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Taxonomy Takes Time: Shortcuts to Synonymy

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Abstract

Taxonomy is the foundation of biology, providing the currency (species) for biological studies and the handle (epithet) to refer to them. The task at hand is urgent: a race against extinction as most species remain undescribed and expertise declines. In response, various 'rapid taxonomy' approaches aim to hasten descriptions. Good examples exist that genuinely accelerate the growth of taxonomic knowledge, but shortcuts risk errors that may take more time to resolve than the original work took to produce. Authors must consider (1) the total time budget, including subsequent revisions necessitated by inadequate taxonomy; (2) the taxonomic literature on regional and widespread taxa; and (3) illustration quality as a critical and enduring component of species description. Reviewers and editors must also ensure minimum standards. I discuss a recent example where shortcuts, instead of accelerating taxonomy, merely borrowed time. *Anelosimus blackgardens*, *Anelosimus covepond*, *Coleosoma roadsalt*—all Sherwood, Mukhida & Connor, 2026—lacked sufficient reference to genus-level revisions and established genus-level synapomorphies and are proposed here as junior synonyms of widespread theridiids: *T. dilucidum* Simon, 1898 syn. nov., *T. melanostictum* O. Pickard-Cambridge, 1876 syn. nov., and *C. blandum* O. Pickard-Cambridge, 1882 syn. nov., respectively. The urgent task of documenting biodiversity can be sped up through effective allocation of effort, but not without due consideration of the taxonomic literature.

Keywords: Araneae; Theridiidae; Anelosimus; Theridion; Coleosoma; species description; taxonomic standards; nomina dubia; integrative taxonomy; Caribbean

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1. Introduction

Taxonomy is simultaneously one of the oldest and most urgent disciplines in biology. It provides the framework upon which ecology, conservation, evolutionary biology, and biogeography depend [1,2]. Yet, taxonomy is widely perceived as being in crisis: fewer students are being trained, funding is limited, the discipline is often dismissed as merely descriptive, and taxonomic work is systematically under-cited and undervalued [3–5]. The irony is that the biodiversity crisis makes taxonomy more important than ever; it is impossible to conserve, monitor, or even discuss species that have not been discovered and described. The alternative is conserving critical habitat, but the measure of habitat importance is typically derived from taxonomic data.

Against this backdrop, there is pressure to describe species quickly. The lag between the collection and description of new species averages 35 years or more, with only 15% of species described within five years of collection [6]. In spiders alone, an estimated 120,000–200,000 species exist, of which only about 54,000 have been described [7,8]. The

temptation to cut corners—to describe from fewer specimens, with less comparative work, without molecular data, and without engaging with the broader taxonomic literature—is understandable but can be counterproductive.

Deficient taxonomy does not save time. Every inadequately described species becomes a burden on subsequent workers who must re-examine types, untangle synonymies, and correct generic placements. The historical record of spider taxonomy is littered with the consequences of this: hundreds of species names erected by prolific but insufficiently careful workers like Embrik Strand and Cândido de Mello-Leitão have been synonymized or declared nomina dubia in subsequent revisions [9,10]. Between 2013 and 2024 alone, 335 species described by Strand and 162 by Mello-Leitão were invalidated—with each synonymy representing extensive revisionary work that would have been unnecessary had the original descriptions been adequate and literature comparison sufficient.

Bond et al. [4] provided the first comprehensive quantitative audit of spider taxonomy over an 11-year period (2008–2018), evaluating 2083 publications describing 8433 new species. Their findings were sobering: only 3.6% of papers explicitly stated a species concept; 34% of species were based on two or fewer specimens; 35% were known from only one sex; only about 5% of studies made data electronically available; and fewer than 14% employed more than one line of evidence. The authors made four concrete recommendations: (1) state the species concept; (2) make data electronically accessible; (3) stop describing singleton species outside of clear revisionary context; and (4) aspire to integrative taxonomy. These recommendations were echoed by Kuntner [11] in his identification of the 'grand challenges' in arachnid science.

Here, I add four more recommendations based on a recent example that illustrates the potential shortfalls of rapid taxonomy. Sherwood et al. [12] described seven new spider species from Anguilla, Lesser Antilles, including three theridiids placed without reference to taxon synapomorphies or sufficient reference to relevant systematic revisions of regional or widespread synanthropic taxa. This particular case is merely illustrative among many recent and historical examples: it is highlighted primarily because it involves *Anelosimus*, a group that has been central to my research program for over two decades [13–16]. When new species are placed in a genus one has revised, a response is not optional—it is a responsibility to the integrity of the taxonomic framework that others rely upon.

Taxonomy, done properly, is a long-term investment that pays dividends. Several examples of successfully accelerating the growth of taxonomic knowledge exist; however, shortcuts that sacrifice fundamental comparison to legacy data can result in a debt that accrues interest.

2. Materials and Methods

This study combines a commentary on rapid-taxonomy practice with three nomenclatural acts arising from a single published case. The taxonomic acts proposed here rest on published descriptions and illustrations, and I state the basis of each explicitly so that readers may weigh each independently.

Two classes of act are distinguished, because they carry different evidentiary burdens. The first is generic placement. Demonstrating that a species lacks the synapomorphies of the genus in which it was described requires only that the relevant characters be assessable in the published illustrations and description. The characters diagnostic of *Anelosimus* [13,14] are structures whose presence or absence is apparent in figures of the quality provided in the original descriptions. A transfer on these grounds, therefore, does not require examination of type material.

The second is species-level synonymy, which requires matching a nominal taxon to a previously described species and is inherently less secure based on published figures

alone. The generic misplacement of two of the species discussed here is unambiguous, while the synonymies proposed here involve more judgment. All rest on Levi's redescriptions of Caribbean theridiids [17,18] and, in the case of *Coleosoma*, additionally on the joint collection of both sexes reported by the original authors. Where the evidence for a particular act is not conclusive, this is acknowledged and I point out what additional evidence is needed to strengthen the case.

Comparative illustrations were modified from the sources cited in the figure captions [12,14,18–22]. Figures were modified in Adobe Photoshop 24.2.0 and arranged in Adobe Illustrator 24.2.0.

All publicly available cytochrome c oxidase subunit I (COI) sequences attributed to *Theridion melanostictum* were retrieved from GenBank: EF449610.1 (Hawaii); KX055052.1 and KX055053.1 (French Polynesia); JN306313.1 (Pakistan); and MK950561.1–MK950568.1 (Oman). Sequences were aligned in ClustalW 2.1, and the phylogeny (Maximum Likelihood) and uncorrected p-distances were estimated in Mega11 using default settings. This approach was deemed sufficient given the few sequences, straightforward alignment, and simple clustering into two groups. The alignment and the full distance matrices are provided as Supplementary Material (Table S1).

3. Results and Discussion

The persistent problem of inadequate taxonomy. The problem of poor species descriptions is as old as taxonomy itself. In spider systematics, several historically prolific authors illustrate this pattern. Embrik Strand (1876–1947) described over 900 valid spider species and erected 165 infraspecific names, often treating trivial variation in coloration, body size, and leg spination as grounds for new taxa. A recent review found that 39 of his subspecies are synonyms of their nominate forms, 26 are nomina dubia, and many others require further study [9]. Cândido de Mello-Leitão (1886–1948) was similarly prolific but insufficiently rigorous; his species have been synonymized or declared unrecognizable in family after family, from Theraphosidae [10] to Araneidae [23] to Uloboridae. Another source of taxonomic confusion is Barrion & Litsinger's [24] Riceland Spiders of South and Southeast Asia, a 700-page work describing over 400 species from Philippine rice fields. While ambitious in scope, many of the theridiid descriptions in this work are so brief and poorly illustrated that the species cannot be reliably identified. Agnarsson [14], in his revision of *Anelosimus*, declared two species from Barrion & Litsinger—*A. nigrobaricus* and *A. salaensis*—as nomina dubia, noting that the types were in very bad condition and the original descriptions lacked sufficient detail for identification. Several other genera erected in the same work have since been synonymized. Yet, as I show below, this source, unreliable for identification, continues to be cited as a primary comparison for new species descriptions. One might hope that modern taxonomy, with access to high-resolution imaging, molecular tools, and comprehensive online databases like the World Spider Catalog, would have moved beyond these problems. The data suggests otherwise. Bond et al. [4] documented that the majority of spider taxonomic publications over the past decade are non-revisionary, non-integrative, and rely on a single morphological data source. Twenty percent of all new species were based on a single specimen—an $n = 1$ from which to infer species boundaries.

Effort to accelerate taxonomy is commendable, and I would argue that there are excellent examples of rapid taxonomy that achieve a favorable tradeoff between quality and the speed of growth of taxonomic knowledge [25–28]. The term "turbo-taxonomy" was coined by Butcher et al. [25] for a study of Thai *Aleiodes* wasps that described 179 new species based on COI-barcoded specimens and typical revisionary components such as identification keys, morphological descriptions and excellent illustrations for every species.

Riedel et al. [26] formalized an equivalent 'fast-track' pipeline and demonstrated it on 101 new species of New Guinea *Trigonopterus* weevils [28], each with a barcode, high-resolution habitus and genitalia images, a short diagnosis, and open data. Critically, that group sustained the approach across further monographs [29–31], which is the strongest available evidence of shortcuts genuinely accelerating the growth of taxonomic knowledge rather than merely the rate of producing new names. Comparable examples exist for lichens [32], annelids [33], dragonflies [34], microhylid frogs [35], phorid flies [36], and the substantial braconid literature [27,37].

What distinguishes successful rapid taxonomy is worth stating explicitly: it saves time through efficient allocation of effort, not through compression of evidence. These works share a common structure: they compress descriptions, drop or simplify keys, provide simple sequence databases, and automate imaging and data capture, while they retain diagnoses, adequate illustration, deposited and accessible data, and—crucially—an explicit treatment of previously described names. The best examples all unite (1) large comparative revisions of clades, (2) the use of high-quality imaging, and (3) basic molecular and morphological data. Hartop et al. [38] make the logic explicit in their Large-scale Integrative Taxonomy framework: preliminary species hypotheses are generated from cheap, fast data and then *validated* against a more expensive data type for specimens chosen by objective criteria. The saving lies in deciding which specimens must be examined closely, not in abandoning examination. In this context, it is worth noting alternatives to turbo-taxonomy, e.g., rapidly making biodiversity data available without formal taxonomic acts—providing currency (putative species boundaries and number) without affixing possibly problematic taxonomic handles [39].

Counterexamples are instructive precisely because they cut short that last set of commitments. The minimalist revisions of Meierotto et al. [40] and Sharkey et al. [41] described species largely from barcodes, without keys, descriptions, or engagement with prior names, prompting substantial critical research [5,42–45]. Two findings from that debate bear directly on the argument advanced here. First, Fernandez-Triana [46], a turbo-taxonomy practitioner, shows that such papers are not, in fact, as fast as advertised once the hidden prior work of collecting, rearing, databasing and sequencing is costed in, and notes that very few authors have sustained the approach. Second, he observes that descriptions resting solely on molecular data force all subsequent users into molecular identification: the cost is not eliminated but transferred from the describer to every later worker. A shortcut that accelerates the author while decelerating the community does not accelerate taxonomy. This is the standard against which the present case should be read. The problem documented below is not that the work was done quickly. It is that the shortcuts saved effort for the authors but not for the field, necessitating the current paper.

The case study misplaced and inadequately diagnosed theridiids from Anguilla. Sherwood et al. [12] described seven new spider species from Anguilla, Lesser Antilles, of which three are theridiids: *Anelosimus blackgardens*, *Anelosimus covepond*, and *Coleosoma roadsalt*. No species concept was stated, no molecular data were included, methods of identification of taxa were not described, some relevant revisions were not cited for ID or diagnostic/synapomorphic traits, and taxon synapomorphies were not reported. Notably, no effort seems to have been made to check if sampled taxa might represent widespread anthropogenic species.

3.1. *The Misplacement of* Anelosimus

Anelosimus Simon, 1891 is diagnosed by a suite of characters established by Agnarsson [13,14]: (1) a characteristic dark notched longitudinal central band on the dorsal abdomen, edged by narrow notched white bands, with bilateral white blotches outside (Figure 1K,L); (2) the absence of a colulus, with two colular setae retained; (3) conspicu-

ous ridges on the epigynal plate (in most species); (4) a subconductor in the male palp; (5) an incised mesal cymbial distal margin; and (6) a characteristic stridulatory apparatus with distinctly curved, paired rows of stridulatory picks on the male abdomen. *Anelosimus* is sister to the subfamily Theridiinae (which includes *Theridion*), together forming the 'lost colulus clade' [13,14]. Within this clade, *Anelosimus* retains two colular setae, whereas *Theridion* and other Theridiinae have lost even these setae—belonging to the 'lost colular setae clade.' The presence or absence of colular setae is, thus, a straightforward diagnostic character separating these genera, readily observed under a stereomicroscope.

The authors do not evaluate any of these genus-level diagnostic characters for placing two of their new species within *Anelosimus*. Their precise placement within the *analyticus*-group is not justified with reference to character data, and their diagnoses then list some characters unlike any seen in 'other' *Anelosimus*. The paper cites Agnarsson [14] for genitalic terminology but does not engage with the character evidence provided therein. Examination of the published habitus photographs reveals that neither species exhibits the synapomorphic *Anelosimus* abdominal color pattern; instead, both show scattered irregular white blotches and spots on a pale ground—typical of many *Theridion* species. No mention is made of colular setae, stridulatory apparatus, epigynal ridges, or incised cymbial margin. The two Anguilla species share none of the synapomorphies of *Anelosimus* and, as the authors point out, further differ in palpal structure from 'other' *Anelosimus*.

The other critical omission underlying this misplacement is the failure to consult the primary revisionary literature for Caribbean and cosmotropical theridiids. Levi [17,18] revised *Theridion* from North America and from Mexico, Central America, and the West Indies, including Anguilla. Neither paper is cited in the Anguilla survey. Comparison with the Caribbean *Theridion* fauna reveals strong similarities between *A. blackgardens* and *Theridion dilucidum* Simon, 1898 [47], widespread in the Lesser Antilles (Figure 1A,B), and similarly, *A. covepond* has a typical *Theridion* gestalt and closely resembles the widespread synanthropic *T. melanostictum* (Figure 1D–F).

3.2. Misidentification of Coleosoma roadsalt

A third new theridiid species, *Coleosoma roadsalt* Sherwood, Mukhida & Connor, 2026, illustrates a different but related pitfall: diagnosis by comparison to an inappropriate reference. This species is described from females only, a holotype and two paratype females. No male is known. The sole comparison offered in the diagnosis is to *Coleosoma pseudoblandum* Barrion & Litsinger, 1995 [24], from the Philippines (as "*P. pseudoblandum*" [sic]). This comparison is problematic on several levels. First, *C. pseudoblandum* is itself poorly described: the original account in Barrion & Litsinger [24] (p. 431, fig. 257) provides a single-sentence description of the epigynum ("Epigynum with a cup-shaped median sclerotized plate and a circular orifice on its anterior"), crude line drawings, and no male. The species is known only from the holotype female and a few spiderlings from the Philippines. This is the kind of weakly founded taxonomic hypothesis that Bond et al. [4] cautioned against.

Second, the diagnosis of a Caribbean species should be made against regional congeners, not against a poorly described Philippine species. The survey recorded two other *Coleosoma* species from Anguilla in the same paper—reportedly *C. acutiventer* (Keyserling, 1884) and *C. floridanum* Banks, 1900—yet the diagnosis does not differentiate *C. roadsalt* from either of them, nor from any other New World or cosmopolitan *Coleosoma*. A diagnosis that tells us only how a species differs from a poorly known congener on a different continent, while remaining silent on how it differs from species occurring on the same island, fails the basic purpose of a diagnosis: to enable identification.

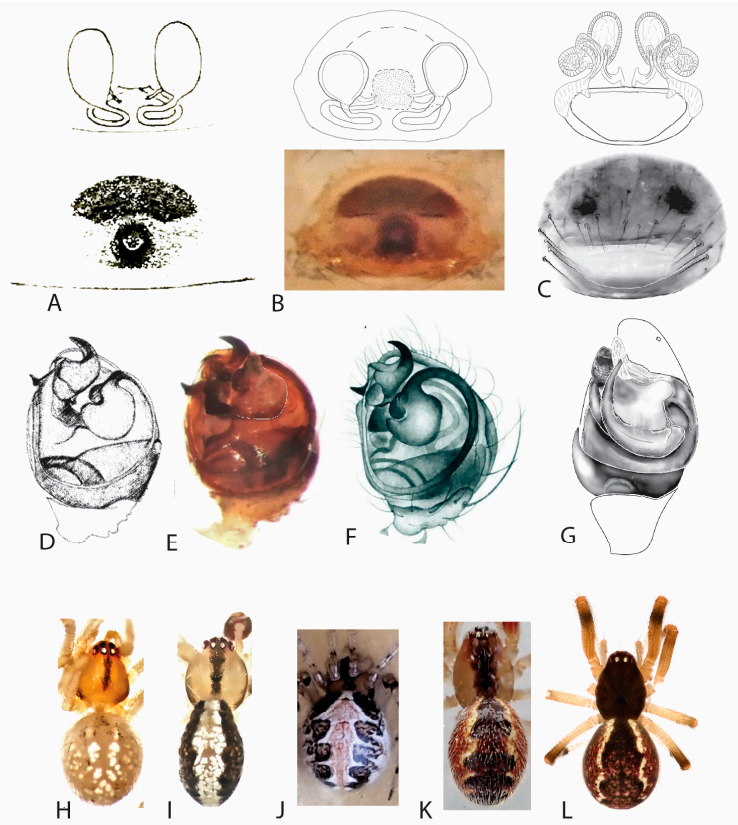

Figure 1. Species misplaced in *Anelosimus* by Sherwood et al. [12]. (**A**) *Theridion dilucidum* Simon, 1898 [47] female epigynum internal (above) and external (below), reproduced from [18] (figs 78–79). (**B**) *Anelosimus blackgardens* Sherwood, Mukhida & Connor, 2026 [12] (=*T. dilucidum* syn. nov.) epigynum internal (above) and external (below), reproduced from [12] (figs. 15G, 15C, respectively). (**C**) For comparison, the contrasting epyginum of *Anelosimus analyticus*, reproduced from [14]. (**D**) Theridion *melanostictum* O. P.-Cambridge, 1876 [48] male palp ventral, reproduced from [20] (fig. 138, from Seychelles). (**E**) *Anelosimus covepond* Sherwood, Mukhida & Connor, 2026 (=*T. melanostictum* syn. nov.) male palp ventral, reproduced from [12] (fig. 16G, from Anguilla). (**F**) *Theridion melanostictum* male palp ventral, re-illustrated from [22] (fig. 127A, from Galapagos). (**G**) For comparison, the fundamentally different palp of *Anelosimus analyticus*, reproduced from [14]. (**H**,**I**) Habitus of *Anelosimus blackgardens* and *covepond*, respectively. (**J**) Habitus of *Theridion pictum*, generotype of *Theridion*. (**K**,**L**) Typical habitus of *Anelosimus* species (*A. vittatus* and *A. may*, respectively), characteristic for the genus. The dorsal bands of *Theridion* (**H**,**J**) and *Anelosimus* (**K**,**L**) share superficial resemblance as variations of the same theme, but the latter is universally characterized by a dark band with a wavy white line on outer margin.

Third, and most critically, the female *C. roadsalt* bears a striking resemblance to males discussed in the same paper identified as *C. acutiventer*. Indeed, males identified as *C. acutiventer* and female *C. roadsalt* were *all* collected in the same samples, at two locations independently. There is little doubt these males and females are conspecific; however, neither appears to belong to *C. acutiventer*. The specimens instead are closely similar to the widespread synanthropic *Coleosoma blandum* O. Pickard-Cambridge, 1882 [49] (Figure 2A–K, see, e.g., [19,21]). While *C. blandum* is a southeast Asian species with no prior record from the Americas, it is associated with anthropogenic habitats (e.g., agriculture) and has a broad and expanding distribution. The species was documented in India for the first time by Prasad et al. [50] and was recently introduced to the Seychelles, Hawaii, and South Africa [19,51,52]. Taken together, these issues show that the description of *C. roadsalt* exemplifies a chain of citation in which weakly founded hypotheses become the reference standard for new ones.

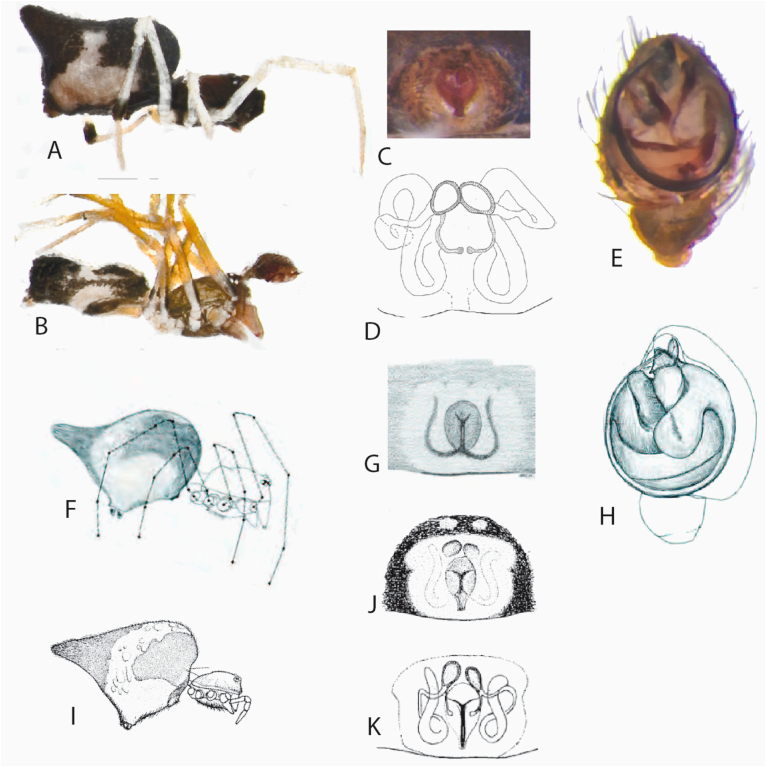

Figure 2. (**A**) *Coleosoma roadsalt* Sherwood, Mukhida & Connor, 2026 [12] (=*C. blandum* syn. nov.) female, modified from [12] (fig. 18C). (**B**) '*C. acutiventer*' (Keyserling, 1884) = *C. blandum* (misidentified) male, modified from [12] (fig. 17D). Males in (**A**,**B**) were found in the same samples by [12]. (**C**,**D**) *C. roadsalt* epigynum, (**C**) external; (**D**) internal, modified from [12] (fig. 18D,G, respectively). (**E**) '*C. acutiventer*' male palp, modified from [12] (fig. 17B). (**F**–**H**) *C. blandum*, modified from [19] (from Seychelles). (**F**) Female habitus ([19], fig. 25A); (**G**) epigynum ([19], fig. 21); (**H**) male palp ventral ([19], fig. 19). (**I**–**K**) *C. blandum*, modified from [21]. (**I**) Female habitus ([21], fig. 28); (**J**,**K**) epigynum, external and internal, respectively ([21], figs. 29–30).

4. Taxonomy

Note: These acts rest on published descriptions and illustrations rather than examination of types. The generic transfers do not require type examination and are robust: the specimens as illustrated lack the diagnostic characters of *Anelosimus* and differ starkly from typical *Anelosimus* in habitus and both male and female genitalia (Figure 1). The synonymies rest on Levi's [17,18] redescriptions and, for *Coleosoma*, on the joint collection of both sexes. The next step goes beyond examining types; all three taxonomic acts involve species that may represent species complexes and need a thorough integrative revision.

Theridion dilucidum Simon, 1898 [47]
Theridion defunctum Petrunkevitch, 1925 [53]: 103 (m), see Levi, 1959 [18]: 84.
Theridion atkinsi Bryant, 1940 [54]: 317 (mf), see Levi, 1959 [18]: 84.
Theridion virginus Bryant, 1942 [55]: 344 (m), see Levi, 1959 [18]: 84.
Anelosimus blackgardens Sherwood, Mukhida & Connor, 2026 [12], 22 (mf), **syn. nov.** (not examined).

Anelosimus blackgardens Sherwood, Mukhida & Connor, 2026 [12] lacks *Anelosimus* synapomorphies and is proposed here as a junior synonym of *T. dilucidum* Simon, 1898 [47] (Figure 1A,B, cf. [18]: figs. 78–81). In his revision of Caribbean *Theridion*, Levi's [18] (p. 85, figs. 78–81) redescription of *Theridion dilucidum* closely matches *A. blackgardens*, including an identical epigynum having "an anterior curved sclerotized plate, and a posterior depression; in between is a projecting carina" (Figure 1A,B).

Theridion melanostictum O. P.-Cambridge, 1876 [48]
Theridion purcelli Benoit, 1977 [56]: 142 (mf), misidentified per Sherwood et al., 2024 [57]: 1278.
Theridion miami Levi, 1980 [58]: 336 (mf), see Levy [59].
Theridion scorinum Roberts, 1983 [60]: 233 (mf), see Yoshida [61].
Theridion ogasawarense Yoshida, 1993 [62]: 111 (mf), see Yoshida [63].
Enoplognatha angkora Barrion, Barrion-Dupo & Heong, in Barrion et al. [64] (p. 38) (m), see Lin et al. [65].
Anelosimus covepond Sherwood, Mukhida & Connor, 2026 [12]: 23 (m) **syn. nov**. (not examined).

Anelosimus covepond Sherwood, Mukhida & Connor, 2026 [12] lacks *Anelosimus* synapomorphies and is proposed here as a junior synonym of *T. melanostictum* O. P.-Cambridge, 1876 [48] (Figure 1C–E, cf. [20]: 271, f. 37.138–140). Even given a single male specimen, the transfer from *Anelosimus* is robust (see below), while the specific synonymy is more subjective with this limited data. The sampling of more males and a female will be important for confirming it.

Theridion melanostictum is a cosmopolitan catchall name that has absorbed *T. miami* (North America), *T. scorinum* (Aldabra/Seychelles), *T. ogasawarense* (Japan), *Enoplognatha angkora* and others, and there is reason to doubt that it circumscribes a single species. Publicly available COI sequences on GenBank attributed to *T. melanostictum* are sparse and geographically restricted. While insufficient to establish clear species boundaries, the sequenced specimens fall into two tight clusters: a Pacific group (EF449610.1, Hawaii; KX055052.1, KX055053.1, French Polynesia) and a continental group (JN306313.1, Pakistan; MK950561.1–MK950568.1, Oman) (Supplementary Material). Between-group divergence averages 7.8% uncorrected (K2P mean 8.2%, maximum 9.4%), while within-group divergence is negligible. These between-group distances are typical among, but not within, species of theridiid spiders. This evidence, along with 'polymorphism' in both habitus and genitalia, is preliminary evidence suggesting that *Theridion melanostictum*, as currently defined, is composed of more than one species. The name belongs, by its type, to whichever lineage the Egyptian holotype [48] represents, possibly neither sequenced group.

The evidence that *Anelosimus covepond* is not an *Anelosimus* is clear: the specimen lacks the diagnostic characters of the genus. The evidence that it belongs to the *melanostictum* complex is likewise straightforward; the current taxonomic act places *covepond* in the most appropriate available bin. The synonymy proposed here is, however, explicitly provisional in that it cannot yet be established which member of that complex it is, and, hence, whether *melanostictum* is ultimately the correct name for it. Resolving this requires an integrative revision anchored on topotypic Egyptian material. Whether *T. melanostictum* is a single species or a species complex awaits further study; regardless, it includes an apparently synanthropic lineage widely introduced, and I expect the Anguillan specimens belong to that lineage.

Coleosoma blandum O. Pickard-Cambridge, 1882 [49]
Theridion acrobeles Thorell, 1895 [66]: 88 (f), see Roberts [21].
Theridion conurum Thorell, 1895 [66]: 90 (f), see Saaristo [67].
Theridion vituperabile Petrunkevitch, 1911 [68]: 210 (repressed replacement name, see [8,18]).
Coleosoma roadsalt Sherwood, Mukhida & Connor, 2026 [12]: 24 (f) **syn. nov.** (not examined).

Coleosoma roadsalt Sherwood, Mukhida & Connor, 2026 [12], was diagnosed exclusively against a poorly described Philippine species and was sampled jointly with matching male specimens, identified as *C. acutiventer*. These are, however, conspecific based on the evidence of habitus and genitalic morphology, and *C. roadsalt* is proposed here as a junior synonym of the widespread *C. blandum* O. Pickard-Cambridge, 1882 [49] syn. nov.

5. Recommendations

I endorse the four recommendations of Bond et al. [4] and add the following, directed at the specific problems illustrated by the present case study.

1. Consider the time budget. Is the shortcut you are taking genuinely saving time? The time necessary to compare the material discussed here against Caribbean and widespread *Anelosimus*, *Theridion*, and *Coleosoma* species is a fraction of that needed to correct its generic placement in a separate publication, re-examine the original material by subsequent workers, perform potential synonymy investigations, and update catalogs and databases. A well-described species, placed in the correct genus with adequate illustrations and comparative data, serves the scientific community indefinitely. A poorly described species, erroneously placed, serves no one and costs everyone.

2. Evaluate genus-level characters against the primary revisionary literature, including the literature on widespread synanthropic species. Before placing a new species in a genus, authors should explicitly evaluate the characters that define that genus (synapomorphies). If a specimen lacks the diagnostic features of the genus, reconsider the placement. Describing new species from a region without consulting the primary revisions for that region, or the literature on widespread species associated with human activities (readily available for spiders in the World Spider Catalog [8]), is a fundamental failing. For Caribbean theridiids, Levi's revisions [17,18] are essential starting points. Diagnoses should compare new species against regional congeners, not solely against geographically distant taxa from poorly documented sources.

3. Prioritize illustration quality. High-quality illustrations are not merely aesthetic—they are primary data and the most enduring component of a species description. High-quality photographs with adequate depth of field and contrast, supplemented by interpretive line drawings with labeled structures, should be the minimum standard. The increasing availability of focus-stacking software and high-resolution digital imaging makes this more achievable than ever. The stunning photography of 'turbo-taxonomy' in Riedel et al. [26,28,29] demonstrates that quality photos are obtainable within the rapid taxonomy framework.

4. Reviewers and editors must enforce standards. The problems documented here should have been caught in peer review. Reviewers of taxonomic manuscripts should verify that genus-level diagnostic characters have been evaluated, that the relevant regional literature has been consulted, and that illustrations are of sufficient quality to enable subsequent identification. Editors of taxonomic journals should require explicit statements of species concepts and encourage data deposition. This issue reflects a broader challenge in taxonomy, where specialist expertise for many groups is concentrated in very few hands and reviewers may not have the background to evaluate genus-level placements outside their own area. This is not a criticism of any individual reviewer but a structural problem: as Bond et al. [4] noted, editorial practices and community standards need to be strengthened across the board. Editors should seek at least one reviewer with the relevant taxonomic expertise (e.g., genus level) and ensure that reviewers communicate back to editors if they are unable to scrutinize taxonomic details. If so, editors may themselves verify the quality of taxonomic acts or seek further expertise; leaving the taxonomic acts unchecked is simply forgoing peer review. The responsibility is shared: authors must do the work, but reviewers and editors must be equipped and empowered to hold them to it.

6. Conclusions

Taxonomy takes time. This is not a weakness of the discipline but a feature of it. The careful comparison of specimens, the evaluation of genus-level characters, the consultation of revisionary literature, the preparation of high-quality illustrations—these are not luxuries to be dispensed under pressure. They are the substance of taxonomy itself. When they are

omitted, the result is not faster but slower science, because every shortcut creates work for someone else downstream.

The case discussed here merely examplifies a symptom of broader patterns documented by Bond et al. [4]: the prevalence of non-revisionary, non-comparative, non-integrative taxonomy that persists despite decades of calls for improvement.

I urge the arachnological community—and the broader taxonomic community—to take these patterns seriously. The resources for improvement exist: comprehensive online catalogs, affordable molecular tools, high-resolution imaging, and the rich revisionary literature built over centuries by careful workers. What is needed is the will to use them and institutional support through training, funding, and editorial standards to make rigorous taxonomy not just aspirational but expected. Taxonomy takes time, but the alternative—shortcuts to synonymy—takes more.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/taxonomy6030056/s1, Figure S1: Maximum likelihood phylogeny of *T. melanosticum* sequences from GenBank showing two distinct and divergent clades; Table S1: Pairwise genetic distances among *T. melanosticum* sequences from GenBank [69,70].

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References

1. Godfray, H.C.J. Challenges for taxonomy. *Nature* **2002**, *417*, 17–19. [CrossRef] [PubMed]
2. Wheeler, Q.D. Taxonomic triage and the poverty of phylogeny. *Philos. Trans. R. Soc. B* **2004**, *359*, 571–583. [CrossRef] [PubMed]
3. Agnarsson, I.; Kuntner, M. Taxonomy in a changing world: Seeking solutions for a science in crisis. *Syst. Biol.* **2007**, *56*, 531–539. [CrossRef] [PubMed]
4. Bond, J.E.; Godwin, R.L.; Colby, J.D.; Newton, L.G.; Zahnle, X.J.; Agnarsson, I.; Hamilton, C.A.; Kuntner, M. Improving taxonomic practices and enhancing its extensibility—An example from araneology. *Diversity* **2022**, *14*, 5. [CrossRef]
5. Engel, M.S.; Ceríaco, L.M.P.; Daniel, G.M.; Dellapé, P.M.; Löbl, I.; Marinov, M.; Reis, R.E.; Young, M.T.; Dubois, A.; Agrawal, I.; et al. The taxonomic impediment: A shortage of taxonomists, not the lack of technical approaches. *Zool. J. Linn. Soc.* **2021**, *193*, 381–387. [CrossRef]
6. Fontaine, B.; Perrard, A.; Bouchet, P. 21 years of shelf life between discovery and description of new species. *Curr. Biol.* **2012**, *22*, R943–R944. [CrossRef] [PubMed]
7. Agnarsson, I.; Coddington, J.A.; Kuntner, M. Systematics: Progress in the study of spider diversity and evolution. In *Spider Research in the 21st Century: Trends and Perspectives*; Penney, D., Ed.; Siri Scientific Press: Manchester, UK, 2013; pp. 58–111.
8. World Spider Catalog, Version 27.0; Natural History Museum Bern. Available online: https://wsc.nmbe.ch (accessed on 6 April 2026).
9. Nentwig, W.; Blick, T.; Gloor, D.; Jäger, P.; Kropf, C. Tackling taxonomic redundancy in spiders: The infraspecific spider taxa described by Embrik Strand. *Arachnol. Mitt.* **2019**, *58*, 29–51. [CrossRef]
10. Bertani, R. Taxonomic revision and cladistic analysis of *Lasiodora* C. L. Koch, 1850 (Araneae, Theraphosidae) with notes on related genera. *Zootaxa* **2023**, *5390*, 1–116. [CrossRef] [PubMed]
11. Kuntner, M. The seven grand challenges in arachnid science. *Front. Arachn. Sci.* **2022**, *1*, 1082700. [CrossRef]
12. Sherwood, D.; Mukhida, F.; Connor, R.A.; Hughes, G.; Carter, D.; Curtis, I.; Hochart, J.; Gumbs, K.; Cumbs, J.C.; Buckmire, Z.; et al. New data on the spiders of Anguilla, Lesser Antilles, with description of seven new species. *Faunitaxys* **2026**, *14*, 1–30.

13. Agnarsson, I. Morphological phylogeny of cobweb spiders and their relatives (Araneae, Araneoidea, Theridiidae). *Zool. J. Linn. Soc.* **2004**, *141*, 447–626. [CrossRef]
14. Agnarsson, I. A revision of the New World eximius lineage of *Anelosimus* (Araneae, Theridiidae) and a phylogenetic analysis using worldwide exemplars. *Zool. J. Linn. Soc.* **2006**, *146*, 453–593. [CrossRef]
15. Agnarsson, I.; Gotelli, N.J.; Agostini, D.; Kuntner, M. Limited role of character displacement in the coexistence of congeneric *Anelosimus* spiders in a Madagascan montane forest. *Ecography* **2016**, *39*, 743–753. [CrossRef]
16. Luo, Y.; Goh, S.P.; Gonzaga, M.O.; Santos, A.J.; Tanikawa, A.; Yoshida, H.; Haddad, C.; May-Collado, L.C.; Chen, R.-C.; Kuntner, M.; et al. Global diversification of the cobweb spider genus *Anelosimus* assimilates the Neogene climate oscillations. *Syst. Biol.* **2020**, *69*, 1122–1136. [PubMed]
17. Levi, H.W. The spider genera *Enoplognatha*, *Theridion*, and *Paidisca* in America north of Mexico (Araneae, Theridiidae). *Bull. Am. Mus. Nat. Hist.* **1957**, *112*, 1–124.
18. Levi, H.W. The spider genera *Achaearanea*, *Theridion* and *Sphyrotinus* from Mexico, Central America and the West Indies (Araneae, Theridiidae). *Bull. Mus. Comp. Zool.* **1959**, *121*, 57–163.
19. Saaristo, M.I. Theridiid or cobweb spiders of the granitic Seychelles islands (Araneae, Theridiidae). *Phelsuma* **2006**, *14*, 49–89.
20. Saaristo, M.I. Araneae. In *Arachnida and Myriapoda of the Seychelles Islands*; Gerlach, J., Marusik, Y.M., Eds.; Siri Scientific Press: Manchester, UK, 2010; pp. 8–306.
21. Roberts, M.J. Contributions à l'étude de la faune terrestre des îles granitiques de l'archipel des Séchelles (Mission P.L.G. Benoit–J.J. Van Mol 1972). Theridiidae, Mysmenidae and gen. Theridiosoma (Araneidae) (Araneae). *Rev. Zool. Afr.* **1978**, *92*, 902–939.
22. Baert, L.; Maelfait, J.-P.; Desender, K.; Hendrickx, F.; Dekoninck, W.; Berthet, M.; Bouckaert, K.; Caudron, J.; Leclercq, M. Updated checklist, origin, distribution, literature and genital drawings of the spiders of the Galápagos Islands. *Belg. J. Entomol.* **2023**, *142*, 1–188.
23. Poeta, M.R.M.; Teixeira, R.A. Description of the male of the spider *Eustala vellardi* Mello-Leitão, 1924, the female of *E. delasmata* Bryant, 1945 and seven species of *Eustala* Simon, 1895 declared as nomina dubia (Araneae, Araneidae). *Zootaxa* **2017**, *4273*, 112–120. [CrossRef] [PubMed]
24. Barrion, A.T.; Litsinger, J.A. *Riceland Spiders of South and Southeast Asia*; CAB International: Wallingford, UK, 1995.
25. Butcher, B.A.; Smith, M.A.; Sharkey, M.J.; Quicke, D.L.J. A turbo-taxonomic study of Thai *Aleiodes* (Aleiodes) and *Aleiodes* (Arcaleiodes) (Hymenoptera: Braconidae: Rogadinae) based largely on COI barcoded specimens, with rapid descriptions of 179 new species. *Zootaxa* **2012**, *3457*, 1–232. [CrossRef]
26. Riedel, A.; Sagata, K.; Suhardjono, Y.R.; Tänzler, R.; Balke, M. Integrative taxonomy on the fast track—Towards more sustainability in biodiversity research. *Front. Zool.* **2013**, *10*, 15. [CrossRef] [PubMed]
27. Fernandez-Triana, J.; Whitfield, J.; Rodriguez, J.; Smith, M.A.; Janzen, D.H.; Hajibabaei, M.; Burns, J.M.; Solis, M.A.; Brown, J.; Cardinal, S.; et al. Review of *Apanteles* sensu stricto (Hymenoptera, Braconidae, Microgastrinae) from Área de Conservación Guanacaste, northwestern Costa Rica, with keys to all described species from Mesoamerica. *ZooKeys* **2014**, *383*, 1–565. [CrossRef] [PubMed]
28. Riedel, A.; Sagata, K.; Surbakti, S.; Tänzler, R.; Balke, M. One hundred and one new species of *Trigonopterus* weevils from New Guinea. *ZooKeys* **2013**, *280*, 1–150. [CrossRef] [PubMed]
29. Riedel, A.; Tänzler, R.; Balke, M.; Rahmadi, C.; Suhardjono, Y.R. Ninety-eight new species of *Trigonopterus* weevils from Sundaland and the Lesser Sunda Islands. *ZooKeys* **2014**, *467*, 1–162. [CrossRef] [PubMed]
30. Riedel, A.; Tänzler, R. Revision of the Australian species of the weevil genus *Trigonopterus* Fauvel. *ZooKeys* **2016**, *556*, 97–162. [CrossRef] [PubMed]
31. Riedel, A.; Narakusumo, R.P. One hundred and three new species of *Trigonopterus* weevils from Sulawesi. *ZooKeys* **2019**, *828*, 1–153. [CrossRef] [PubMed]
32. Lücking, R.; Dal Forno, M.; Moncada, B.; Coca, L.F.; Vargas-Mendoza, L.Y.; Aptroot, A.; Lawrey, J.D. Turbo-taxonomy to assemble a megadiverse lichen genus: Seventy new species of *Cora* (Basidiomycota: Agaricales: Hygrophoraceae). *Fungal Divers.* **2017**, *84*, 139–207. [CrossRef]
33. Summers, M.M.; Al-Hakim, I.I.; Rouse, G.W. Turbo-taxonomy: 21 new species of Myzostomida (Annelida). *Zootaxa* **2014**, *3873*, 301–344. [CrossRef] [PubMed]
34. Dijkstra, K.-D.B.; Kipping, J.; Mézière, N. Sixty new dragonfly and damselfly species from Africa (Odonata). *Odonatologica* **2015**, *44*, 447–678.
35. Rakotoarison, A.; Scherz, M.D.; Glaw, F.; Köhler, J.; Andreone, F.; Franzen, M.; Glos, J.; Hawlitschek, O.; Jono, T.; Mori, A.; et al. Describing the smaller majority: Integrative taxonomy reveals twenty-six new species of tiny microhylid frogs (genus *Stumpffia*) from Madagascar. *Vertebr. Zool.* **2017**, *67*, 271–398. [CrossRef]
36. Hartop, E.A.; Brown, B.V.; Disney, R.H.L. Opportunity in our ignorance: Urban biodiversity study reveals 30 new species and one new Nearctic record for *Megaselia* (Diptera: Phoridae) in Los Angeles (California, USA). *Zootaxa* **2015**, *3941*, 451–484. [CrossRef] [PubMed]

37. Arias-Penna, D.C.; Whitfield, J.B.; Janzen, D.H.; Hallwachs, W.; Dyer, L.A.; Smith, M.A.; Hebert, P.D.N.; Fernández-Triana, J.L. A species-level taxonomic review and host associations of Glyptapanteles (Hymenoptera, Braconidae, Microgastrinae) with an emphasis on 136 new reared species from Costa Rica and Ecuador. *ZooKeys* **2019**, *890*, 1–685. [CrossRef] [PubMed]
38. Hartop, E.; Srivathsan, A.; Ronquist, F.; Meier, R. Towards Large-Scale Integrative Taxonomy (LIT): Resolving the data conundrum for dark taxa. *Syst. Biol.* **2022**, *71*, 1404–1422. [CrossRef] [PubMed]
39. Cao, X.; Liu, J.; Chen, J.; Zheng, G.; Kuntner, M.; Agnarsson, I. Rapid dissemination of taxonomic discoveries based on DNA barcoding and morphology. *Sci. Rep.* **2016**, *6*, 37066. [CrossRef] [PubMed]
40. Meierotto, S.; Sharkey, M.J.; Janzen, D.H.; Hallwachs, W.; Hebert, P.D.N.; Chapman, E.G.; Smith, M.A. A revolutionary protocol to describe understudied hyperdiverse taxa and overcome the taxonomic impediment. *Dtsch. Entomol. Z.* **2019**, *66*, 119–145. [CrossRef]
41. Sharkey, M.J.; Janzen, D.H.; Hallwachs, W.; Chapman, E.G.; Smith, M.A.; Dapkey, T.; Brown, A.; Ratnasingham, S.; Naik, S.; Manjunath, R.; et al. Minimalist revision and description of 403 new species in 11 subfamilies of Costa Rican braconid parasitoid wasps, including host records for 219 species. *ZooKeys* **2021**, *1013*, 1–665. [CrossRef]
42. Zamani, A.; Vahtera, V.; Sääksjärvi, I.E.; Scherz, M.D. The omission of critical data in the pursuit of 'revolutionary' methods to accelerate the description of species. *Syst. Entomol.* **2021**, *46*, 1–4. [CrossRef]
43. Zamani, A.; Dal Pos, D.; Fric, Z.F.; Orfinger, A.B.; Scherz, M.D.; Bartoňová, A.S.; Gante, H.F. DNA barcodes on their own are not enough to describe a species. *Syst. Entomol.* **2022**, *47*, 385–389. [CrossRef]
44. Ahrens, D.; Ahyong, S.T.; Ballerio, A.; Barclay, M.V.L.; Eberle, J.; Espeland, M.; Huber, B.A.; Mengual, X.; Pacheco, T.L.; Peters, R.S.; et al. Is it time to describe new species without diagnoses?—A comment on Sharkey et al. (2021). *Zootaxa* **2021**, *5027*, 151–159. [CrossRef] [PubMed]
45. Meier, R.; Blaimer, B.B.; Buenaventura, E.; Hartop, E.; von Rintelen, T.; Srivathsan, A.; Yeo, D. A re-analysis of the data in Sharkey et al.'s (2021) minimalist revision reveals that BINs do not deserve names, but BOLD Systems needs a stronger commitment to open science. *Cladistics* **2022**, *38*, 264–275. [CrossRef] [PubMed]
46. Fernandez-Triana, J.L. Turbo taxonomy approaches: Lessons from the past and recommendations for the future based on the experience with Braconidae (Hymenoptera) parasitoid wasps. *ZooKeys* **2022**, *1087*, 199–220. [CrossRef] [PubMed]
47. Simon, E. On the spiders of the island of St Vincent. III. *Proc. Zool. Soc. Lond.* **1898**, *65*, 860–890. [CrossRef]
48. Pickard-Cambridge, O. Catalogue of a collection of spiders made in Egypt, with descriptions of new species and characters of a new genus. *Proc. Zool. Soc. Lond.* **1876**, *44*, 541–630. [CrossRef]
49. Pickard-Cambridge, O. On new genera and species of Araneidea. *Proc. Zool. Soc. Lond.* **1882**, *50*, 423–442. [CrossRef]
50. Prasad, P.; Tyagi, K.; Kumar, V. First report of the cob-web spider *Coleosoma blandum* O. Pickard-Cambridge (Araneae: Theridiidae) with comments on its distribution from India. *Munis Entomol. Zool.* **2020**, *15*, 96–99.
51. Simpson, A.; Sellers, E.; Pagad, S. Global Register of Introduced and Invasive Species—Hawaii, United States, Version 2.0; Invasive Species Specialist Group ISSG. Checklist Dataset. Available online: https://doi.org/10.5066/p9kfftod (accessed on 11 July 2026). [CrossRef]
52. Robinson, T.; Ivey, P.; Powrie, L.; Winter, P.; Wong, L.J.; Pagad, S. Global Register of Introduced and Invasive Species—South Africa, Version 2.8; Invasive Species Specialist Group ISSG. Checklist Dataset. Available online: https://doi.org/10.15468/l6smob (accessed on 11 July 2026). [CrossRef]
53. Petrunkevitch, A. Arachnida from Panama. *Trans. Conn. Acad. Arts Sci.* **1925**, *27*, 51–248.
54. Bryant, E.B. Cuban spiders in the Museum of Comparative Zoology. *Bull. Mus. Comp. Zool.* **1940**, *86*, 247–532.
55. Bryant, E.B. Notes on the spiders of the Virgin Islands. *Bull. Mus. Comp. Zool.* **1942**, *89*, 317–366.
56. Benoit, P.L.G. Fam. Theridiidae. In *La Faune Terrestre de l'Île de Sainte-Hélène IV*; (Zool.-Ser. 8°); Musée Royal de l'Afrique Centrale, Sciences Zoologiques: Tervuren, Belgium, 1977; Volume 220, pp. 131–152.
57. Sherwood, D.; Henrard, A.; Jocqué, R.; Fowler, L.; Marusik, Y.M.; Maddison, W.; Harvey, M.S.; Hormiga, G.; Rheims, C.A.; Piacentini, L.N.; et al. Annotated checklist of the spiders of Saint Helena, with new records, descriptions of unknown sexes, new and restored genera, and two new species (Araneae: Araneomorphae). *Arachnology* **2024**, *19*, 1218–1291. [CrossRef]
58. Levi, H.W. Two new spiders of the genera *Theridion* and *Achaearanea* from North America. *Trans. Am. Microsc. Soc.* **1980**, *99*, 334–337. [CrossRef]
59. Levy, G. Spiders of the genera *Episinus*, *Argyrodes* and *Coscinida* from Israel, with additional notes on *Theridion* (Araneae: Theridiidae). *J. Zool.* **1985**, *207*, 87–123.
60. Roberts, M.J. Spiders of the families Theridiidae, Tetragnathidae and Araneidae (Arachnida: Araneae) from Aldabra atoll. *Zool. J. Linn. Soc.* **1983**, *77*, 217–291. [CrossRef]
61. Yoshida, H. *The Spider Family Theridiidae (Arachnida: Araneae) from Japan*; Arachnological Society of Japan: Tokyo, Japan, 2003.
62. Yoshida, H. Two new species of the genus *Theridion* (Araneae: Theridiidae) from the Yaeyama Islands and Haha-jima Island of the Bonin Islands, Japan. *Acta Arachnol.* **1993**, *42*, 109–113. [CrossRef]
63. Yoshida, H. Two species of the genus *Theridion* (Araneae: Theridiidae) from Japan. *Acta Arachnol.* **1999**, *48*, 127–130. [CrossRef]

64. Barrion, A.T.; Barrion-Dupo, A.L.A.; Catindig, J.L.A.; Villareal, M.O.; Cai, D.; Yuan, Q.H.; Heong, K.L. New species of spiders (Araneae) from Hainan Island, China. *UPLB Mus. Publ. Nat. Hist.* **2013**, *3*, 1–103. [CrossRef] [PubMed]
65. Lin, Y.J.; Wu, L.B.; Cai, D.C.; Li, S.Q.; Barrion, A.T.; Heong, K.L. Review of 43 spider species from Hainan Island, China (Arachnida, Araneae). *Zootaxa* **2023**, *5351*, 501–533. [CrossRef] [PubMed]
66. Thorell, T. *Descriptive Catalogue of the Spiders of Burma, Based upon the Collection Made by Eugene W. Oates and Preserved in the British Museum*; British Museum: London, UK, 1895.
67. Saaristo, M.I. Spiders (Arachnida, Araneae) from the Seychelle islands, with notes on taxonomy. *Ann. Zool. Fenn.* **1978**, *15*, 99–126.
68. Petrunkevitch, A. A synonymic index-catalogue of spiders of North, Central and South America with all adjacent islands, Greenland, Bermuda, West Indies, Terra del Fuego, Galapagos, etc. *Bull. Am. Mus. Nat. Hist.* **1911**, *29*, 1–791.
69. Tamura, K.; Nei, M.; Kumar, S. Prospects for inferring very large phylogenies by using the neighbor-joining method. *Proc. Natl. Acad. Sci. USA* **2004**, *101*, 11030–11035. [CrossRef] [PubMed]
70. Tamura, K.; Stecher, G.; Kumar, S. MEGA 11: Molecular Evolutionary Genetics Analysis Version 11. *Mol. Biol. Evol.* **2021**, *38*, 3022–3027. [CrossRef] [PubMed]