorities, therefore, affect the shipping process based on their evaluation of whether the risk of escape and establishment of the invasive species, parasite or pathogens is significant. Licensing of approved recipients (with procedural

requirements on containment, disposal, etc.) is a management option available in relation to such risks. Shipping to recognised licensed recipients may facilitate efficient acceptance and flow of live insect shipments for some species and sources.

Changing attitudes

Attitudes towards insects have changed immensely over the past two decades. Insects once feared in some parts of the world are now championed for their pollination services. Populations of butterflies, always beloved by the public, are now more protected due to declining numbers, according to empirical data collected over 35 years (12, 13). Monarch butterfly populations in the western US have plummeted precipitously to the brink of extinction, 97% lower than their previous levels in California (14). The California Department of Fish and Game has now made it illegal in California for anyone to collect a monarch butterfly for any purposes, even to breed and release it. Moving monarch butterfly individuals and populations to other locations represents a risk to native individuals and groups from genetic mixing and pathogens (11). Moore (15) states that individuals which originate non-locally will breed with local individuals and decrease the fitness of the local population, by introducing genes that are not optimal for the local environmental conditions.

The USA allows breeding and release of nine species of US butterflies. Only six species (*Vanessa cardui*, *Vanessa virginiensis*, *Nymphalis antiopa*, *Vanessa atalanta*, *Danaus plexippus* (west) and (east), and *Agraulis vanillae*), however, can be shipped and released in California (11). The North American Butterfly Association (www.naba.org) does not support the movement and subsequent release to the environment of any commercially bred native species of butterflies for events (weddings, parties, etc.). In other countries, such as the UK, butterfly releases are also not allowed, due to similar concerns.

Conclusions

Despite changing attitudes to collection and more interest in conservation of butterflies, interest in seeing live insects remains

strong. Insect zoos and butterfly exhibits play an overwhelmingly positive education role by introducing millions of children and adults to the immensely important world of insects each year. Such displays range from large public institutions to small local venues. Many of these exhibits, across the range of scales, need to regularly replenish their stocks of exotic species, many on a weekly basis. This works smoothly where it is facilitated by aggregators in hubs that can then redistribute smaller lots to individual exhibit recipients. Species assessment by the licensing authorities, the containment capabilities of the facility applying for the permit, their operational procedures for the facility and the training of staff all contribute to the safe maintenance of exotic insects in exhibit facilities. Regulations variously aimed at conservation, preventing invasive species, and ensuring animal and plant health can differ considerably across different sources, destinations, and species, making the shipping task more difficult and increasingly more expensive, especially for less experienced exporters and buyers.

Acknowledgements

The author would like to thank Ko Veltman, Curator Emeritus of the Insectarium and Butterfly Pavilion, Artis Royal Amsterdam Zoo; Ulrich Hartmond, Magic Wings Butterfly House, Museum of Life and Science; Richard Lamb, Stratford-on Avon Butterfly Farm; Richard Cowan, LPS, LLC; and Gerlinde Blaese, CRES, Germany for generously sharing their information which aided in the preparation of this manuscript.

References

1. Saul-Gershenz L. (2009). – Insect Zoos. *In* Encyclopedia of Insects (V. Resh & R. Cardé, eds), 2nd Edn. Academic Press, Cambridge, USA, 516–523.
2. Suvák M. (2015). – Exotic butterflies and moths (Lepidoptera) in botanical gardens – potential for education and research. *Thaiszia J. Bot.*, 25 (Suppl. 1), S81–S147. Available at:

www.upjs.sk/public/media/13222/081-147_Suvak-upr2.pdf (accessed on 14 January 2022).

3. Cowan R.D. & Weissman M.J. (2014). – Butterfly imports into the USA: what a difference a decade makes. *In* 2014 Invertebrates in Education and Captivity Conference, Rio Rico, Arizona, USA, 8pp. Available at:

<http://titag.org/2014/2014papers/IMPORTSKALLIMALPS.pdf>

(accessed 12 December 2021).

4. The International Union for Conservation of Nature (IUCN) (2021). – Red list of threatened species. Available at: www.iucnredlist.org/ (accessed on 18 December 2021).

5. Van Seaay C., Cuttelod A., Collins S., Maes D., López Munguira M., Šašić M., Settele J., Verovnik R., Verstrael T., Warren M., Wiemers M. & Wynhof I. (2010). – European Red List of Butterflies. Luxembourg: Publications Office of the European Union. Available at: https://ec.europa.eu/environment/nature/conservation/species/redlist/downloads/European_butterflies.pdf (accessed on 4 January 2022).

6. International Union for Conservation of Nature (IUCN) (2021). – Red list of threatened ecosystems. Available at: www.iucnredlist.org/ (accessed on 5 January 2022).

7. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (2021). – How CITES works? Available at: <https://cites.org/eng/disc/how.php> (accessed on 27 January 2022).

8. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (2017). – CITES. Available at: www.cites.org/eng (accessed on 5 January 2022).

9. United Nations Environment Programme World Conservation Monitoring Centre (UNEP WCMC) (2012). – UNEP WCMC Annual Report. Available at: www.unep-wcmc.org/system/dataset_file_fields/files/000/000/069/original/UNEP-WCMC_Annual_Report_2012_.pdf?1398438298 (accessed on 18 December 2021).

10. International Butterfly Breeders Association (2021). – Which butterflies can be released where? Available at: www.internationalbutterflybreeders.org/which-butterflies-can-be-released-where/ (accessed on 18 December 2021).
11. Boppré M. & Vane-Wright R.I. (2012). – The butterfly house industry: conservation risks and education opportunities. *Conserv. Soc.*, **10** (3), 25–43. doi:10.4103/0972-4923.101831.
12. Forister M.L., McCall A.C., Sanders N.J., Fordyce J.A., Thorne J.H., O'Brien J, Waetjen D.P. & Shapiro A.M. (2010). – Compounded effects of climate change and habitat alteration shift patterns of butterfly diversity. *Proc. Natl Acad. Sci.*, **107**, 2088–2092. doi:10.1073/pnas.0909686107.
13. Forister M.L., Cousens B., Harrison J.G., Anderson K., Thorne J.H., Waetjen D., Nice C.C., De Parsia M., Hladik M.L., Meese R., van Vliet H. & Shapiro A.M. (2016). – Increasing neonicotinoid use and the declining butterfly fauna of lowland California. *Biol. Lett.*, **12**, 1–5. doi:10.1098/rsbl.2016.0475.
14. Pelton E.M., Schultz C.B., Jepsen S.J., Black S.H. & Crone E.E. (2019). – Western Monarch population plummets: status, probable causes, and recommended conservation actions. *Front. Ecol. Evol.*, **7**, 258. doi:10.3389/fevo.2019.00258.
15. Moore P. (2000). – Seeds of doubt. *Nature*, **407**, 683–685 doi:10.1038/35037693.

Table I

Rapid online survey of insect zoos and butterfly house exhibits around the world using google search engine conducted in 2021. This is not an exhaustive list but one that represents the diversity of types of shippers and receivers. Data provided is what is presented on the websites as cited

Where cells are blank, information was not available online. Websites were accessed and available in January 2022

	Institution	Website/date of opening/Native and or exotic spp./size of BH/comments	No. of butterfly specimens	No. of spp.	Institution type
Australia & New Zealand					
1	Australian Butterfly Sanctuary Kuranda, Australia	www.kuranda.org/listing/australian-butterfly-sanctuary			I, BH
2	Coffs Harbour Butterfly House 5 Strouds Road, Bonville NSW, Australia	Native www.butterflyhouse.com.au/			I, BH, Y
3	Bugs Alive, Museums Victoria Melbourne Museum, 11 Nicholson Street, Carlton, Victoria, 3053, Australia	https://museumsvictoria.com.au/melbournemuseum/whats-on/bugs-alive/			M
4	Butterfly House, Melbourne Zoo, 0 Elliott Ave, Parkville VIC 3052 Australia	www.zoo.org.au/melbourne/whats-on/news/melbourne-zoos-iconic-butterfly-house-reopens/	600	13	Z, BH
5	Otago Museum	1985 https://otagomuseum.nz/whats-on/tuhura/tropical-forest/			M

	Tūhura Tropical Forest, 419 Great King Street, Dunedin, New Zealand				
	Africa				
1	Algiers Insectarium Algiers, Algeria	https://maliactu.net/linsectarium-dalger-a-la-pointe-de-la-lutte-contre-les-ravageurs/?_cf_chl_managed_tk__=pmd_yfkiDN_Et.NJi6_y0elggeijX9tmXqbXpUoz6B6e5pA-1632295966-0-gqNtZGzNAzuicnBszRQI			M, IZ
		An insect museum and biocontrol research facility –1924			
2	Exotic Animal World (formerly Butterfly World Zoo) Route 44, Klampmuts 7625, Stellenbosch, South Africa	https://exoticanimalworld.co.za/	0	0	Z, BH
		1996			
		International importation of butterflies stopped due to COVID-19 pandemic			
3	Kipepeo Butterfly Project & Mombasa Butterfly House Malindi, Kilifi, Kenya Amani Farm Tanzania Minibeast, 11 Hunting Gate, Hitchin SG4 OTJ, Tanzania	www.kipepeo.org		77	I, BH, BB
		Native			BB
		www.minibeast.uk/amani			
		Supplier of pupae			
		Rural collective of butterfly farmers			

	Mida Butterfly Farm Kenya Watamu Beach Rd, Watamu, Kenya	www.naturalhistorycuriosities.com/conservation/supporting-the-mida-butterfly-farm-in-watamu-kenya/	50–70	BB
		1990		
1	Asia Banteay Srey Butterfly Centre Siem Reap, Cambodia	https://en.wikipedia.org/wiki/Banteay_Srey_Butterfly_Centre		I, BH, BB
		2009		
2	Butterfly Conservatory of Goa Goa, India	Native www.ifoundbutterflies.org/butterfly-conservatory-goa		I, BH
3	Butterfly Park, Bannerghatta National Park Bangalore, India	400 m ² , 1,000 m ² https://bannerghatabiologicalpark.org/butterfly_park.html		NP
		1,000 m ²		
4	Butterfly Garden Kadoorie Farm and Botanic Garden, Hong Kong, Special Administrative Region of the People's Republic of China	Native www.kfbg.org/en/attractions/Butterfly-Garden/		BG
5	Butterfly House, Ocean Park Hong Kong, Special Administrative Region of the People's Republic of China	www.chinaculturetour.com/hongkong/ocean-park.htm		I, BH

6	Butterfly Park and Insect Kingdom 51 Imbiah Road, Sentosa, Singapore 099702	This website mentions a butterfly house www.hotels.com/go/singapore/singapore-butterfly-kingdom	1,500	50	Z, IZ
7	Dubai Butterfly Garden Al Barsha South 3, Dubailand Area, Beside Dubai Miracle Garden, Dubai, United Arab Emirates	www.dubaibutterflygarden.com/ 6,673 m ² Exotic	15,000	50	I, BH
8	Entopia, Penang Butterfly Farm No.830, Jalan Teluk Bahang, Teluk Bahang, 11050 Tanjung Bungah, Pulau Pinang, Malaysia	www.entopia.com/	5,000	120	I, BB, BH, Y
9	Gunma Insect World 460-1 Niisatocho Tsurugaya, Kiryu, Gunma 376-0132, Japan	www.giw.pref.gunma.jp/ www.kiea.jp/GunmaInsectWorld.html 4,309 m ² Silk farmers exhibit 2005			I, NR, Y
10	Itami City Museum of Insects Japan	www.itakon.com/			M
11	Insectarium, Butterfly Hot House Tama Zoological Park, Hodokubo, Hino-shi, Tokyo, Japan	https://japan.apike.ca/japan_tokyo_tama_zoo.html 1,104 m ²			Z, IZ
12	Insectarium, Taipei Zoo No.30 Sec. 2 Xinguang Rd. Taipei City 11656, Chinese Taipei	https://english.zoo.gov.taipei/News_Content.aspx?n=E7E517B5158ABF13&sms=824DA26D0BC162B9&s=AFB765C506E50B4E			Z, IZ

13	Konya Tropical Butterfly Garden Konya, Turkey	www.konyakelebeklervadisi.com/ www.konyakelebeklervadisi.com/Muze		BG, BP
14	Phuket Butterfly Garden & Insect World Phuket, Thailand	https://phuketindex.com/butterflygarden/		I, IZ, BG
15	Melaka Butterfly and Reptile Sanctuary Ayer Keroh, Melaka, Malaysia	www.butterflyreptile.com/ 1991	20	I, BG, BE
16	Simply Butterflies Conservation Center Bilar, Bohol, The Philippines	www.boholtourismph.com/simply-butterflies-conservation-center/		I, BH
17	Singapore Zoological Gardens The Fragile Forest Enclosure, 80 Mandai Lake Road, Singapore 729826	www.mandai.com/en/singapore-zoo/animals-and-zones/fragile-forest.html		Z, IZ, BE
18	Tropical Butterfly Conservatory Trichy, Tamil Nadu 620101, India	https://en.wikipedia.org/wiki/Tropical_butterfly_conservatory,_Trichy		I, BH
North America				
1	Aveda Butterfly Garden, Minnesota Zoo 1300 Zoo Blvd, Apple Valley, Minnesota 55124, USA	https://mnzoo.org/blog/tag/aveda-butterfly-garden/ Native	40	Z, BE, S
2	Bayer Insectarium & Mary Ann Lee Butterfly Wing, Saint Louis Zoological Park Government Dr., St Louis, MO 63110, USA	www.stlzoo.org/visit/thingstoseeanddo/discoverycorner/insectarium 2000		Z, BH, IZ
3	Butterfly Garden, Bronx Zoo 2300 Southern Blvd, Bronx, New York, 10460, USA	https://bronxzoo.com/things-to-do/exhibits/butterfly-garden?qclid=Cj0KCQiAweaNBhDEARIsAJ5hwb		Z, BE, S

		dLsV9cdJ8c74CDncSSRN5AT5Hb9siFMV8EMJA 1vv9VkYaayBKQ4v8aApYfEALw_wcB		
4	Butterfly exhibit American Museum of Natural History, New York City, NY, USA	Native www.amnh.org/exhibitions/butterflies	500	M, BE, S
5	Butterfly House Missouri Botanical Gardens, 15050 Faust Pk, Chesterfield, Missouri 63017, USA	Exotic www.missouribotanicalgarden.org/visit/family-of-attractions/butterfly-house.aspx		BG, BH
6	Butterfly House, Children's Museum 224 Lamm Street, Mankato, MN 56001, USA	www.cmsouthernmn.org/butterfly-house/		M, BE
7	Audubon Butterfly Garden and Insectarium 423 Canal St, New Orleans, Louisiana 70130, USA	Native https://audubonnatureinstitute.org/insectarium		Z, IZ
8	Bear Mountain Butterfly Sanctuary 18 Church Rd, Jim Thorpe, PA 18229, USA	https://bearmountainbutterflies.com/raising-butterflies/		I, BE
9	Berniece Grewcock Butterfly and Insect Pavilion, Henry Doorly Zoo and Aquarium 3701 S 10th St, Omaha, Nebraska 68108, USA	Native Painted lady and monarch butterfly releases www.omahazoo.com/berniece-grewcock-butterfly-and-insect-pavilion		Z, IZ, BH
10	Butterfly House and Insect World 6750 McGulpin Street, Mackinac Island, MI, USA	Exotic www.originalbutterflyhouse.com/ 1991, 2006	100s	I, BH

11	Blooming Butterfly Garden Como Zoo & Conservatory, 1225 Estabrook Drive, St Paul, MN 55103, USA	167 m ² https://comozooconservatory.org/new-planting-for-blooming-butterflies/		100	Z, BE
12	Bug House, Houston Zoo 6200 Hermann Park Drive, Houston, TX 77030, USA	232 m ² Exotic www.houstonzoo.org/explore/exhibits/bug-house/			Z, IZ
13	Butterfly Biosphere 3003 N Thanksgiving Way, Thanksgiving Point, Lehi, Utah 84043, USA	2014 https://thanksgivingpoint.org/experience/butterfly-biosphere/	1,000		I, BH
14	Butterfly Conservatory & Insect Zoo, Kansas State University Manhattan, Kansas 66506, USA	3,716 m ² Exotic www.k-state.edu/gardens/education/insect-zoo/			U, IZ
15	Butterfly Encounter, Connecticut Science Center 250 Columbus Blvd, Hartford, Connecticut 06103, USA	https://ctsciencecenter.org/butterfly-encounter/	100–200	20–30	M, BE
16	Butterfly House at Churchville Nature Center 501 Churchville Ln., Churchville, PA 18966, USA	www.localgymsandfitness.com/US/Southampton/499910143494954/The-Butterfly-House-at-Churchville-Nature-Center			NC, BH, IZ, S
		2014 Native butterflies and some other insects			

17	Butterfly Garden & Insect Zoo , Museum of Science 1 Science Park, Boston, MA 02114, USA	www.mos.org/explore/exhibits/butterfly-garden			M, IZ
18	Butterfly Habitat, Six Flags Discovery Kingdom Vallejo, California, USA	www.sixflags.com/discoverykingdom/attractions/butterfly-habitat			I, BH
19	Butterfly House, Ashland Nature Center Delaware Nature Society, Hockessin, Delaware 19707, USA	Exotic www.onlyinyourstate.com/delaware/ashland-nature-center-de/			NC, BH,
20	Butterfly House, Detroit Zoo 8450 W. 10 Mile Rd, Royal Oak, Michigan 48067, USA	Native https://detroitzoo.org/animals/zoo-animals/butterfly/	250 pupae/week	25	Z, BH
21	Butterfly House, San Antonio Zoo 3903 N St Mary's Street, San Antonio, Texas 78212 USA	Exotic www.tripadvisor.com/ShowUserReviews-g60956-d104199-r472224489-San_Antonio_Zoo-San_Antonio_Texas.html		15-20	Z, BH
22	Butterfly House 1455 Obee Road, Whitehouse, Ohio 43571, USA	156 m ² www.wheelerfarms.com/butterfly-house			I, BH
23	Butterfly House, The Gardens on Spring Creek 2145 Centre Ave, Fort Collins, Colorado 80526, USA	Exotic www.fcgov.com/gardens/ 2019	100s		I, BH, Y
		158 m ² Native			

24	Butterfly Hollow, Franklin Park Zoo One Franklin Park Road, Boston, Massachusetts 02121, USA	www.zoonewengland.org/franklin-park-zoo/exhibits/butterfly-hollow-seasonal/		40	Z, BE, S
25	Butterfly Magic, Tucson Botanical Gardens Tucson, Arizona 85712, USA	Native https://tucsonbotanical.org/ https://tucsonbotanical.org/buy-tickets/			BG, S
26	Butterfly Palace and Rainforest Adventure 4106 W. Hwy 76, Branson, Missouri 65616, USA	Exotic www.thebutterflypalace.com/ Spend US\$ 70–100,000 per year on pupa	1,000	40–60	I, BH, Y
27	Butterfly Pavilion 6252 W. 104 th Avenue, Westminster, Colorado 80020 USA	650 m ² https://butterflies.org/ 1995 Wings of the Tropics, 650 m ² 2,800 m ² Exotic	1,200		I, BH, IZ
28	Butterfly Place 120 Tingsboro Road Westford, Massachusetts 01886, USA	https://butterflyplace-ma.com/			I, BH
29	Butterfly Jungle, San Diego Wild Animal Park 15500 San Pasqual Valley Road Escondido, California 92027-7017, USA	Exotic https://sdzsafaripark.org/animals/butterfly			Z, BH, S
30	Butterfly Rainforest, Florida Museum of Natural History Gainesville, Florida 32611, USA	Exotic www.floridamuseum.ufl.edu/exhibits/butterfly-rainforest/	1,000	50	M, BH

31	Butterfly Wing, Reiman Gardens Iowa State University 1407 University Blvd. Ames, Iowa, 50011, USA	595 m ² Exotic www.reimangardens.com/education-ideas/butterfly-insect-links-and-articles/	800	80	U, BE
32	Butterfly Wonderland 9500 East Via de Ventura F100 Scottsdale, Arizona 85256, USA	232 m ² Native and exotic https://butterflywonderland.com/	100s		I, BE
33	Butterfly World, Six Flags Discovery Kingdom 1001 Fairgrounds Dr., Vallejo, California 94589, USA	Exotic www.sixflags.com/discoverykingdom/attractions/butterfly-habitat			I, BH
34	Cambridge Butterfly Conservatory 2500 Kossuth Rd, Cambridge, ON N3H 4R7, Canada	Exotic www.cambridgebutterfly.com/ 2001	2,000	57	BH, IZ
35	Cecil B Day Butterfly Center, Callaway Resort and Gardens	Exotic In partnership with El Bosque Nuevo Butterfly Farm, 100% of the profit from the purchase of butterflies is invested into reforestation and conservation of tropical rainforest habitat in the Guanacaste region of Costa Rica www.callawaygardens.com/the-gardens/places-to-explore/day-butterfly-center/	1,000		BG, BH, Y

	17800 US Highway 27, Pine Mountain, Georgia 31822, USA	Exotic			
36	Cockrell Butterfly Center, Houston Museum of Natural Science 5555 Hermann Park Dr., Houston, Texas 77030, USA	www.hmns.org/cockrell-butterfly-center/ Exotic		11	M, BH, Y
37	Frederik Meijer Gardens & Sculpture Butterflies are Blooming Exhibit Park, 1000 East Beltline Ave NE, Grand Rapids, Michigan 49525, USA	www.meijergardens.org/calendar/butterflies-are-blooming/ 1,400 m ² -Lena Meijer Conservatory Exotic	7,000	60	BG, BH, S
38	Insect Zoo & Butterfly Pavilion, Natural History Museum of Los Angeles County Los Angeles, California, USA	https://nhm.org/experience-nhm/exhibitions-natural-history-museum/butterfly-pavilion			M, IZ, Y, BH-S
39	Insect House, San Diego Zoo 2920 Zoo Drive, San Diego, CA 92101, USA	Native www.shyguysworld.com/index.php?topic=20802.0			Z, IZ
40	Idlewild Butterfly Farm and Insectarium 1100 Logan St, Louisville, Kentucky 40204, USA	Exotic www.idlewildbutterflyfarm.com/butterflies 2009			BF, IZ, BH
41	Insect Zoo, San Francisco Zoo 1 Zoo Road, San Francisco, California 94132, USA	Native butterflies to eastern USA & for release at events www.sfzoo.org/australian-walking-stick/ 1979-Insect Zoo	1,000	20	Z, IZ, Y
		Native and exotic			

42	Insect exhibit, Toronto Zoo 261A Old Finch Ave, Toronto, Ontario M1B 5K7, Canada	www.torontozoo.com/welcomeback Insect exhibits within other exhibits		Z, IZ
43	Key West Butterfly and Nature Conservatory 1316 Duval St, Key West, Florida 33040, USA	www.keywestbutterfly.com/ Exotic	50–60	I, BH
44	Living Conservatory, North Carolina Museum of Natural Sciences 11 West Jones Street, Raleigh, North Carolina 27601, USA	https://naturalsciences.org/living-collections/living-conservatory		M, IZ
45	Magic Wings Butterfly Conservatory & Gardens 281 Greenfield Road, South Deerfield, MA 01373, USA	https://magicwings.com/ 2000 743 m ² Exotic	3000–4000	BG, BH
46	Magic Wings Butterfly House & Bayer Insectarium North Carolina Museum of Life & Science 433 Murray Ave, Durham, North Carolina 37704, USA	www.lifeandscience.org/explore/insectarium/ Exotic	30–50	M, BH, IZ, Y
10	Mariposario Chapultepec, Mexico City, Mexico	www.atlasobscura.com/places/mariposario-chapultepec	1,000s	I, BB
47	Marshall Butterfly Pavilion, Desert Botanical Garden 1201 N Galvin Pkwy, Phoenix, Arizona 85008, USA	https://dbg.org/ https://dbg.org/exhibits/mighty-monarchs/2021-09-25/		BG, BE

48	Michigan State University, Horticultural Gardens and Butterfly House 1066 Bogue Street, Plant & Soil Sciences Building, East Lansing, Michigan 48824, USA	www.michigan.org/property/michigan-state-university-horticultural-gardens-and-butterfly-house			U, BG, BH, S
49	Montreal Insectarium 4581 Rue Sherbrooke E, Montréal, QC H1X 2B2, Canada	https://espacepurlavie.ca/en/about-insectarium			I, IZ, Y
50	Newfoundland Insectarium 2 Bonne Bay Road Reidville, NL A8A 2V1, Canada	https://nlinsectarium.com/	100s		M, IZ, BH, S
51	Niagara Park Butterfly Conservatory 2565 Niagara Parkway, Niagara, ON L0S 1J0, Canada	www.niagaraparks.com/visit/attractions/butterfly-conservatory/	2,000	45	I, BG, BH GOV
52	Orange County Native Butterfly House The Environmental Nature Center Newport Beach, California, USA	https://encenter.org/visit-us/butterfly-house/	180 m ² Exotic Native		NC, BH, S
53	Osher Rainforest, California Acad. Sciences Golden Gate Park San Francisco, California, USA	www.calacademy.org/exhibits/osher-rainforest	1,250		M, BE, IZ
54	O. Orkin Insect Zoo & Butterfly Pavilion Smithsonian Institution, National Mus. of Natural History Washington, DC, USA	https://naturalhistory.si.edu/sites/default/files/media/file/butterflies-commonly-seen-pavilion.pdf www.si.edu/exhibitions/insect-zoo-orkin%3Aevent-exhib-132		16	M, IZ, Y BE

55	Panhandle Butterfly House 4966 Henry St, Milton, Florida 32570, USA	1976 Native and exotic https://panhandlebutterflyhouse.org/			NC, BG
56	Paul Smiths VIC Butterfly House Adirondacks Park 8023 NY-30, Paul Smiths, NY 12970, USA	2021 Native www.adirondackvic.org/Butterfly-House.html			I, BH, S
57	Puelicher Butterfly Wing, Milwaukee Public Museum 800 West Wells Street, Milwaukee, Wisconsin 53233, USA	1993 Native www.mpm.edu/index.php/exhibitions/permanent-exhibits/first-floor-exhibits/puelicher-butterfly-wing	60		M, BH
58	Sophia M. Sachs Butterfly House, Missouri Botanical Garden 15193 Olive Boulevard, Faust Park Dr. Chesterfield, Missouri 63017 USA	1998 243 m ² Exotic and native www.missouribotanicalgarden.org/visit/family-of-attractions/butterfly-house/about-the-butterfly-house.aspx	60		BG, BH
59	Sertoma Butterfly House 4320 South Oxbow Ave., Sioux Falls, South Dakota 57106, USA	1998 243 m ² Exotic https://butterflyhouseaquarium.org/	800		I, BH
60	Butterfly World & Bug Zoo, Tradewinds Park	Exotic www.butterflyworld.com/our-story/	~5,000	80	I, BH, IZ

61	3600 W. Sample Road, Coconut Creek, Florida 33073, USA Tropical Butterfly House, Pacific Science Center 200 Second Ave. North, Seattle, Washington 98109, USA	1988 Exotic www.pacificsciencecenter.org/exhibits/butterfly-house/				M, BE
62	Western Colorado Botanical Gardens and Butterfly House 641 Struthers Ave, Grand Junction, Colorado 81501, USA	1998 15 acres (6.1 ha) https://wcbotanic.org/butterflies/				BG, BH
63	Victoria Bug Zoo 631 Courtney Street, Victoria, British Columbia V8W 1B8, Canada	Insect Zoo www.victoriabugzoo.ca/				I, IZ
64	Victoria Butterfly Gardens 1461 Benvenuto Ave., Brentwood Bay, BC V8M 1J5, Canada	www.butterflygardens.com 1,100 m ² rainforest Exotic	400–700/ week emerge (~4,000 total)	75		BG, BH
65	Wings of Fancy, Butterfly and Caterpillar Exhibit Brookside Gardens, Wheaton Regional Park, 1800 Glenallan Ave., Wheaton, Maryland 20902, USA	https://montgomeryparks.org/parks-and-trails/brookside-gardens/wings-fancy-live-butterfly-caterpillar-exhibit/ Native Maryland National Capital Park and Planning Commission				P, BE, S
66	World of the Insect, Cincinnati Zoo 3400 Vine St, Cincinnati, OH 45220, USA	https://cincinnati-zoo.org/plan-your-visit/exhibits/world-of-the-insect/				Z, IZ

67	Fairchild Tropical Botanic Garden, Clinton Family Conservatory 10901 Old Cutler Road, Miami, Florida 33156, USA	1978 https://fairchildgarden.org/miami-botanical-garden/butterfly-garden-miami/	100s	40	BG, BH
68	Butterfly Dan's 1803 Harbor Road, Kissimmee, Florida 34746, USA	Exotic www.butterflydants.com			BB
69	Zoológico Miguél Álvarez del Toro (formerly Zoológico de Tuxtla Gutierrez) Chiapas, Mexico	Native butterfly supplier https://en.wikipedia.org/wiki/Zool%C3%B3gico_Migu%C3%A9l_%C3%81lvarez_del_Toro			Z, IZ
	Central & South America, Caribbean	Native species			
1	Butterfly Farm, Aruba N.V J. Irausquin Boulevard Z/N, Oranjestad, Aruba	www.thebutterflyfarm.com/			I, BH, Y
2	Cali Zoo, Butterfly house Cra. 2a Oe., Cali, Valle del Cauca, Cali, Colombia	Exotic www.zoologicodecali.com.co/			Z, BH
3	Chaa Creek Butterfly Farm Chaa Creek Road, San Ignacio, Cayo, Belize	450 m ² www.chaacreek.com/amenities/blue-morpho-butterfly-farm			I, BG, BH, BB
4	Costa Rica Entomological Supply (CRES) La Guácima, Alajuela, Costa Rica	Morpho Farm www.butterflyfarm.co.cr		49	I, BB, BH
		1984			
		Supplier of butterflies to exhibits			

5	El Bosque Nuevo San Jose, Costa Rica	www.elbosquenuevo.org/copy-of-purchase-pupaes	87	I, BB
6	El Mariposario, Insectarium Av Centenario no 15-190, Km. 3 Via al Valle, Calarcá Quindio, Colombia	https://jardinbotanicoquindio-org.translate.goog/?x_tr_sl=es&x_tr_tl=en&x_tr_hl=en&x_tr_pto=sc www.tripadvisor.co/ShowUserReviews-g2539236-d5788465-r321380981-Jardin_Botanico_del_Quindio-Calarca_Quindio_Department.html		I, BG, IZ, BB
7	Green Hills Butterfly Ranch 8 Mile Chiquibul Road, Route from Georgeville village heading to Caracol archaeological site, Mountain Pine Ridge Reserve, Belize	640 m ² www.greenhillsbelize.com/ 40 ha, native spp	20 spp	I, BG, BB
8	Heliconius Butterfly Works Casilla Postal 17-22-20056, Quito, Ecuador	www.heliconiusworks.com/new_Page/pages/home.html		I, BB, BF
9	Mariposario Mindo, Sector La Yaguira Baja 2 km from the town of Mindo 170167, Ecuador	1996 Exotic Specialize in <i>Heliconius</i> + <i>Morpho peleides</i> www.mariposasdemindo.com/index-en.html#top_content		I, BB

11	Mariposario Tambopata Butterfly Farm, Puerto Maldonado, Peru	www.livinginperu.com/puerto-maldonados-butterfly-farm/ 600 m ²		15–30	I, BF, BB, BH
12	Morpho Pupae/MROCH NEOTROPICAL SRL La Guaria, Piedades Sur, San Ramon, Alajuela, Costa Rica	www.morphopupae.com <i>Morpho</i>			I, BB
13	Pilpintuwasi Butterfly Farm Pilar Nires De Garica 22 Iquitos 16000, Peru	https://pilpintuwasi.com/			I, BF, BB
14	Sao Paulo Butterfly Estrada da Ponte Alta 4300 – São Paulo/SP, São Paulo, Brazil	https://eco.cidadedesapaulo.com/atracoes/borboletario/		17	I, BH
15	SpirogyrA Butterfly Garden/Jardin de Mariposas San Jose Butterfly Farm San Jose, Costa Rica	Native www.butterflygardencostarica.com/ 1992 7,000 m ²		37	I, BH, BF,
Europe					
1	Benalmadena Butterfly Park Costa del Sol, Malaga, Spain	www.mariposariodebenalmadena.com/en/mariposas/	1,500	150	I, BH
2	Bornholm Butterfly Park, Bornholms Sommerfuglepark Gl. Rønnevej 14b, 3730 Nexø, Bomholm, Denmark	Exotic www.sommerfugleparken.dk/en/home-more-than-1000-butterflies/ 1997	1,000	15–30	I, BG, S

		900 m ² Exotic			
3	Botanical Garden of P. J. Šafárik University in Košice Mánašova 1889/23, 040 01 , Košický Kraj, Slovakia	www.upjs.sk/pracoviska/botanicka-zahrada/	1,000–3,000	42–89	U, BH, BG, S
4	Butterfly Arc, Esapolis Insectarium Padova Via de Colli, 28, 35143 Padua, Italy	www.micromegamondo.com/en/museums-and-parks/esapolis www.micromegamondo.com/en/about-us/story			I, IZ
5	Butterfly Botania, University of Eastern Finland Heinäpurontie 70, 80110 Joensuu Finland	Exotic www.botania.fi/			U, BG
6	Butterfly Dome Vilnius Avenue, Druskininkai, Lithuania	Exotic www.facebook.com/Butterfly-Dome-Drugeli%C5%B3-kupolas-1751829641511885/			I, BH
7	Butterfly House Strada Küllőmezőnr38, Praid 537240, Romania	Exotic www.butterflyhouse.ro/			I, BH
8	Butterfly Paradise & Bugs, London Zoo Regent's Park, London NW1 4RY UK	Exotic www.zsl.org/zsl-london-zoo/exhibits/butterfly-paradise			Z, IZ, BH, Y
9	Butterfly Park Empuriabrava c/ Sta. Clara, s / n 17486 Castelló	2006-Butterfly Paradise Exotic www.butterflypark.es			I, BH

	d'Empúries Girona, Catalonia Spain	Exotic			
10	Butterfly Pavilion & Insectarium, Artis Royal Amsterdam Zoo Amsterdam, The Netherlands	http://Artis.nl			Z, IZ, BH, Y
11	Butterfly World Ltd, Preston Park Yarm Rd, Stockton-on-Tees TS18 3RH, United Kingdom	Exotic www.butterfly-world.co.uk		80–120	I, BH
12	Edinburgh Butterfly and Insect World Dobbies Garden World, Melville Nursery, Lasswade, Edinburgh, EH18 1AZ, United Kingdom	www.edinburgh-butterfly-world.co.uk			I, BH, IZ
13	Garden of the Butterflies Castle Sayn Bendorf- Sayn, Germany	Exotic www.sayn.de/garten-der-schmetterlinge			I, BH
14	Garten der Schmetterlinge Schloss Sayn Garden of Butterflies, Friedrichsruh Am Schlossteich 821521 Aumühle-Friedrichsruh, Germany	1987 Exotic www.gartenderschmetterlinge.de/	1,000	40	I, BH
15	Insectarium & Butterfly Hall, Wilhelma Zoo Wilhelma 13, 70376 Stuttgart, Germany	1985 450 m ² Exotic www.wilhelma.de/en/animals-and-plants/animals/insectarium.html			Z, IZ
		1979 Insectarium-exotic www.wilhelma.de/en/nature-conservation-at-wilhelma.html			

16	Jardin de Papillons, (Butterfly Garden) Grevenmacher, Luxembourg	www.papillons.lu www.papillons.lu/eintritt-zum-schmetterlingsgarten/	100s	16	BG, BH
17	La Serre aux Papillons 1 avenue des platanes, 78940 La Queue-les-Yvelines, France	600 m ² www.serreauxpapillons.com/pages/accueil	700		I, BH,S
18	Maximilianpark Alter Grenzweg, 2 59071 Hamm Hamm, Germany	1989 Exotic www.maximilianpark.de/en/aufsichtsrat/		80	I, BH
19	Micropolis (La Cité des Insectes) Le Bourg, 12780 Saint-Léons, France	450 m ² Exotic www.micropolis-insectworld.com/micropolis_uk/index_uk.html			I, IZ
20	Musée d'Histoire naturelle et Vivarium de l'Hôtel de ville, Cour d'Honneur, Rue Saint-Martin 52, 7500 Tournai, Belgium	https://mhn.tournai.be/collections/			M, IZ
21	Papiliorama & Nocturama Switzerland Fondation Papiliorama Moosmatte 1, CH-3210 Kerzers FR, Switzerland	live arthropods-exotics www.papiliorama.ch/en/ 1,200 m ² Exotic	1,000	120	I, BH,Y
		500 m ² Bug Bigtop-10 spp. Swiss indigenous butterflies			
		1989 in situ conservation program in Belize- Shipstern-400 km ² tropical rainforest			

22	Papilionia Butterfly House motýlí dům Praha Na Příkopě 854/14, Praha, Czech Republic	www.prague.eu/en/object/places/3039/papilionia www.papilionia.cz/praha/en/homepage-english/	600		I, BH
23	Passiflorahoeve Vlindertuin Harskamp, oud Willigerweg 1 6731 GB Harskamp Gelderland, The Netherlands	150 m ² Exotic www.passiflorahoeve.nl/			I, BF, S
24	Schmetterlinghaus Hofburg, 1010 Wien, Austria	1,600 m ² www.schmetterlinghaus.at/	500	40	I, BH
25	Stratford Butterfly Farm Stratford-on Avon, Swan's Nest Lane, Stratford-upon-Avon, Warwickshire, CV37 7LS, United Kingdom	1990 www.butterflyfarm.co.uk/attraction/ www.butterflyfarm.co.uk/attraction/our-displays/flight-area	2,000	250	I, BH
26	Vlinders aan de Vliet Veursestraatweg 195A, 2264 EG Leidschendam, The Netherlands	Aggregator and distributor of butterflies from farms in tropics Exotic www.vlindersaandevliet.nl/			S, BH, S
27	Vlindersafari Vinderkas Broekstraat 40, 5421 ZJ Gemert Diergaarde Blijdorp, Rotterdam, The Netherlands	1,600 m ² Exotic www.vlindersafari.nl			I, BH
28	WILDLANDS Adventure Zoo Emmen Raadhuisplein 99, 7811 AP Emmen, The Netherlands	Exotic www.wildlands.nl/ Jungola			Z, BH

Abbreviations: BB: butterfly breeding, BE: butterfly exhibit, BF: butterfly farm, BG: botanical garden, BH: butterfly house, GOV: government, I: independent, IABES: International Association of Butterfly, IZ: Insect Zoo or Insectarium, M: within a museum, NC: nature centre, NP: national park, NR: nature reserve, S: seasonal operation, Y: year-round operation, Z: within a zoo.

Pre-print



Fig. 1

Large and beautiful butterflies such as *Idea lynceus*, and birdwing butterflies *Troides amphrysus* and *Trogonoptera brookiana* from Malaysia which were highly valued by hobbyists and butterfly houses are now protected by the Malaysian Wildlife Conservation Act 2010

Left to right: © Alex Dumchus; © Shutterstock Inc. Web. 9 January 2022. © Leslie Saul-Gershenz; © Anaxibia. (CC) CC BY-SA 3.0. Filename: [Trogonoptera brookiana 0588.JPG](#).
Uploaded: 14 December 2016.

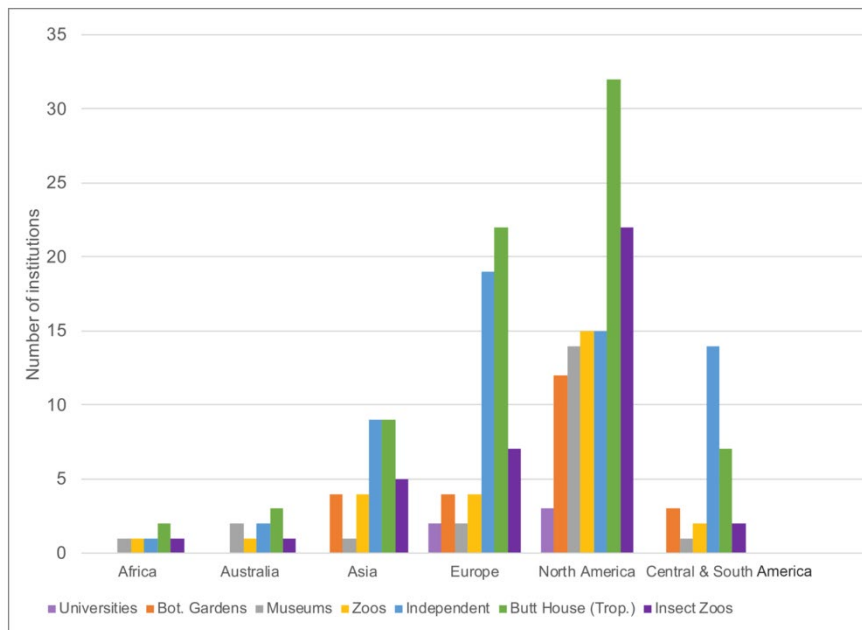


Fig. 2
Numbers of insect exhibits around the world by geographical region and by institution type (based on data summarised in Table I). Most of the exhibits in Australia, Central and South America exhibit species from within their ecoregions