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THE TRADE OF LIVE TARANTULAS AND SCORPIONS IN A SOCIAL MEDIA PLATFORM IN THE PHILIPPINES

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ABSTRACT – Tarantulas and scorpions are diverse groups of arachnids. The international trade of live arachnids as pets is widespread, with undescribed or newly described species being particularly sought-after by enthusiasts due to their novelty and perceived rarity. Previous studies on wildlife trade in the Philippines have focused on vertebrates (e.g. reptiles, birds, mammals). This study was conducted to provide baseline data on trade dynamics of arachnids. We surveyed five Facebook groups specializing in the trade of live arachnids in 2020 and 2022 which documented more than 16,000 individuals representing 135 and 25 species of tarantulas and scorpions, respectively. Price per individual tarantula ranged from PHP 20 (USD 0.38) for a commonly traded species to PHP2 0,000 (USD382) for an undescribed species. Legality in sourcing and trade is a concern. Non-native arachnids are smuggled regularly by post into the country, while native species are poached and illegally shipped domestically and internationally to supply the pet trade. The Philippine wildlife authorities and Facebook are urged to collaboratively address the ongoing illegal live arachnid trade.

Keywords: arachnid, CITES, Facebook, illegal wildlife trade, Theraphosidae

INTRODUCTION

Tarantulas (Araneae, Theraphosidae) and scorpions (Scorpiones) are diverse groups of invertebrates belonging to the arachnid class. Tarantulas are large spiders with 165 genera and 1,088 described species (World Spider Catalog, 2024), while scorpions are composed of 24 families and 2,809 species (Rein, 2024). Due to their relative ease of care and novelty, keeping arachnids as pets became popular in the international wildlife trade. In a recent study, 451 tarantula and 350 scorpion species were documented for sale on the Internet (Marshall et al., 2022). In the Philippines, a wildlife seizure analysis from 2010-2019 identified arachnids as the most seized invertebrates with 2,994 tarantulas from 38 taxa and 992 scorpions from four taxa (Sy, 2021).

Despite the widespread availability of hundreds of species in the international trade, only five scorpions and 37 tarantulas are regulated by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, 2024) and only three scorpions and 39 tarantulas were assessed by the International Union for Conservation of Nature (IUCN, 2024). In the Philippines, the *Republic Act No. 9147* or the *Wildlife Resources Conservation and Protection Act of 2001* allows local trade of threatened wildlife if the wildlife were acquired legally, and the trader possesses a Wildlife Farm Permit (WFP) from the Department of Environment and Natural Resources (DENR). Exotic pet enthusiasts must apply for a Certificate of Wildlife Registration (CWR) to legally keep wildlife, while a Local Transport Permit (LTP)

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is required to transport wildlife within the country. The DENR's *Department Administrative Order No. 2004-55 (DAO 2004-55)* stipulates that the importation and exportation of wildlife species are only allowed if the necessary permits are granted.

Facebook is a widely used social media platform with 86.75 million users in the Philippines as of January 2024 (Statista, 2024). Despite Facebook's explicit commerce policy against animal sales (Facebook, 2024) and its collaborative effort with conservation groups to address illegal wildlife trade on its platform (Sy & Lorenzo, 2023; TRAFFIC, 2021), including collaborating with TRAFFIC Southeast Asia in deactivating nearly 2,000 Facebook groups facilitating illegal wildlife trade in the Philippines and Indonesia from January-May 2021, it continues to be the preferred platform for wildlife traders in the Philippines (Canlas et al., 2017; Sy, 2018; Sy et al., 2022; Sy & Lorenzo, 2023). Previous studies on wildlife trade in the Philippines have focused on vertebrates such as reptiles, birds, and mammals (Gomez et al., 2022; Sy, 2018; Sy & Krishnasamy, 2020; Sy et al., 2022). This study aims to provide baseline information on the dynamics of the arachnid trade in the Philippines, including the species and trade volume, and to inform recommended actions for mitigating illegal online wildlife trade.

METHODS

We pre-selected the five most active Philippine Facebook groups specializing in the trade of arachnids and conducted manual surveys (i.e., reviewed each post) for three months in October-December 2020 and February-April 2022. Since all five groups surveyed in the first batch were deactivated by Facebook in 2021, we selected a new set of five groups for the second survey. All offers to sell or exchange arachnids for other species or gadgets (e.g. cellphone) were recorded. Other information such as price, quantity, date, and seller's location were also documented. Posts without specific quantity or accompanying photograph were recorded as one individual each, as a conservative estimate. Duplicate posts were removed from the dataset. We used the exchange rate of USD 1 = PHP 52.3346, rate on 30 April 2022, throughout the report for uniformity.

RESULTS AND DISCUSSION

A total of 14,662 tarantulas representing at least 135 species from 6,123 posts (Table 1) and 1,387 scorpions of 25 species from 477 posts (Table 2) were recorded in the two surveys. Among the 42 CITES-listed arachnid species, 28 tarantulas and one scorpion were recorded in this study.

Native vs. Non-native

Most tarantulas and scorpions recorded are non-native. The non-native tarantula species dominated the trade with 14,058 individuals (95.9%) while native tarantula species consisted of 604 individuals. For scorpions, 20 non-native species represented by 885 (63.8%) individuals and five native species with 502 individuals were recorded. The neotropical tarantula subfamily Theraphosinae was the most prominent in the trade with 61 species. Members of this subfamily are considered by hobbyists to be easier to keep in captivity compared to Old World tarantulas. New World tarantulas are generally slower, less defensive, and possess less potent venom since they rely more on urticating hair for defense (Blatchford *et al.*, 2011; Kaderka *et al*., 2019).

Many native tarantulas which are still undescribed (reported as *Selenocosmiinae* spp. in Table 1) documented during the survey were suspected to be endemic and highly localized in distribution, while native scorpions have a wider geographical range and occurring in neighboring countries also.

Table 1. List of tarantula species in the online trade in the Philippines. Native species is denoted with an asterisk (*). Doubtful scientific names (nomina dubia) but are still widely used in the arachnid keeping hobby are denoted with two asterisks (**). IUCN Red List: Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concern (LC), Data Deficient (DD), Not Evaluated (NT). CITES Appendix: Not Listed (NL).

Scientific Name	English Name	Quantity	IUCN	CITES
Acanthoscurria chacoana	Bolivian Red Rump Tarantula	1	NE	NL
Acanthoscurria geniculata	Brazilian White Knee Tarantula	361	NE	NL
Acanthoscurria musculosa	Brazilian Black Velvet Tarantula	3	NE	NL
Acanthoscurria sp.	-	2	NE	NL
Aphonopelma bicoloratum	Mexican Blood Leg Tarantula	9	NE	NL
Aphonopelma crinirufum	Costa Rican Blue Front Tarantula	5	NE	NL
Aphonopelma moderatum	Rio Grande Gold Tarantula	6	NE	NL
Aphonopelma chalcodes	Payson Blonde Tarantula	4	NE	NL
Aphonopelma seemanni	Costa Rican Zebra Tarantula	136	NE	NL
Aphonopelma sp.	-	1	NE	NL
Augacephalus breyeri	Golden Brown Baboon Tarantula	27	NE	NL
Augacephalus junodi	Golden Baboon Tarantula	68	NE	NL
Avicularia avicularia	Pink Toe Tarantula	169	NE	NL
*Avicularia braunshauseni***	Goliath Pink Toe Tarantula	5	NE	NL
*Avicularia geroldi***	Brazilian Blue Green Pink Toe Tarantula	3	NE	NL
Avicularia juruensis	Peruvian Pink Toe Tarantula	2	NE	NL
*Avicularia metallica***	Metallic Pink Toe Tarantula	18	NE	NL
Avicularia minatrix	Red Slate Pink Toe Tarantula	1	NE	NL
Avicularia purpurea	Ecuadorian Purple Pink Toe Tarantula	1	NE	NL
Avicularia sp.	Pink Toe Tarantula	136	NE	NL
Birupes simoroxigorum	Bornean Neon Blue Leg Tarantula	2	NE	NL
Brachypelma albiceps	Mexican Golden Red Rump Tarantula	266	LC	II
Brachypelma auratum	Mexican Flame Knee Tarantula	584	NT	II

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Scientific Name	English Name	Quantity	IUCN	CITES
Brachypelma baumgarteni	Mexican Orange Beauty Tarantula	4	EN	II
Brachypelma boehmei	Mexican Fire Leg Tarantula	1,118	EN	II
Brachypelma emilia	Mexican Red Leg Tarantula	269	LC	II
Brachypelma hamorii	Mexican Red Knee Tarantula	557	VU	II
Brachypelma klaasi	Mexican Pink Beauty Tarantula	68	NT	II
Brachypelma smithi	Mexican Red Knee Tarantula	5	NT	II
Cardiopelma mascatum	Mexican Black Mask Tarantula	4	NE	NL
Caribena versicolor	Antilles Pink Toe Tarantula	12	NE	II
Ceratogyrus brachycephalus	Greater Horned Baboon Tarantula	12	NE	NL
Ceratogyrus darlingi	Rear-horned Baboon Tarantula	559	NE	NL
Ceratogyrus marshalli	Straight-horned Baboon Tarantula	87	NE	NL
Ceratogyrus meridionalis	Grey Mustard Baboon Tarantula	174	NE	NL
Ceratogyrus sanderi	Namibian Horned Baboon Tarantula	26	NE	NL
Ceratogyrus sp.	-	1	NE	NL
Chilobrachys dyscolus	Asian Smokey Earth Tiger Tarantula	19	NE	NL
Chilobrachys fimbriatus	Fimbriated Burrowing Tarantula	101	LC	NL
Chilobrachys guangxiensis	Chinese Fawn Tarantula	5	NE	NL
Chilobrachys huahini	Asian Fawn Tarantula	1	NE	NL
Chilobrachys sp.	Myanmar Tarantula	29	NE	NL

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Scientific Name	English Name	Quantity	IUCN	CITES
Chromatopelma cyaneopubescens	Green Bottle Blue Tarantula	392	NE	NL
Cyclosternum schmardae	Yellow-banded Bird Eater Tarantula	1	NE	NL
Cyriocosmus elegans	Trinidad Dwarf Tarantula	7	NE	NL
Cyriopagopus albostriatus	Thailand Zebra-legged Tarantula	15	NE	NL
Cyriopagopus doriae	Orange-fringed Tiger Tarantula	2	NE	NL
Cyriopagopus hainanus	Hainan Bird Tarantula	126	NE	NL
Cyriopagopus lividus	Cobalt Blue Tarantula	246	NE	NL
Cyriopagopus minax	Thailand Black Tarantula	12	NE	NL
Cyriopagopus sp.	Hati Hati Purple Earth Tiger Tarantula	77	NE	NL
Davus pentaloris	Guatemalan Tiger-rumped Tarantula	160	NE	NL
Dolicothele diamentinensis	Brazilian Blue Dwarf Beauty Tarantula	11	NE	NL
Encyocratella olivacea	Tanzanian Black and Olive Tarantula	13	NE	NL
Ephebopus cyanognathus	Blue Fang Tarantula	6	NE	NL
Ephebopus murinus	Skeleton Tarantula	2	NE	NL
Ephebopus rufescens	Red Skeleton Tarantula	7	NE	NL
Eupalaestrus campestratus	Pink Zebra Beauty Tarantula	1	NE	NL
Grammostola pulchra	Brazilian Black Tarantula	41	NE	NL
Grammostola pulchripes	Chaco Golden Knee Tarantula	1,123	NE	NL
Grammostola rosea	Chilean Rose Tarantula	218	NE	NL
Hapalopus formosus	Pumpkin Patch Tarantula	17	NE	NL
Haplocosmia himalayana	Himalayan Tarantula	10	NE	NL
Harpactira namaquensis	Namaqua Baboon Tarantula	27	NE	NL

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Scientific Name	English Name	Quantity	IUCN	CITES
Harpactira pulchripes	Golden Blue-legged Baboon Tarantula	138	NE	NL
Heteroscodra maculata	Togo Starburst Baboon Tarantula	185	NE	NL
*Heterothele villosella***	Tanzanian Chestnut Baboon Tarantula	1	NE	NL
Hysterocrates gigas	Giant Baboon Tarantula	31	NE	NL
Idiothele mira	Blue-footed Tarantula	6	NE	NL
Lampropelma carpenteri	Sulawesi Black Tarantula	2	NE	NL
Lasiocyano sazimai	Brazilian Blue Tarantula	58	NE	NL
Lasiodora parahybana	Salmon Pink Bird Eater Tarantula	444	NE	NL
*Lasiodora striatipes***	Bahia Grey Bird Eater Tarantula	27	NE	NL
Lasiodorides polycuspulatus	Peruvian Blonde Tarantula	2	NE	NL
Lyrognathus giannisposatoi	Sumatran Stout Leg Tarantula	2	NE	NL
Megaphobema petersi	Peruvian Red Bloom Tarantula	1	NE	NL
Monocentropus balfouri	Socotra Island Blue Baboon Tarantula	424	NE	NL
Neoholothele incei	Trinidad Olive Tarantula	42	NE	NL
Nhandu carapoensis	Brazilian Red Tarantula	25	NE	NL
Nhandu cerradensis	-	4	NE	NL
Nhandu chromatus	Brazilian Red and White Tarantula	314	NE	NL
Nhandu coloratovillosus	Brazilian Black and White Tarantula	76	NE	NL
Nhandu tripepii	Brazilian Giant Blonde Tarantula	27	NE	NL
Omothymus schioedtei	Malaysian Earth Tiger Tarantula	3	NE	NL
Omothymus violaceopes	Singapore Blue Tarantula	3	NE	NL

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Scientific Name	English Name	Quantity	IUCN	CITES
Ornithoctonus sp.	Surat Thani Tarantula	6	NE	NL
Orphnaecus dichromatus	New Guinea Black Fury Tarantula	1	NE	NL
*Orphnaecus pellitus**	Mayon Tarantula	10	NE	NL
*Orphnaecus philippinus**	Philippine Orange Tarantula	51	NE	NL
Orphnaecus sp.*	-	6	NE	NL
Pamphobeteus antinous	Bolivian Blue Leg Tarantula	2	NE	NL
Pamphobeteus fortis	Colombian Giant Brown Tarantula	1	NE	NL
Pamphobeteus insignis	Colombian Purple Bloom Tarantula	1	NE	NL
Pamphobeteus nigricolor	Colombian Giant Blue Bloom Tarantula	1	NE	NL
Pamphobeteuss sp. - *'playtomma'*	Pink Bloom Tarantula	1	NE	NL
Pamphobeteus sp.	Bloom Tarantula	23	NE	NL
Pamphobeteus ultramarinus	Ecuadorian Purple Bloom Tarantula	1	NE	NL
Pamphobeteus vespertinus	Ecuadorian Red Bloom Tarantula	3	NE	NL
Pelinobius muticus	King Baboon Tarantula	24	NE	NL
*Phlogiellus baeri**	Philippine Dwarf Tarantula	21	NE	NL
*Phlogiellus johnreylazoi**	Palawan Blue Dwarf Tarantula	14	NE	NL
Phlogiellus sp.*	Asian Dwarf Tarantula	1	NE	NL
Phormictopus atrichomatus	Red Island Bird Eater Tarantula	2	NE	NL
Phormictopus auratus	Cuban Bronze Tarantula	18	NE	NL
Phormictopus cancerides	Hispaniolan Giant Tarantula	4	NE	NL
Phormictopus sp.	Salinas Tarantula	13	NE	NL
Phormingochilus arboricola	Borneo Black Tarantula	9	NE	NL
Phormingochilus sp.	Indonesian Earth Tiger	4	NE	NL

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Scientific Name	English Name	Quantity	IUCN	CITES
Poecilotheria formosa	Salem Ornamental Tarantula	75	EN	II
Poecilotheria hanumavilasumica	Rameshwaram Ornamental Tarantula	8	CR	II
Poecilotheria metallica	Peacock Tarantula	607	CR	II
Poecilotheria miranda	Bengal Spotted Ornamental Tarantula	47	EN	II
Poecilotheria ornata	Fringed Ornamental Tarantula	148	NE	II
Poecilotheria regalis	Indian Ornamental Tarantula	600	LC	II
Poecilotheria rufilata	Red Slate Ornamental Tarantula	5	EN	II
Poecilotheria smithi	Yellow-backed Ornamental Tarantula	1	NE	II
Poecilotheria sp.	Ornamental Tarantula	1	NE	II
Poecilotheria striata	Mysore Ornamental Tarantula	4	VU	II
Poecilotheria subfusca	Ivory Ornamental Tarantula	10	NE	II
Poecilotheria tigrinawesseli	Tiger Ornamental Tarantula	53	DD	II
Psalmopoeus cambridgei	Trinidad Chevron Tarantula	47	NE	NL
Psalmopoeus irminia	Venezuelan Sun Tiger Tarantula	50	NE	NL
Psalmopoeus pulcher	Panama Blonde Tarantula	81	NE	NL
Psalmopoeus reduncus	Costa Rican Orange Mouth Tarantula	29	NE	NL
Pseudhapalopus aculeatus	Dwarf Tarantula	17	NE	NL
Pterinochilus lugardi	Tanzanian Baboon Tarantula	38	NE	NL
Pterinochilus murinus	Orange Baboon Tarantula	1,132	NE	NL
Sahydroaraneus raja	Indian Blue Dwarf Tarantula	6	NE	NL
*Selenocosmia peerboomi**	Philippine Gray-legged Tarantula	40	NE	NL
*Selenocosmia samarae**	Samar Tarantula	19	NE	NL

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Scientific Name	English Name	Quantity	IUCN	CITES
Sericopelma angustum	Costa Rican Red Rump Tarantula	6	DD	II
Sericopelma sp.	-	2	NE	-
Spinosatibiapalpus spinulopalpus	Colombian Chestnut Dwarf Tarantula	4	NE	NL
Stromatopelma calceatum	Feather-legged Baboon Tarantula	4	NE	NL
Tapinauchenius gigas	Orange Tree Tarantula	26	NE	NL
Tapinauchenius plumipes	Purple Tree Tarantula	6	NE	NL
Theraphosa apophysis	Goliath Pink-toed Tarantula	16	NE	NL
Theraphosa blondi	Goliath Bird Eater Tarantula	19	NE	NL
Theraphosa stirmi	Burgundy Goliath Bird Eater	7	NE	NL
Thrixopelma lagunas	Peruvian Blue Bird Eater Tarantula	1	NE	NL
Thrixopelma longicolli	Peruvian Blue Zebra Tarantula	1	NE	NL
Tliltocatl albopilosus	Curly Hair Tarantula	1,176	LC	II
Tliltocatl epicureanus	Yucatan Rust Rump Tarantula	1	LC	II
Tliltocatl kahlenbergi	New Mexican Tarantula	5	LC	II
Tliltocatl sabulosus	Guatemalan Red Rump Tarantula	1	DD	II
Tliltocatl schroederi	Mexican Black Velvet Tarantula	4	EN	II
Tliltocatl vagans	Mexican Red Rump Tarantula	484	LC	II
Tliltocatl verdezi	Mexican Rose Gray Tarantula	3	NT	II
Xenesthis immanis	Colombian Lesser Black Tarantula	8	NE	NL
Xenesthis intermedia	Amazon Blue Bloom Tarantula	1	NE	NL

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Scientific Name	English Name	Quantity	IUCN	CITES
Theraphosinae (subfamily)	-	11	NE	NL
*Selenocosmiinae (subfamily)**	-	375	NE	NL
*Ornithoctoninae (subfamily)**	Earth Tiger Tarantula	67	NE	NL

Table 2. List of scorpion species in the online trade in the Philippines. Native species is denoted with an asterisk (*).

Scientific Name	English Name	Quantity	IUCN	CITES
Centruroides margaritatus	Central American Bark Scorpion	6	NE	NL
*Chaerilus celebensis**	Asian Bush Scorpion	46	NE	NL
Chersonesometrus tristis	Indian Forest Scorpion	46	NE	NL
Heteroctenus garridoi	Cuban Scorpion	2	NE	NL
*Heterometrus longimanus**	Asian Forest Scorpion	373	NE	NL
Heterometrus swammerdami	Giant Forest Scorpion	60	NE	NL
Hottentotta franzwerneri	Werner's Fat-tailed Scorpion	2	NE	NL
Hottentotta gentili	North African Fat-tailed Scorpion	20	NE	NL
Hottentotta hottentotta	Alligator Back Scorpion	239	NE	NL
Hottentotta jayakari	Iranian Black Fat-tailed Scorpion	3	NE	NL
Hottentotta tamulus	Indian Red Scorpion	9	NE	NL
*Isometrus maculatus**	Lesser Brown Scorpion	1	NE	NL
Leiurus haenggi	Eclipse Deathstalker Scorpion	1	NE	NL
Leiurus jordanensis	Black Deathstalker Scorpion	9	NE	NL
Leiurus quinquestriatus	Deathstalker Scorpion	19	NE	NL
*Liocheles australasiae**	Dwarf Wood Scorpion	50	NE	NL
*Liocheles waigiensis**	Rainforest Scorpion	32	NE	NL

Table 2 (Continued). List of scorpion species in the online trade in the Philippines. Native species is denoted with an asterisk (*).

Scientific Name	English Name	Quantity	IUCN	CITES
Lychas tricarinatus	Three-keeled Bark Scorpion	209	NE	NL
Pandinus imperator	Emperor Scorpion	16	NE	II
Parabuthus liosoma	African Black-tailed Scorpion	27	NE	NL
Parabuthus maximus	Black-Tipped Thick-tailed Scorpion	4	NE	NL
Parabuthus raudus	Burrowing Thick-tailed Scorpion	3	NE	NL
Parabuthus transvaalicus	South African Fat-tailed Scorpion	111	NE	NL
Rhopalurus junceus	Red Scorpion	96	NE	NL
Tityus stigmurus	Brazilian Scorpion	3	NE	NL

The most offered tarantula was the Curly Hair Tarantula (*Tliltocatl albopilosus*) (1,176 individuals), a CITES Appendix II-listed species occurring in Costa Rica and Nicaragua. The Curly Hair Tarantula is globally popular and in high demand. A trade study also listed the species as the most common tarantula in the trade in South Africa (Shivambu *et al*., 2020). Although the Curly Hair Tarantula is easy to keep and breed in captivity, it is still intensively harvested from the wild for the pet trade in Nicaragua (Fukushima *et al*., 2019).

The most common scorpion offered for sale was the Asian Forest Scorpion (*Heterometrus longimanus*) (373 individuals), a sought-after native species due to its large size and ease of care in captivity. This scorpion is known to be regularly poached from the wild in Palawan Province and smuggled to Metro Manila and other urban centers (Aurelio, 2016; Diola, 2011).

The stronger preference of hobbyists in the Philippines to keep non-native species was also observed in other faunal groups. A study on online bird trade showed that 97% of the bird species recorded were non-native (Canlas *et al*., 2017). Similarly, a study on reptile trade showed that 81% of reptiles offered for sale were also non-native species (Sy, 2018).

Traders

A total of 1,097 unique Facebook accounts were recorded posting 6,600 posts. The top 10 traders offered 3,443 arachnid individuals (21.4%). Most sellers were ‘casual’ traders who offered few arachnids infrequently, with 826 traders (75.3%) offering 10 or fewer arachnid individuals. These casual traders may be individuals who were interested to try keeping different species or lost interest in arachnids altogether.

Of the 200 most active traders with location information, the majority were located on Luzon Island in Regions III, NCR, and IV-A (Table 3). Previous studies have also identified these three regions as the most active in the wildlife trade (Raymundo et al., 2023; Sy et al., 2022; Sy & Lorenzo, 2023).

Table 3. Location of the 200 most active online arachnid traders by region.

Region	Trader
I	1
III	68
IV-A	47
NCR	48
VII	21
X	1
XI	13
XII	1
TOTAL	**200**

Legality and sourcing

Although no traders specifically mentioned possession of permits for keeping or selling arachnids in their posts, tarantulas bred in captivity in the Philippines could be the primary source (Fig. 1). An indication of ongoing local captive breeding is the practice of a "breeding loan", wherein a keeper with a matured specimen will look for someone keeping the same species of the opposite gender for breeding purposes and share the offspring between them (Fig. 2). To trade legally, selling species assessed as threatened or listed in any of the CITES Appendices requires a Wildlife Farm Permit.

Figure 1. Local captive-bred Burgundy Goliath Bird Eater *Theraphosa stirmi*.

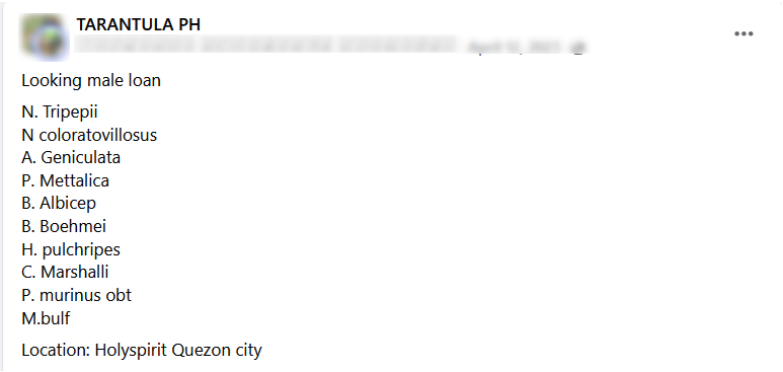

Figure 2. A tarantula keeper looking for male tarantulas for captive breeding purposes.

In contrast, arachnids that are considered new to science, rare, expensive, or hard to breed in captivity are regularly smuggled into the Philippines. It is a common practice for traders to pre-sell seldomly traded species even before the shipment of arachnids arrive in the country (Fig. 3). Traders would post incoming shipments with information such as the species, price, available quantity, and estimated arrival date. The Bureau of Customs foiled at least eight arachnid smuggling attempts via post between 2019 and 2022 (Bureau of Customs, 2019; 2020; 2021a-d; 2022a-b).

Figure 3. A trader pre-selling tarantulas in a Facebook group.

Prices

Prices are determined by the novelty and perceived rarity of the species in the trade, the life stage of the individual, and gender. Females are more expensive since they generally have longer lifespan than males. The most expensive price recorded was for an undescribed tarantula from South America at PHP 20,000 (USD 382) while the least expensive was for Chaco Golden Knee Tarantula (*Grammostola pulchripes*) spiderling at PHP 20 (USD 0.38). When the availability of a species in the market increases, the price tends to decrease. This phenomenon was also observed in a similar study in South Africa (Shivambu et al., 2020).

The proliferation of under-regulated local trading and breeding led to some species becoming very common in the market and resulting to a significant price reduction. For instance, the Peacock Tarantula (*Poecilotheria metallica*) was assessed as Critically Endangered (Molur et al., 2008) but is now commonly bred in captivity (Fig. 4). We recorded 168 Peacock Tarantulas with the lowest asking price at PHP 500 (USD 9.55) for a spiderling in 2020. In the follow up survey in 2022, we recorded 443 individuals with the lowest price of PHP 200 (USD 3.82) or a 250% price decrease.

Figure 4. Local captive-bred Peacock Tarantula *Poecilotheria metallica* spiderlings emerged from the egg sac.

Evasive techniques

In collaboration with TRAFFIC, Facebook's sweeping deactivation of wildlife trade groups that violated the platform's policy since 2021 resulted in traders employing various evasive techniques to continue their online trading activities. Administrators of groups have been observed to instruct members to use codes to avoid being automatically flagged by Facebook's algorithm (Fig. 5a-b). Traders also used other evasive techniques such as intentionally misspelling words, use of emojis, and embedding text in photos. These techniques have been documented to be widely used on Facebook wildlife trade groups (Raymundo et al., 2023) and have also been shared with Facebook.

Figure 5a-b. Group administrators instructing members to use codes to avoid detection by the Facebook algorithm.

Delivery

Along with the usual method of meeting up with buyers, traders have been observed to increasingly utilize courier services to transport wildlife (Fig. 6). Delivery personnel may be arrested and charged in court for illegal possession or transportation of wildlife by law enforcement authorities since a local transport permit from the DENR is a requirement to transport wildlife legally.

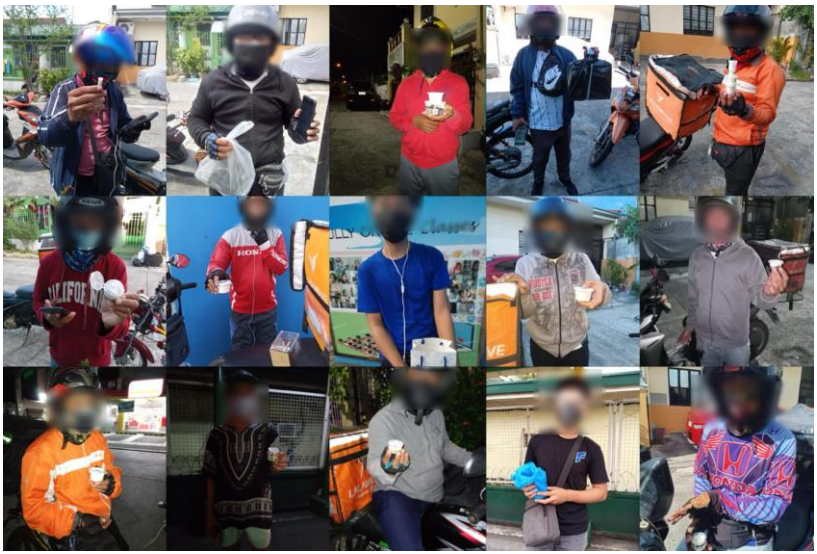

Figure 6. A collage of couriers hired by a trader to deliver live arachnids, as shown in his post about successful deliveries.

Effect of COVID-19 Lockdown

At the height of the COVID-19 pandemic in 2020-2021, the national authority imposed a lockdown and severely restricted the movement of people except for essential workers such as health workers, food service providers, and delivery personnel. The effect of the lockdown on arachnid trade appeared to be insignificant considering the minimal difference in posts between the two surveys (3,018 vs. 3,582), even though the first survey was conducted during the height of the lockdown. The minimal effect may be due to arachnids being easily concealed and transported by couriers.

CONSERVATION CONCERNS

Threats from unsustainable wild offtake

Among the 160 arachnid species documented in the online trade, the IUCN assessed 10 tarantula species as threatened (CR = 2; EN = 6; VU = 2) while none of the 25 scorpion species have been evaluated (IUCN, 2024). While some of these species could have been bred in captivity, it remains a challenge to ascertain the quantity of wild arachnid offtake in the trade. The impact of the arachnid trade on wild populations is largely unknown but could have a significant negative impact, especially for species with very narrow geographical distribution. Of particular concern to the Philippines would be the illegal and possible unsustainable collecting of endemic species.

Philippine tarantulas in the international trade

An ad-hoc web search revealed that Philippine native or endemic tarantulas, including potentially undescribed species, were openly advertised in several international websites. It was very likely that specimens were poached from the wild and smuggled out of the country.

The distribution of Philippine tarantulas is highly localized, as expected from an archipelagic state with 7,641 islands and complex geological history. The discovery of undescribed arboreal tarantulas belonging to Ornithoctoninae subfamily from various islands in southern Philippines (Region XI) sparked a strong demand from both local and international enthusiasts. Aside from pet-keeping purposes, Philippine tarantulas are being exploited for scientific purposes. For example, specimens used to scientifically describe the Palawan Blue Dwarf Tarantula (*Phlogiellus johnreylazoi*) have a dubious source (Nunn et al., 2016). The species was already available in both local and international markets prior to being described as a new species in 2016.

A potentially undescribed tarantula from Panay Island and marketed as "*Orphnaecus* sp. - Blue Panay" is also noteworthy due to its absence in the local trade but is widely available in the international trade. Although illegal without relevant permits (i.e., collection, local transport, and export permit), the demand for Philippine tarantulas in the international trade is expected to increase as illegal collection of tarantulas has begun to shift from central and south America to the Southeast Asia (Law, 2019).

Potential introduced species

Non-native species may be introduced accidentally or intentionally in the wild and could become invasive. For instance, the Mexican Red Rump Tarantula (*Tliltocatl vagans*) has been identified as an invasive alien species in Florida, USA (Edwards *et al*., 1999) and Cozumel Island in Mexico (Vilchis-Nestor et al., 2013). The species was among the most traded tarantulas in the Philippine online trade.

Parthenogenetic species like the Alligatorback Scorpion (*Hottentotta hottentotta*), another common species in trade, could have a higher chance of becoming invasive since a single individual escapee could establish a viable wild population.

Without proper health screening and quarantine, smuggled arachnids could potentially harbor parasites and diseases that are new to the country. For example, parasitic nematodes belonging to the *Tarantobelus* genus are known to infect both captive-bred and wild-caught tarantulas. Limited information is available on the mode of transmission of these nematodes and currently, there are no known effective treatments against these parasites. (Baniya et al., 2023; Wyrobisz-Papiewska et al., 2013).

CONCLUSION AND RECOMMENDATIONS

This study provides baseline information on the online arachnid trade in the Philippines. We highlighted traded species, volume, trade hotspots, modus operandi, and potential threats to endemic arachnids. The number of species and quantity in this study are conservative estimates. Several traders did not specify the available quantity of arachnids which could be significantly more than the reported quantity. As the scale of this trade could be substantial and involve illegal and unsustainable trade, we make the following recommendations:

For wildlife authorities

Facilitate and simplify the process for bona fide researchers to conduct scientific studies on arachnids. This will lead to a better understanding of the diversity, distribution, and ecology of Philippine species.

Prioritize law enforcement efforts in the NCR, region III, and IV-A where most suspected illegal wildlife trading activities occur.

Continue to detect and intercept tarantula and scorpion smuggling attempts at major international ports.

Enhance online monitoring of wildlife trade and collaboration with online platforms to detect and mitigate evolving modus operandi.

Conduct in-depth investigations on suspected traffickers to uncover and disrupt criminal networks and file criminal cases in court to deter traffickers.

For Facebook

Deactivate wildlife trade groups proactively and consistently for violating the platform's policy on wildlife trade. The group administrators should also be sanctioned for facilitating illegal wildlife trade.

Collaborate closely with conservation organizations to rapidly detect evolving evasive methods and new code words used by online traffickers and integrate the findings into the platform's algorithm.

For courier services

Ensure that company policies prohibit the transport of illegal wildlife and raise awareness for staff about the serious consequences of transporting wildlife illegally.

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STATEMENT OF AUTHORSHIP

JJGR conducted the online surveys, analyzed the dataset, and wrote the first draft; SCLC edited the paper; EYS conceptualized the study, curated and analyzed the dataset, collated seizure records, and edited the paper.

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