Carl T. Kloock
Department of Biology
California State University, Bakersfield
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#### Why this guide?

Identifying spiders can be an incredibly time consuming and frustrating process, and is virtually impossible for the non-specialist. Taxonomic keys frequently rely on characteristics only visible with high power microscopes or, even more problematic, only present in adult individuals. Given that spiders spend the bulk of their lives as juveniles, this can make identification – even of the Genus – difficult. However, investigating questions regarding spider ecology, evolution and behavior requires identification.

My goal with this guide is to develop an easy to use resource for identifying the local spiders to genus, and to species wherever practical, using characters present on juveniles as well as adults and easily observable with a low-power dissecting microscope or good macro-photography lens without dissection. Preference is given to traits observable to the naked eye whenever possible, but as most spiders are tiny even as adults, magnification is a necessity. My primary goal is to create a teaching resource for my future research students; I have decided to make it generally available in the hope that others may find it useful.

Given the desire to focus on easily observable characters present in juveniles, identification to genus is the best practical outcome using this guide. Because of this, I strongly considered not including species designations at all, but decided that they could be helpful in narrowing down the possibilities, and explaining some of the variation if certain cautions are kept in mind.

#### Given the limited scope of the guide, there are several disclaimers.

- One major weakness of macro-level characters is that they are often very similar between congeners. Represented genera can usually be determined well with this guide without recourse to primary taxonomic works. However, species designations based on these characters should always be considered provisional, and if accurate species identification is required for your purposes, primary works must be consulted (& are cited for convenience). This will usually require adult specimens, magnification >100x, and may require dissection.
- Species identifications included here are of spiders in the southern San Joaquin Valley found in and around the town of Bakersfield, CA. It is possible, maybe even probable, that similar spiders found in nearby locations are different species. Less likely, but still possible, is that they are different genera. Use caution outside of the southern San Joaquin Valley.
- My research focuses on the Mimetidae, which are nocturnal. Because that is when I do the bulk of my observations, the guide is certainly biased towards inclusion of nocturnal species.

#### **Organization:**

The next page of the guide is a list of the species included, with links to their individual descriptions. Next is a key to the local families with pictures to help you identify the traits since verbal descriptions are often problematic. Clicking on the family name in the key will take you to the first page of that family's species descriptions; if more than one species is present, a small key will appear on this page that will guide you to genera & species. Alternatively, the guide can be browsed linearly; the families are in alphabetical order with genera alphabetical within family and species alphabetical within genus. Family keys appear on the first page for each family. All species descriptions include photographs of a dorsal view and a ventral view; some have additional photos to help with specific traits or to show the range of variation in that species. The entire document is a work in progress, and as I get better photographs and more specimens, I will continue to expand the guide. Suggestions for improvement are welcomed. For help with spider external anatomy & terminology, click on spider anatomy on any page.

Use of images: Unless otherwise stated, all photographs are my original work; I waive copyright on my photos, but ask that use of any photographs be cited (Kloock, C.T. 2020. Guide to common spiders of Bakersfield, California) and would greatly appreciate being informed of any use (<a href="mailto:ckloock@csub.edu">ckloock@csub.edu</a>).

Go to Species list

Go to Key

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List of included species (by Family)

<u>Agelenidae</u> <u>Pholcidae</u>

Hololena sp. Holocnemus pluchei

Araneidae Salticidae

Larinia famulatoriaPhidippus asotusMetepeira spPhidippus audaxNeoscona arabescaPhidippus boeiNeoscona oaxacensisThiodina hespera

ClubionidaeSitticus sp.Elaver sp.SparrasidaeCorinnidaeOlios sp.

Trachelas pacificus

Dictynidae

Dictyna sp. A

*Dictyna* sp B.

GnaphosidaeTetragnathidaeGnaphosa spTetragnatha sp.

<u>Herpyllus sp</u> <u>Theridiidae</u>

Scopoides sp. Latrodectus sp.
Lycosidae Steatoda grossa

GeolycosaTheridion californicumHogna sp.Theridion neomexicanum

<u>Mimetidae</u> <u>Thomisidae</u> <u>Mimetus hesperus</u> <u>Xysticus sp.</u>

Oecobiidae Oecobius sp.

Oxyopidae

Oxyopes flavus Uloboridae

Oxyopus salticus <u>Uloborus diversus</u>

Oxyopes scalaris

<u>Peucetia sp.</u> Philodromidae

Apollophanes sp.

**Tibellus** 

Ebo parabolis

#### **Key to Families**

- **A.** With 1 pair of forward facing eyes obviously larger (>2x) than some other eyes (figs. 1, 2 & 3). There may be a second pair of large eyes, but not forward facing----- 2
  - **B.** Not as above; all eyes approximately the same size or larger eyes not facing forward------ 4



Figure 2 Oxyopidae eye arrangement (frontal view)



Figure 3. Lycosidae eye arrangement (dorso-frontal view)

- Figure 1. Salticidae eye arrangement (frontal view).
- 2 (1) **A.** Smaller eyes appear laterally -- No eyes below large forward-facing eyes (Fig 1)---Family Salticidae **B.** With smaller eyes occurring below the large pair of forward-facing eyes (Fig 2, 3)------3
- 3 (2) A. 2 small eyes below & medial to large eyes (Fig 2)------Family Oxyopidae
- (1) A. Lateral spinnerets readily visible in dorsal view and with bases obviously separated (Fig. 4, 5)-----5 **B.** Lateral spinnerets not visible in dorsal view **or**, if visible, without obvious separation at bases. -----6



Figure 4. Gnaphosidae. Note separation of parallel lateral spinnerets and cylindrical shape with blunt tips



Figure 5. Agelenidae. Note separation of lateral spinnerets and conical distal segment with pointed tips (thin arrow) angled toward midline.

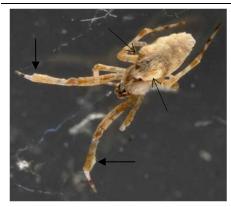
- (4) A. Lateral spinnerets cylindrical and held roughly parallel their entire length. Lateral spinnerets without an obvious joint obviously away from body (Fig 4) ------ Family Gnaphosidae
  - **B.** Lateral spinnerets conical, with an obvious joint towards the distal end. Often (but not always) bent towards the midline at rest and (Fig 5). Build funnel webs ------ Family Agelenidae

Not as above-----7



Figure 7. Mimetidae metatarsus showing spination of leg I Note large spines on prolateral surface metatarsus with smaller spines between that increase in length distally. This pattern also on tibia (not shown). Large spines can be seen without magnification, small spines can be seen with minimal magnification

**Figure 6**. Mimetidae (dorsal View, juvenile male). Note long legs I & II



**Figure 8**. Uloboridae (dorsal view). Thick arrows show metatarsal combs, thin arrows anterior abdominal humps



Figure 9. Sparassidae (ventral view) showing scopulae



**Figure 10**. Thomisidae (dorsal view). Note obviously thickened Legs I & II (thick arrow) compared to legs IV (thin arrow; legs III not visible)



**Figure 11**. Philodromidae (dorsal View) showing exceptionally long leg II of *Ebo* 

11	(8) Spinnerets point caudally in dorsal view, without obvious separation between lateral spinnerets at base (if obviously separated at base go back to couplet 4) figs 12 & 1312
	Spinnerets point ventrally; not visible in dorsal view <u>15</u>
12	(11)Tips of spinnerets separated (will require magnification), small (<5 mm)13
	Tips of spinnerets together; spinnerets form a compact cone (fig 12,13) <u>14</u>
13	(12) Hair well distributed over abdomen, giving it a "fuzzy" appearance to naked eye. Hair covering
	sternum (fig 18) and white hairs covering ocular region of carapace (fig 19) require magnification to
	see well. Build irregular webs in <u>branch-tips</u> <u>Family Dictynidae</u> (in part)
	Point on anterior of carapace over chelicerae; eyes clustered on the anterior surface of a turret on the
	carapace behind this point



Figure 12. Clubionidae (Dorsal View) with long spinnerets visible, inset shows more magnified view



Figure 13. Corinnidae (Dorsal View). spinnerets visible as conical point caudally, inset with more magnified view.

15 ( $\underline{11}$ ) Abdomen  $\geq 3x$  longer than wide,  $\geq 2x$  length of cephalothorax. Legs I & II very long and thin:  $\geq 2x$  longer than cephalothorax and abdomen combined (legs III vary). (fig 14, 15 & 16)----- $\underline{16}$  Not as above, or if as above with all legs heavily spined (fig 20) ----- $\underline{17}$ 



**Figure 14**. Pholcidae (Lateral View) Note ventral facing point made by spinnerets.



Figure 15. Tetragnathidae (Ventral view). Thick arrow: spines on legs I & II; Thin arrow, endites, showing extension of chelicerae from sternum.



Figure 16.
Tetragnathidae
Dorsal view.

17 (15) Abdomen variously shaped, but with ventrally directed spinnerets forming a sharp conical point on the ventral side of the abdomen (fig 17). Hair sparse to absent on both cephalothorax and abdomen, which can be shiny in some specimens. Build <u>cobwebs</u>.-----<u>Family Theridiidae</u> Either abdomen, carapace, or both "hairy", sometimes with a "fuzzy" appearance ------<u>18</u>



Figure 17. Theridiidae (ventrolateral view) showing ventrally "point" made by spinnerets



**Figure 18**. Family Dictynidae. Note hairs covering sternum



**Figure 19**. Note white hairs covering ocular region and abdomen



**Figure 20**. Note sparse hairs covering anterior portion of sternum (thick arrow), but not posterior portion (thin arrow)

#### **Spider families by Web Types:**

Below are the basic web types that spiders build, with photos of representatives and with the families that build them. Web type is an excellent guide to spider families when available, with a few exceptions. Of course, any spider may be found outside of its web, and some may be found in other spider's webs on occasion.

**No web**: The following families do not normally build prey catching webs, but may build compact retreats that they use to protect themselves when not actively hunting:

<u>Clubionidae</u>, <u>Corinnidae</u>, <u>Gnaphosidae</u>, <u>Oxyopidae</u>, <u>Philodromidae</u>, <u>Salticidae</u>, <u>Sparassidae</u>, <u>Thomisidae</u>
Although the <u>Mimetidae</u> do not build webs, they prey upon web-weaving spiders and thus are often found in webs of various types, most commonly in branchtip webs and cobwebs, occasionally in orb webs and sheet webs; they have not been found to date in funnel webs.

**Orb Webs** (figs 20,21): 2 dimensional circular webs: Built by the Araneidae, Tetragnathidae and Uloboridae.

<u>Araneidae</u> typically build vertically oriented orb webs. Back to couplet <u>17</u>

Tetragnathidae build both vertical and horizontal webs. Back to couplet 14

<u>Uloboridae</u> typically build horizontally oriented orb webs, but some build a modified orb web, called a "triangle" web, which look like a sector of a regular orb web (think piece of pie) and are oriented vertically. Only horizontal-web building genus *Uloborus* have been identified in the study area to date. Back to couplet <u>7</u>



Figure 20. Araneidae in vertical orb web; saltbush in background.

Figure 21. Partially destroyed orb web

spider anatomy

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**Cobwebs**: 3 dimensional, irregularly shaped, dense webs, typically constructed so that vibrations all travel to a hub – this may be roughly in the center of the web, or built in a retreat (a hole, at the base of branch or in a rolled up leaf), where the spider sits waiting for prey to strike the web. They are built by the family Therididae.

Several other web types can be difficult to distinguish from a cobweb, including the branchtip webs of the <u>Dictynidae</u>, and the webs of the <u>Pholcidae</u> which are usually much less dense. Back to couplet <u>16</u>

**Branchtip webs**: Small, dense, irregular 3 dimensional webs built between in the forks occurring at the end of branches, between leafs or needles. Built by the Dictynidae.

Some <u>Theridiidae</u>, such as *Theridion* sp., which occupy very similar ecological niches, build cobwebs with a very similar structure. Back to couplet <u>11</u>, <u>17</u>

**Funnel webs:** (figure 24) Webs consist of a more or less flat sheet leading to a small circular retreat, where the spider sits waiting for prey to land on the web. A loose 3 dimensional "scaffolding" is often built above the sheet. This is the typical web of the Agelenidae. Back to couplet 5



Figure 24. Hololena sp. (Agelenidae) on funnel web at entrance to funnel

**Sheet webs:** (not pictured) usually one or more sheets, often curved, with supporting threads attaching the sheets to the substrate. The spider sits in supporting threads below the sheets, and attacks prey from below. Typical of the Linyphiidae, which have not been found in the area to date and are thus not in this key.

spider anatomy

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#### Family Agelenidae:

The Funnel web weavers. 1 species identified in the region so far

Species: Hololena sp. Back to couplet\_4

**Field identification:** Funnel web is usually the best indicator of Agelenidae. Spinnerets protrude posteriorly and are visibly separated at base, angling toward midline at tips creating a pincer-like appearance under magnification (arrow, fig 25). This particular agelenid has paired dark longitudinal bands on either side of the carapace, but with pale borders in the thoracic region. Folium often faint, consisting of reddish longitudinal lines with pale median band and pale sides. Ventrally the lack of any distinctive marks is unusual.

Similar Species: Lycosidae share the carapace stripes, but lack protruding, separated spinnerets.

Gnaphosidae share the visibly separated spinnerets, but their spinnerets are cylindrical and remain parallel, rather than conical and converging posteriorly.

**Taxonomic citations:** Bennett & Ubick 2005



**Figure Ag1**. *Hololena* sp. Dorsal view (juvenile)



**Figure AG2**. *Hololena* sp. Ventral view (juvenile)



Figure Ag3. Hololena sp. juvenile in web

### Family Araneidae:

The Orb web weavers. 4 species identified in the region so far

Brief key to the local Araneidae:

Back to couplet 17

- 1) With 1-2 pairs of lateral white stripes or dots on the ventral surface of the abdomen (fig Ar1)---*Neoscona* sp.----2. With a single medial white stripe on the ventral surface of the abdomen (fig Ar2).------3
- 2) With a row of black dots laterally on the either side of the dorsum of the abdomen (fig Ar3)---<u>Neoscona arabesca</u>. Without these dots ------<u>Neoscona oaxacensis</u>
- 3) Dorsal surface of the abdomen with a definite pattern (folium), carapace hairy (fig Ar 4)---<u>Metepeira</u> sp. Dorsal surface without a coherent pattern, vague red lines running longitudinally on abdomen (fig Ar5) --<u>Larinia famulatoria</u>



**Figure Ar1**. *Neoscona oaxacensis* ventral view



**Figure Ar2**. *Metepeira sp.* ventral view



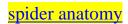
**Figure Ar3**. *Neoscona* arabesca dorsal view



**Figure Ar4**. *Metepeira sp.* Dorsal view



**Figure Ar5**. *Larinia famulatoria* dorsal view



#### **Family Araneidae:**

The Orb web weavers. 4 species identified in the region so far

**Species:** *Larinia famulatoria* (#1 of 4 Araneidae)

Back to Family Araneidae: Key

**Field identification:** Adult size 5-10 mm. Abdomen and cephalothorax both relatively long compared to width: Carapace about 1.5X as long as wide, Abdomen >2x as long as wide. Longitudinal red stripes on carapace and dorsal abdomen as pictured. Single white median stripe on ventral abdomen and sometimes also on sternum.

**Similar Species:** <u>Metepeira</u> has similar ventral pattern, but abdomen not elongated: approximately as long as wide, no greater than 1.5x as long as wide. <u>Tetragnatha</u> have much longer legs with much sparser spination, and large chelicerae.

<u>Neoscona arabesca</u> and <u>N. oaxacensis</u>. have paired white ventral markings on abdomen and abdomen nearly spherical.

**Taxonomic citations:** Levi 1975



Figure Ar6. L. famulatoria in dorsal view.



**Figure Ar7**. *L. famulatoria* in web, ventral view.

### Family Araneidae:

The Orb web weavers. 4 species identified in the region so far

**Species:** *Metepeira* sp.(#2 of 4 Araneidae)

Back to couplet 17

Back to Family Araneidae: Key

**Field identification:** Folium as in dorsal view. Single median white stripe on ventral abdomen, single median white or yellow stripe on sternum. Sternum sparsely haired anteriorly, bald posteriorly.

**Similar Species:** *Nescona* sp. have paired white dots/stripes laterally on ventral abdomen rather than a single medial stripe. *Nescona*'s folium narrows posteriorly to <1/2 abdominal width; *Metepeira*'s folium is >1/2 the abdominal width. *Larinia* shares the single ventral abdominal stripe, but no distinct folium on abdomen, instead has random faint red lines and spots

Taxonomic citations: Levi 1977



Figure Ar8. Meteperia sp. Dorsal view



**Figure Ar9**. *Meteperia* sp. Ventral view

### **Family Araneidae:**

The Orb web weavers. 4 species identified in the region so far

**Species:** Neoscona arabesca; # 3 of 4 Araneidae

Back to couplet 17

Back to Family Araneidae: Key

**Field identification:** Size 5-8 mm. Abdomen with repeating triangular folium on dorsal side, and unique set of black dots on anterior and dorsal portion of abdomen.

**Similar Species:** <u>Neoscona oaxacensis</u> is much larger as an adult, lacks the black spots on the anterior and dorsum of the abdomen. <u>Metepeira</u> has vaguely similar folium, but lacks the black spots and has a single medial white stripe on the ventral side of the abdomen, rather than paired lateral white stripes. <u>Larinia</u> has a single median white mark on the ventral abdomen, rather than paired markings, and no obvious folium; instead <u>Larinia</u> has scattered red lines & dots.

**Taxonomic citations:** Berman & Levi 1981



**Figure Ar10**. *Neoscona arabesca* dorsal view, (immature female)



**Figure Ar11**. *Neoscona arabesca*, Ventral view, immature female



**Figure Ar12**. *Neoscona arabesca*, Ventral view, juvenile; note anterior black spots on abdomen

### **Family Araneidae:**

The Orb web weavers. 4 species identified in the region so far

**Species:** *Neoscona oaxacensis.* (#4 of 4 Araneidae)

Back to couplet 17

Back to Family Araneidae Key

**Field identification:** Adults >10 mm. Carapace Grey to orange, with dark median stripe. Dorsal abdominal pattern (folium) varies widely (see fig Ar16) but is wide anteriorly with a sharp narrowing into a scalloped posterior stripe, more or less well defined. Ventrally always with white/yellow median stripe on sternum, and paired, lateral white dots on abdomen as pictured (figure Ar15), sometimes connected longitudinally by a narrow white bridge.

**Similar Species:** <u>Metepeira</u> and <u>Larinia</u> have a single white stripe on ventral abdominal surface rather than paired, lateral dots. <u>Neoscona's</u> folium narrows posteriorly to <1/2 abdominal width; <u>Metepeira's</u> folium is >1/2 the abdominal width. <u>Neoscona arabesca</u> has a series of distinct black dots along the anterior-dorsal edge of the abdomen.

Taxonomic citations: Berman & Levi 1981



**Figure Ar13**. Female *N. oaxacensis* dorsal view

**Figure Ar14**. Male *N.* oaxacensis dorsal view

**Figure Ar15**. Female *N. oaxacensis* ventral view



**Figure Ar16**. Several *N. oaxacensis* in dorsal view demonstrating variation in folium and color in this species.

### Family Clubionidae:

Sac Spiders. 1 genus identified in the region so far

**Species:** *Elaver sp.* Back to couplet <u>11</u>

**Field identification:** Light colored spider with dark ocular region; carapace pale orange except in ocular region, abdomen covered with fine pale grey hairs. Usually found running along the ground or on vegetation, not in webs. In dorsal view, spinnerets generally form a long cone, though sometimes the spinnerets will appear separated at the tips – never at the base.

**Similar Species:** Resemble <u>Gnaphosidae</u>, but without cylindrical spinnerets obviously separated at base in dorsal view and generally lighter in color. Very similar to <u>Corinnidae</u>, from which it differs by having longer spinnerets (approximately as long as the width of the base of the spinneret complex) and tufts of hair at the cranial end of the endites.

**Taxonomic citations:** Ubick et al. 2005



Figure Cl1. Elaver sp. dorsal view



Figure Cl2. Elaver sp. ventral view

#### **Family Corinnidae:**

1 species identified in the region so far

**Species:** *Trachelas sp* Back to couplet <u>11</u>

**Field identification:** Carapace orange/brown with dark ocular region, Sternum same color, darker chelicerae may be noticeable. Abdomen lighter than sternum ventrally, grey to pale orange. Abdomen dorsum variable: sometimes darker than carapace and uniformly colored, sometimes light (about the same as ventral side) but with vague dark central line and dark margins.

**Similar Species:** <u>Gnaphosa</u> & <u>Scopoides</u> Have cylindrical, visibly separated spinnerets which <u>Trachelis</u> lacks, and lack the high contrast on the dorsal/ventral abdomen. <u>Elaver</u> is much lighter dorsally, without contrasting dorsal/ventral abdomen.

**Taxonomic citations:** Ubick & Richman 2005



**Figure Co1**. *Trachelas sp.* dorsal view: dark abdomen



**Figure Co2**. *Trachelas sp.* dorsal view; light morph



**Figure Co3**. *Trachelas sp.* Ventral view.



**Figure Co4**. *Trachelas sp.* Ventral view.

#### **Family Dictynidae:**

2 species identified in the region so far

Brief key to local Dictynidae

Back to couplet 11 or 17

Note: The Dictynidae are extremely difficult to identify, even to genus, even using microscopic characters. For this reason I am following the advice of Bennett (2005) "The genera *Dictyna*, *Emblyna*, *Phantyna* and Tivyna are not clearly diagnosed and can be difficult to separate. Except for *Tivyna*, females are essentially indistinguishable at the genus level. Females (other than *Tyvina*) as well as males that cannot be keyed beyond this point [couplet 16 in Bennet's key to the genera of the Dictynidae] are best left identified as '*Dictyna*' sp unless comparison can be made with the species literature".

The two species below Key out to this point, and keying beyond this point, even for males, requires detailed examination of microscopic characters of the gentalia. Therefore here they are simply referred to as *Dictyna* Sp A and *Dictyna* Sp B.

1) Carapace dark brown, no medial stripe on sternum (figs Di1, Di2)------*Dictyna* Sp.A Carpace light tan to pale yellow/white, with dark medial longitudinal stripe on sternum----*Dictyna* Sp B

**Species:** *Dictyna* sp. A (#1 of 2 Dictynidae)

**Field identification:** Small (<5 mm) spider with dark carapace and light abdomen. Light hairs in ocular region not always visible without magnification, but sometimes reduce the effect of the dark carapace. Hairy abdomen, sternum and legs hairy, but hairs are less dense on the legs. Abdomen obviously longer than wide.

Similar Species: <u>Dictyna</u> sp B is very similar, but with light carapace. <u>Theridion californicum</u> and <u>T. neomexicanum</u> sp occur in similar habitats, but abdomen not hairy and generally with abdomen roughly spherical rather than obviously longer than wide and longer, thinner legs. <u>Theridion</u> tend to have a shiny, rather than hairy, carapace. <u>Uloborus</u> is similarly hairy, but has prominent setal brushes and dorso-lateral abdominal humps. <u>Oecobius</u> spinnerets are visible in dorsal view, and has eyes clumped together on the front of a turret on the carapace

**Taxonomic citations:** Bennett 2005.



**Figure Di1**. *Dictyna* sp. A. dorsal view, male



**Figure Di2**. *Dictyna* sp A.Ventral view, female

#### **Family Dictynidae**

2 species identified in the region so far

**Species:** *Dictyna* sp. B (#2 of 2 Dictynidae)

Back to couplet <u>11</u>or <u>17</u>

Back to Family Dictynidae: Key

**Field identification:** Small (<5 mm). Light colored with small white hairs covering dorsal abdomen, giving it a slightly "fuzzy" appearance. Similar hairs on dorsal surface of carapace, particularly around ocular region, as in *Dictyna* Sp A (fig 44). Very faint dorsal abdominal pattern often not visible without magnification. Sternum with dark longitudinal line down center. Spinnerets visible as small posteriorly directed point.

Similar Species\*: <u>Dictyna</u> Sp. A very similar but with dark carapace. <u>Theridion californicum</u> and <u>T. neomexicanum</u> occur in similar habitats, but abdomen not hairy and generally with abdomen roughly spherical rather than obviously longer than wide and longer, thinner legs and appear shiny rather than hairy. <u>Uloborus</u> is similarly hairy, but has prominent setal brushes and dorso-lateral abdominal humps. <u>Oecobius</u> spinnerets are visible in dorsal view, and has eyes clumped together on the front of a turret on the carapace

#### Taxonomic citations: Bennett 2005.



**Figure Di3**. *Dictyna Sp B* sp. dorsal view (female)

Figure Di4. Dictyna Sp B sp. ventral view (female)

**Figure Di-5**. *Dictyna Sp B*. dorsal view (male)

Figure Di6. Dictyna Sp B. ventral view (male)

### Family Gnaphosidae:

3 genera identified in the region so far

Brief key to Gnaphosidae

Back to couplet 4

- 2) Carapace orange/brown, abdomen dark brown and clearly darker than carapace, (fig Gn2)--*Gnaphosa* Carapace orange/brown, abdomen tan to white; as light or lighter than carapace (fig Gn3)--*Scopoides*



Fig Gn1. Herpyllus eclesiasticus dorsal view adult female



**Fig Gn2**. *Gnaphosa sp*. Dorsalview, Adult female.



**Fig Gn3**. *Scopoides sp.* Dorsal view, Adult male.

### Family Gnaphosidae:

3 genera identified in the region so far

**Species:** *Gnaphosa* sp. (#1 of 3 Gnaphosidae)

Back to Family Gnaphosidae: key

**Field identification:** Adults 5-10 mm, Chestnut-brown coloration, abdomen darker than carapace, ocular region darker than thoracic region of carapace, endites darker than sternum. Fast moving. Anterior lateral Spinnerets are cylindrical, visible to naked eye protruding posteriorly, and visibly separated.

**Similar Species:** <u>Scopoides</u> has abdomen lighter than carapace vs <u>Gnaphosa</u> with abdomen darker than carapace. <u>Elaver</u> is lighter and with spinnerets less clearly separated in dorsal view. <u>Hololena</u> has separated spinnerets, but they are not conical and the apical segments of the spinnerets converge, rather than staying parallel. <u>Trachelus</u> is very similar, but with much smaller spinnerets forming a conical point

Taxonomic citations: Ubick et al. 2005



**Figure Gn4**. *Gnaphosa* sp. dorsal view (female)



**Figure Gn5**. *Gnaphosa* sp. ventral view (female)

### Family Gnaphosidae

3 genera identified in the region so far

Species: Herpyllus sp. (#2 of 3 Gnaphosidae)

Back to couplet 4

Back to Family Gnaphosidae: key

**Field identification:** Adults 8-10 mm, Abdomen as in figures below; white stripe is distinctive. Fast moving. Anterior lateral Spinnerets are cylindrical & visible to naked eye protruding posteriorly, and visibly separated.

**Similar Species:** *Herpyllus* is distinctive in the region. Unlikely to be confused with any other spider.



**Fig Gn3**. *Herpyllus eclesiasticus* dorsal view adult female



**Fig Gn7**. *Herpyllus eclesiasticus* Ventral view adult female

### Family Gnaphosidae

3 genera identified in the region so far

**Species:** *Scopoides* sp. (#2 of 3 Gnaphosidae)

Back to couplet <u>4</u>
Back to Family Gnaphosidae: key

**Field identification:** Adults 5-10 mm, Abdomen gray, cephalothorax light brown. Fast moving. Anterior lateral Spinnerets are cylindrical & visible to naked eye protruding posteriorly, and visibly separated.

**Similar Species:** <u>Gnaphosa</u> has abdomen darker than carapace, endites darker than sternum and dark ocular region compare to rest of carapace. <u>Scopoides</u> has abdomen lighter than carapace and cephalothorax more uniformly colored.

Taxonomic citations: Ubick et al. 2005





**Figure Gn9**. *Scopoides* sp. ventral view (male)

**Figure Gn8**. *Scopoides* sp. dorsal view (male)

#### Family Lycosidae:

The Wolf Spiders: 2 species identified in the region so far



**Figure Ly1**. *Geolycosa* sp, Lateral view. Note carapace rising from posterior to anterior.



**Figure Ly2**. *Pardosa* sp, Lateral view. Note relatively flat carapace from posterior to anterior.



**Figure Ly3**. *Hogna* sp, dorso-frontal view. Patterns on carapace and abdomen are very similar in *Pardosa*.

**Note:** Although the Lycosidae are very easy to determine to family because of their unique eye pattern, most Lycosid genera are very similar, and require microscopic characters of adult genitalia to separate. While Geolycosa can be seperated based on the trait provided here, other lycosids should simply be described as Lycosidae. The Lycosidae are abundant in this area, but most that I have found are juveniles; there are almost certainly more species in the area than I have been able to identify at this point. If better identification is required, see Ubick et. al 2005.

### Family Lycosidae:

The Wolf Spiders: 2 species identified in the region so far

**Species:** Geolycosa sp. Back to couplet 2

Back to Lycosidae key

**Field identification:** Lycosid eye pattern; light medial band with dark lateral stripes, then light marginal stripes as in fig Ly2 on carapace. Running spiders usually found at night on the ground, though sometimes can be found crawling through the vegetation. Adults are separable from *Hogna* based on size, *Hogna* being much larger; juveniles require magnification to detect rising carapace

Similar Species: *Hololena* has similar markings, but spinnerets are larger and obviously separated in dorsal view, and eyes are all roughly the same size. *Xysticus* has a similar carapace color pattern but lateral dark stripes extend to the edge of the carapace, not bordered in white laterally. Body shape, leg position and eye arrangement easily distinguish these two spiders.



Figure Ly5. Geolycosa sp. ventral view Juvenile

Figure Ly4. Geolycosa sp. Dorsal view; Juvenile

#### Family Lycosidae:

The Wolf Spiders: 2 species identified in the region so far

Species: *Hogna sp.* Back to couplet 2

**Field identification:** Lycosid eye pattern; light medial band with dark lateral stripes, then light marginal stripes as in fig 55 on carapace. Running spiders usually found at night on the ground, though sometimes can be found crawling through the vegetation. *Hogna* are large (>10 mm)as adults

**Similar Species:** *Hololena* has similar markings, but spinnerets are larger and obviously separated in dorsal view, and eyes are all roughly the same size. *Xysticus* has a similar carapace color pattern but lateral dark stripes extend to the edge of the carapace, not bordered in white laterally. Body shape, leg position and eye arrangement easily distinguish these two spiders.

Taxonomic citations: Dondale & Redner 1990; 2004



Figure Ly6. Hogna sp. dorsal view (female)



Figure Ly7. Hogna sp. ventral view (juvenile)

### Family Lycosidae:

The Wolf Spiders: 2 species identified in the region so far

Species: Pardosa sp. Back to couplet 2

**Field identification:** Lycosid eye pattern; light medial band with dark lateral stripes, then light marginal stripes as in on carapace. Running spiders usually found at night on the ground, though sometimes can be found crawling through the vegetation.

**Similar Species:** <u>Hololena</u> has similar markings, but spinnerets are larger and obviously separated in dorsal view, and eyes are all roughly the same size. <u>Xysticus</u> has a similar carapace color pattern but lateral dark stripes extend to the edge of the carapace, not bordered in white laterally. Body shape, leg position and eye arrangement easily distinguish these two spiders. *Pardosa* and *Hogna* cannot be reliably separated without genital characters

Taxonomic citations: Dondale & Redner 1990; 2004. Vogel 2004



Figure Ly8. Pardosa sp. dorsal view (adult female)



**Figure Ly10**. *Pardosa* sp. Epigynum ventral view (adult female)



**Figure Ly9**. *Pardosa* sp. Ventral view (adult female)

#### **Family Mimetidae:**

The Pirate Spiders: 1 species identified in the region so far

**Species:** *Mimetus hesperus* Back to couplet <u>6</u>

**Field identification:** Adults 5-8 mm. Abdomen appears truncated ("squared off") posteriorly in dorsal view (arrow, fig Mi3). Extremely long legs I & II, often held as seen in pictures. Row of large spines on medial surface of legs I & II, barely visible with naked eye (not visible in small juveniles). With a hand lens the pattern of small hairs between the spines decreasing in length from anterior to posterior can be seen (see figure Mi4; fig 7 in key provides a highly magnified view). This is a diagnostic feature of the family Mimetidae. Pattern of thin lines on the carapace is distinctive of *M. hesperus*, but difficult to see without magnification.

**Similar Species:** Adults are distinctive. Small juveniles can be difficult to tell from adult male <u>Theridion</u> <u>californicum</u> and <u>T. neomexicanum</u>, which also have very long legs I and II, but without spines. Sometimes confused with <u>Thomisidae</u> because of the similarity of leg positions, but <u>Mimetus</u> has much longer and more slender legs, with the femur of legs 1 being as long or longer than the carapace and abdomen combined.

<u>Taxonomic citations:</u> Mott 1989; for ecology, see Kloock (2012).



Figure Mil. Mimetus hesperus. dorsal view (female)



**Figure Mi2**. *Mimetus hesperus*. lateral view (female)



**FigureMi3**. *Mimetus hesperus*. dorsal view (juvenile male)



**Figure Mi4.** *Mimetus hesperus*. ventral view (female)



**Figure Mi5.** *Mimetus hesperus.* ventro-lateral view in Pholcidae web (juvenile male)

### Family Oecobiidae

The disc-web Spiders: 1 genus identified in this region so far

Species: Oecobius sp. (Not yet placed in key) Back to couplet 6

**Field identification:** Small (<5 mm as adults) relatively flat spiders with pointed abdomens, you will usually need significant magnification to ID them. Spinnerets visible from dorsal view (figure Oe1) and eyes clumped together on a small grey turret at the anterior of the Carapace. Legs generally held radiating out from the body to form a circular to slightly oval footprint. Live on rocks & walls, and make circular webs on the surface. Webs have two layers which the spiders rest between, with radiating lines projecting from the retreat that function as trip-wires. So far have only been found associated with human structures in this area.

**Similar species:** Although taxonomically very distinct (Ubick et al. 2004), they may be confused with *Theridion* or *Dictyna*, which they resemble in size and some markings. *Theridion* has a rounder abdomen, spinnerets are not visible in dorsal view and without eyes on a turret. *Dictyna* have hairs covering the carapace, which Oecobius lacks, and eyes do not appear clumped together on a turret.

**Taxonomic citations:** Ubick et al. 2004.



Figure Oe1. Oecobius, juvenile, dorsal view



Figure Oe2. Oecobius, juvenile, ventral view

### Family Oxyopidae:

The Lynx spiders: 3 species identified in the region so far

Brief Key to the local Oxyopidae

Back to couplet 2



**Figure Ox1.** *Peucetia viridans*, dorsal view (male)



**Figure Ox2.** Oxyopus flavus, dorsal view (female)

**Figure Ox3.** Oxyopus flavus, ventral view (female)



**Figure Ox4.** Oxyopus scalaris, dorsal view (juvenile)

### Family Oxyopidae

The Lynx spiders: 3 species identified in the region so far

**Species:** *Oxyopes flavus* Back to couplet 2

Back to Family Oxyopidae key

**Field identification:** Adult 5-10 mm. Posterior portion of abdomen triangular, coming to a point. Carapace and dorsal abdomen similarly colored, with white streaks, mostly longitudinal but with some partial, angled crossbars on abdomen. Ventrally, abdomen with a broad dark longitudinal line bordered by white hairs. Sternum bordered with brown, white hairs filling center.

**Similar Species:** Similar to Jumping Spiders (<u>Salticidae</u>), especially in habits – it will jump. Differs from local Salticidae in general coloration (our salticids are generally either black or whitish, not brown). Salticids can be separated based on the eye configuration: the enlarged eyes in Salticidae are the anterior median eyes, while in the Oxyopidae the posterior medial eyes are enlarged, resulting in two eyes occurring ventrally to the enlarged eyes (see figs 1 and 2 in key).

<u>Ebo</u> can have similar coloration and has similar abdominal shape, but lacks the ventral abdominal stripe; <u>Ebo</u> has a dark diamond-shaped mark dorsally on the anterior portion of the abdomen and extremely long legs II. <u>Oxyopes scalaris</u> is smaller, darker, and the ventral abdominal stripe is indistinct.

**Taxonomic citations:** Brady 1975



**Figure Ox5.** Oxyopus flavus, dorsal view (female)



**Figure Ox6.** *Oxyopus flavus*, ventral view (female)

### **Family Oxyopidae**

The Lynx spiders: 3 species identified in the region so far

**Species:** *Oxyopes scalaris* Back to couplet 2

Back to Family Oxyopidae key

**Field identification:** Adult <7 mm. Posterior portion of abdomen triangular, coming to a point. Carapace and dorsal abdomen similarly colored, mottled dark brown-black, possibly with some lighter patches. Sternum bordered with brown, white hairs filling center.

**Similar Species:** Similar to Jumping Spiders (<u>Salticidae</u>), especially in habits – it will jump. Salticids can be separated based on the eye configuration: the enlarged eyes in Salticidae are the anterior median eyes, while in the Oxyopidae the posterior medial eyes are enlarged, resulting in two eyes occurring ventral to the enlarged eyes (see <u>figures 1 and 2</u>).

<u>Oxypes flavus</u> is larger, light colored, and with a very distinct broad medial stripe on the ventral portion of the abdomen.

**Taxonomic citations:** Brady 1975



**Figure Ox7.** *Oxyopus scalaris*, dorsal view (juvenile)



**Figure Ox8.** *Oxyopus scalaris*, ventral view (juvenile)

### Family Oxyopidae

The Lynx spiders: 3 species identified in the region so far

**Species:** *Peucetia sp.* Back to couplet 2

Back to Family Oxyopidae key

**Field identification:** Adult 20-25 mm. Bright Green cephalothorax & abdomen with some, often faint, white streaks. Femurs are green with numerous black spots, Patella & tibia orange. Eyes clustered on central white mound in cephalic region, with enlarged posterior median eyes. Juveniles are similar, but the ocular area is dark (Fig Ox11).

**Similar Species:** The genus *Peucetia* is one of the most distinctive spiders in this region. Readily identifiable based on the figures. The adult male pictured below is *P. viridans*. However, *P. longipalpus* is very similar and may occur here as well, but can only be reliably separated by microscopic examination of the adult genitalia.

**Taxonomic citations:** Brady 1964.



**Figure Ox9**. *Peucetia viridans*, frontal/dorsal view (male)



FigureOx10. Peucetia viridans, ventral view (male)



**Figure Ox11**. *Peucetia sp.*, dorsal view (juvenile)

### **Family Philodromidae**

The running crab spiders: 1 species identified in the region so far

**Species:** *Ebo parabolis* Go back to couplet <u>8</u>

**Field identification:** Adult <5 mm. Pale mottled grey everywhere. Flattened dorso-ventrally. Abdomen triangular caudally (more pronounced in adults than in juveniles) with a diamond-shaped "heart mark" at the anterior end. Legs "laterigrade" i.e. projecting to the sides of the body rather than forward/backward ("prograde"). Leg II much longer (1.5-2x) than other legs

**Similar Species:** Oxyopes flavus is superficially similar, but not as flattened dorso-ventrally, with distinctive eye pattern and with Leg II not distinctly longer than other legs. Olios bears a very superficial similarity but is easily distinguished by its large scopulae and smoothly rounded abdomen.

**Taxonomic citations:** Dondale & Redner 1978.



**Figure Phi1**. *Ebo parabolis*, dorsal view (juvenile).



Figure Phi2. Ebo parabolis, ventral view (juvenile).

#### **Family Pholcidae**

The Cellar Spiders: 1 species identified in the region so far

**Species:** *Holocnemus pluchei* Go back to couplet <u>14</u>

**Field identification**: All legs very long & thin -- >2x length of (cephalothorax + abdomen) Folium variable, but usually similar to that pictured in the dorsal view (Pho1). Broad dark stripe on ventral surface is continuous from sternum to abdomen (Pho2). Abdomen taller than wide, with mottled pattern extending down sides. Abdomen is >2x longer than wide, with spinnerets forming a ventral facing point (Pho3). **Note:** This species is introduced from Europe. *H. pluchei* is the only member of this genus known from North America (Huber 2005).

**Similar Species**: Sometimes confused with Harvestmen (aka "Daddy long-legs", Order Opisthiolones) which are not spiders and are easily separated by possessing only a single body segment, rather than 2, no spinnerets, and not weaving webs. *Tetragnatha* shares the long thin legs, but has spines on the legs and a more cylindrical body, without the obviously ventrally pointing conical spinnerets.

#### **Taxonomic citations:** Huber 2005



**Figure Pho1**. *Holocnemus* pluchei, dorsal view (juvenile).



**Figure Pho2**. *Holocnemus* pluchei, ventral view (juvenile).



**Figure Pho3**. *Holocnemus pluchei*, lateral view (juvenile).

#### **Family Salticidae**

The Jumping spiders: 5 species identified in the region so far

#### Brief key to the local Salticidae

## Back to couplet 1

- 1) Carapace and abdomen main color either black or reddish (sometimes grey), with various white to brown markings, (black markings if red is the main color). Large as adults (Figs Sa1-3)------2 (Genus *Phidippus*)

  Abdomen pale yellowish-tan; small even as adults (figs 70,71)-------4



**Figure Sa1**. *Phidippus aotus* dorsal view (Female)



**Figure Sa2**. *Phidippus audax* dorsal view (Female)



Figure Sa3. Phidippus

boei dorsal view (Male)



**Figure Sa4**. *Thiodina hespera*, dorsal view (Juvenile female)



**Figure Sa5**. *Sitticus sp.*, dorsal view (Juvenile)

## **Family Salticidae**

The Jumping spiders: 5 species identified in the region so far

Species: Phidippus asotus (1 of 5 Salticidae species)

Back to couplet 2
Back to Family Salticidae key

**Field identification:** Adult 20-25 mm. Large jumping spider, dorsal carapace and abdomen with dull red base color with markings ranging from white through brown to black Females may sometimes have base color more grey (like the color of the ventral abdomen in figure 73), but with similar dorsal markings. Under magnification, long hairs can be seen protruding from the abdomen.

**Similar Species:** *Phiddipus boei* males have red abdomens, but carapace is black and they are uniformly colored, without distinct markings.

**Taxonomic citations:** Edwards 2004.



Figure Sa6. Phiddipus asotus. Dorsal view (Female)



**Figure Sa7**. *Phiddipus asotus*. Ventral view (Female)



**Figure Sa8**. *Phiddipus asotus*. Frontal view (Female)

## **Family Salticidae**

The Jumping spiders: 5 species identified in the region so far

**Species:** *Phidippus audax* (2 of 5 Salticidae species)

Back to couplet <u>2</u>

Back to Family Salticidae key

**Field identification:** Adult 20-25 mm. Large jumping spider, dorsal carapace and abdomen black. Abdomen with white anterior stripe and large white dot roughly in the middle of the abdomen – may have smaller white stripes and dots on the carapace as well. Males and females are similar except that males usually have more obvious white stripes on the front two pairs of legs. Iridescent green chelicerae are obvious without magnification in all but very small specimens. *Phidippus audax* is an introduced species and commonly found around houses and other human structures.

**Similar Species:** *Phiddipus boei* females appear similar but are uniformly colored, without distinct markings. Male *P. boei* have a bright red abdomen. *P. boei* also have iridescent green chelicerae, though they are usually more obscured by hairs on the palps and difficult to see without magnification.

**Taxonomic citations:** Edwards 2004.



**Figure Sa9**. *Phiddipus audax*. Ventral view (Juvenile male)



**Figure Sa10**. *Phiddipus audax*. Dorsal view (Female)

#### **Family Salticidae**

The Jumping spiders: 5 species identified in the region so far

**Species:** *Phidippus boei* (3 of 5 Salticidae species)

Back to couplet 2

Back to Family Salticidae key

**Field identification:** Adult 15-20 mm. Medium-sized jumping spider. Females are almost uniformly black, ocular region of carapace may be slightly lighter black than rest of body. Males have a dorsal surface of abdomen red and white striped on legs & palps, most obviously on legs I. Iridescent green chelicerae may be difficult to see without magnification because of hairs obscuring them.

**Similar Species:** *Phiddipus audax* appear similar but are not uniformly colored, having distinct white markings. *P. audax* iridescent green chelicerae, are usually much more obvious and can be easily seen without magnification. *P. asotus* are red all over, without black carapace

Taxonomic citations: Edwards 2004.



**Figure Sa11**. *Phiddipus boei*. Dorsal view (Male)



**FigureSa12**. *Phiddipus boei*. Ventral view (Male)

#### **Family Salticidae**

The Jumping spiders: 5 species identified in the region so far

**Species:** *Sitticus sp.* (4 of 5 Salticidae species)

Back to couplet 2
Back to Family Salticidae key

**Field identification:** Adult 3-5 mm. Small jumping spider. Base color is yellowish-tan with white hairs covering the carapace and a medial longitudinal white stripe on the dorsal side of the abdomen.

**Similar Species:** *Thiodina hespera*, though similar in size and abdominal coloration, has a much darker carapace (males) or four large black spots on the carapace surrounding the dorsal eyes (females).

Taxonomic citations: Prószyński 1980.



**Figure Sa13**. *Sitticus sp.* Dorsal view (Juvenile)



**Figure Sa14**. *Sitticus sp.* Ventral view (Juvenile)

## **Family Salticidae**

The Jumping spiders: 5 species identified in the region so far

**Species:** *Thiodina hespera.* (5 of 5 Salticidae species)

Back to couplet <u>2</u> Back to Family Salticidae key

**Field identification:** Adult 3-5 mm. Small jumping spider with yellowish abdomen and dark carapace. In males, the carapace is mostly dark with a contrasting white patch medially in the ocular region. Females have carapace color basically the same as the abdome, but with 4 large black sposts covering the dorsal eyes. Given size of spider, this may often appear, without magnification, as a single black spot with a light dot in the middle located on the anterior portion of the carapace.

**Similar Species:** *Sitticus* sp. is similar in size and base color, but with carapace about the same color as abdomen, and with a dorsal, medial white stripe on the abdomen.

Taxonomic citations: Richman & Vetter 2004.



**Figure Sa15**. *Thiodina hespera*. Dorsal view (Juvenile female)



**Figure Sa16**. *Thiodina hespera*. Ventral view (Adult female)



**Figure Sa17**. *Thiodina hespera*. Dorsal view (Adult female)

**Figure Sa18**. *Thiodina hespera*. Dorsal view, male (Photo pending...)

## **Family Sparassidae**

The Giant Crab spiders (a.k.a Huntsman spiders): 1 species identified in the region so far **Species:** *Olios sp.* Back to couplet 8

**Field identification:** Juveniles 5-10 mm. Legs "laterigrade" i.e. projecting to the sides of the body rather than forward/backward ("prograde"). Broad scopulae (Hair tufts) on tips of legs make tips of legs appear wider than base. Carapace pale with darker ocular region, abdomen dark.

**Similar Species:** <u>Ebo</u> is somewhat similar, but easily distinguished by it's lack of scopulae and strongly triangular shape of the caudal portion of the abdomen. <u>Oxyopes</u> is not flattened dorso-ventrally, has a strongly triangular poserior abdomen and lacks scopulae.

#### **Taxonomic citations:**



**Figure Sp1**. *Olios* sp. Frontal/dorsal view (juvenile).



**Figure Sp2**. *Olios* sp. ventral view, showing scopulae (juvenile)

#### **Family Tetragnathidae**

The long-jawed orbweavers: 1 species identified in the region so far

**Species:** *Tetragnatha sp.* Back to couplet <u>14</u>

**Field identification:** Long-legged, thin orb weaving spiders with large chelicerae – unlike most spiders, the chelicerae on these are often readily visible, protruding from carapace in dorsal view. In ventral view, the extreme elongation of the endites parallels this and is often easier to see. The endites also are somewhat "L"-shaped, diverging anteriorly. Chelicerae are at least ¼ the length of the entire carapace, can be longer than the carapace in adult males (generally longer in adults than in Juveniles). Long legs often held stretched out in front of and behind body, so that spider resembles a twig.

**Similar Species:** *Larinia* sp usually has red spots &/or stripes, smaller chelicerae and has easily visible spines covering the legs, especially apparent when the spider is backlit. *Holocnemus* shares the long thin legs, but lacks spines on the legs, has abdomen taller than wide, and obviously ventrally pointing, conical spinnerets. *Uloborus* has distinctive setal tufts on the metatarsus.

Taxonomic citations: Levi 1981.



**Figure Te1**. *Tetragnatha* sp. Dorsal view (juvenile) Legs I & right leg II are in the typical "twig" resting position.



**Figure Te2**. *Tetragnatha* sp. Ventral view (juvenile). Endites are visible (red arrow)



**Figure Te3**. *Tetragnatha* sp. Frontal/dorsal view (juvenile) showing elongated chelicerae (red arrow).

<mark>spider anatomy</mark>

## **Family Theridiidae**

The cobweb weavers: 4 species identified in the region so far.



**Figure The1**. *Latrodectus* sp. Ventral view (female)



**Figure The2**. Steatoda grossa Dorsal view (female)



**Figure The3**. *Latrodectus* Lateral view (juvenile)



**Figure The4**. *Theridion neomexicanum* Ventral view (female)



**Figure The5**. *Theridion* californicum Ventral view (female)

#### Family Theridiidae

The cobweb weavers: 4 species identified in the region so far. **Species:** *Latrodectus* sp. (#1 of 4 Theridiid species). Go back to couplet <u>16</u>

"Black widow spiders" Go to <u>Family Theridiidae</u> key

**Field identification:** Adult females are entirely black, body hairless and shiny with a clearly visible red hourglass on the ventral side of the abdomen (may appear as 2 separate red triangles). Males and juveniles are much smaller and not black, but instead have patterns of white, yellow and/or brown lines on the sides of the abdomen, a yellow carapace with medial longitudinal black lines. Small specimens generally lack the red hourglass, but the outline is usually visible, filled with white, sometimes with yellow or brown stripes. As they age, the hourglass darkens through pink to red. Note: the local species is either *L. mactans* or *L. hesperus*, but according to genetic data (Zhang et al. 2004) there is no reliable genetic difference between these species, and the morphological differences are small, and microscopic genital characters are required to separate them.

**Similar Species:** <u>Steatoda</u> sp lack the hourglass entirely and usually have white stripes &/or spots dorsally on the abdomen.

Taxonomic citations: Levi 1959, McCrone and Levi 1964.



**Figure The6**. *Latrodectus* sp. Dorsal view (female)



**Figure The8**. *Latrodectus* sp. Dorsal view (juvenile)



**Figure The9**. *Latrodectus* sp. Ventral view (juvenile) showing typical juvenile white & pink hourglass



**Figure The7**. *Latrodectus* sp. Ventral view (female)



**Figure The10**. *Latrodectus* sp. Lateral view (juvenile)

## **Family Theridiidae**

The cobweb weavers: 4 species identified in the region so far.

**Species:** *Steatodae grossa* (#2 of 4 Theridiidae species)

Go back to couplet <u>16</u> Go to Family Theridiidae key

**Field identification:** Dark Brown to black spiders with white transverse marking on the abdomen. Males generally have longer legs I &II than females, with narrower and somewhat elongated abdomens than females as well. Juveniles are generally lighter in color, grey rather than brown, but share the white transverse markings.

**Similar Species:** Adult females are sometimes dark enough to be misidentified as small *Latrodectus*, but lack the red hourglass and usually have white stripes &/or spots dorsally on the abdomen – sometimes these are narrow enough, however, to require magnification to them distinctively.

Taxonomic citations: Gertsch 1960.



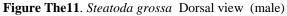




Figure The12. Steatoda grossa Ventral view



Figure The13. Steatoda grossa lateral view (male)



**Figure The14**. *Steatoda* grossa frontal/dorsal view (female)



**Figure The15**. *Steatoda* grossa dorsal view (spiderling)

## **Family Theridiidae**

The cobweb weavers: 4 species identified in the region so far.

**Species:** *Theridion californicum* (#3 of 4 Theridiidae species) Go back to couplet <u>16</u>

Go to Family Theridiidae key

**Field identification:** Small (<5 mm). Usually with a visible central pattern on the dorsal surface of the abdomen (folium) filled with red, but sometimes filled with white and often indistinct. Not hairy or "fuzzy". Abdomen nearly circular and with spinnerets forming a point on the abdomen directed ventrally rather than posteriorly. Carapace with faint reddish longitudinal lines wide near the eyes and narrowing posteriorly. Males have longer legs and a less circular, more oval, abdomen.

Similar Species: <u>Dictyna</u> sp. are "fuzzy", and with abdomen distinctly oval, rather than round. Spinnerets directed posteriorly. Adult males can be difficult to distinguish from very young <u>Mimetus</u>, especially when the folium is faint. Spines on the ventro- medial surface of the front legs of <u>Mimetus</u> are the best indicator. *Oecobius* spinnerets are visible in dorsal view, and have eyes clumped together on a turret on the carapace <u>Theridion neomexicanum</u> has distinct pair of black spots on ventral abdomen. Most <u>Theridion</u> species are similar & difficult to separate even with microscopic characters. It is safest refer to any spider with this folium and without black ventral spots as simply <u>Theridion sp</u>.

Taxonomic citations: Levi 1957, 2005



**Figure The16** Theridion californicum dorsal view (female)



**Figure The17**. Theridion californicum ventral view (female)

#### Family Theridiidae

The cobweb weavers: 4 species identified in the region so far.

**Species:** The ridion neomexicanum (#4 of 4 The ridiidae species)

Go back to couplet 16

Go to Family Theridiidae key

**Field identification:** Small (<5 mm). Ventral abdomen with two distinct black spots, which are diagnostic – no other *Theridion* in the region has them. Usually with a visible central pattern on the dorsal surface of the abdomen (folium) similar to that of *Theridion californicum* (fig The16), but less distinct as in fig 111, 113. Not hairy or "fuzzy". Abdomen nearly circular and with spinnerets forming a point on the abdomen directed ventrally rather than posteriorly. Red line around sternum visible in figs 112 & 114 is not typical, nor diagnostic. Males have longer legs and a less circular, more oval, abdomen.

**Similar Species:** <u>Dictyna</u> sp. are "fuzzy", and with abdomen distinctly oval, rather than round. Spinnerets directed posteriorly. Both lack dark spots on abdomen. Adult males can be difficult to distinguish from very young <u>Mimetus</u>, especially when the folium is faint. Spines on the ventro- medial surface of the front legs of <u>Mimetus</u> are the best indicator. *Oecobius* spinnerets are visible in dorsal view, and has eyes clumped together on the front of a turret on the carapace

<u>Theridion californucum</u> lacks black spots on venter and in our region has a more distinct folium usually filled with red, though other variations are possible. Many other *Theridion* species are similar, but lack paired black spots on ventral abdomen. It is safest refer to any spider with this folium and without black ventral spots as simply *Theridion sp*.

**Taxonomic citations:** Levi 1957, 2005



**Figure The18**. *Theridion neomexicanum* dorsal view (female)



**Figure The20**. *Theridion neomexicanum* dorsal view (juvenile)



**Figure The19**. *Theridion neomexicanum* ventral view (female)



Figure The21. Theridion neomexicanum ventral view (male)

#### **Family Thomisidae**

The Crab Spiders: 1 species identified in the region so far.

**Species:** *Xysticus sp.* Back to couplet 8

**Field identification:** Crab spiders can generally be identified from other spiders because at rest they are one of the few spiders that appears wider than long because of their distinctive legs and posture. Femurs I & II are thicker than femurs III and IV and held away from the body to the side. In *Xysticus*, the carapace is light brown with dark brown lateral stripes. Abdomen is truncated, approximately as wide as long. Lateral eyes are on small tubercles.

**Similar Species:** With a little practice, the Thomisidae are one of the most readily identifiable spider families because of their unique combination of characters. However, they share individual characters with a number of different spiders that can make identification difficult at first.

<u>Mimetus</u> also has long legs I & II, which it often holds in a similar posture, and has a similarly truncated abdomen; however, leg I femur of Mimetus is much longer: as long or longer than carapace+abdomen.

Mimetus' dorsal carapace has thin, medial longitudinal lines rather than the broad lateral stripes of Xysticus.

The <u>Sparrasidae</u> and <u>Philodromidae</u> both have laterigrade (directed to the side rather than forward) legs, but the Sparrasidae have large scopulae on the tips of the legs while the Philodromidae have a posteriorly pointed, rather than truncated, abdomen.

The <u>Lycosidae</u> share the broad dorsal lateral stripes on the carapace (as do some Philodromidae), but are much longer than broad with tapering abdomens and posterior median eyes at least twice the size of the other eyes, whereas all Thomisid eyes are more or less the same size

The <u>Salticidae</u> share the thickened femurs I and II, but have anterior median eyes that are at least twice the diameter of other eyes.

#### **Taxonomic citations:**



**Figure Tho1**. *Xysticus* sp. Dorsal view (juvenile)



**Figure Tho2**. *Xysticus* sp. Ventral view (juvenile)

#### **Family Uloboridae**

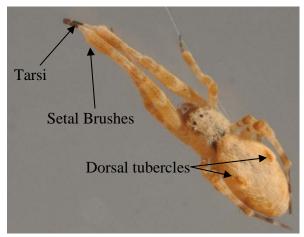
The Hackled-band orb weavers: 1 species identified in the region so far.

**Species:** *Uloborus diversus* Back to couplet <u>7</u>

**Field identification:** Metatarsi of legs I bearing prominent fringe of stiff hairs known as the "Setal Brush" that makes it appear to the naked eye that the spider is wearing fur cuffs on its "wrists". The setal brushes are diagnostic characters. Paired humps occur dorso-laterally on the anterior portion of abdomen. Carapace, abdomen, sternum and legs are all covered with short hairs, imparting a "furry" appearance. Spiders both on and off of web often sit with legs I & II stretched forward, and II and IV backward, making the spider appear twig-like and similar to the Tetragnathidae, except that this posture emphasizes the setal brushes, making them easier to see. The Family Uloboridae is of note because they are the only family of spiders that lack venom glands.

**Similar Species:** <u>Tetragnatha</u> is much longer and relatively thinner, lacks setal brush. <u>Dictyna</u> sp.have some superficial similarity in size and "fuzziness", but lack the distinctive dorsal tubercles and setal brush.

**Taxonomic citations:** Opell 2005



**FigureUl1**. *Uloborus diversus* dorsal view (female). Note the apparent thickening of the legs caused by the setal brushes, with the dark tarsi appearing very skinny distally. This is visible to the naked eye in all but the smallest specimens.



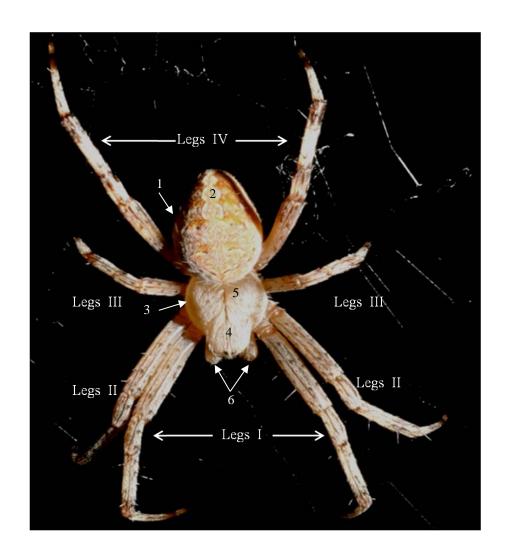
**Figure U12**. *Uloborus diversus* ventral view (female)



**Figure Ul3**. *Uloborus diversus* ventral view (juvenile) with legs separated

## **Spider External Anatomy**

- A. Dorsal Features <u>Ventral features</u> <u>Legs</u> <u>Back to Key</u>
  - 1 Abdomen: the posterior segment.
  - 2 Folium: any consistent pattern on the dorsal surface of the abdomen
  - 3 Carapace: the dorsal side of the cephalothorax (the anterior segment of the spider)
  - 4 Cephalic region: the Anterior portion of the carapace, from the eyes to approximately the midpoint. Usually delineated by a groove separating this area from the posterior portion of the carapace.
  - 5 Thoracic region: the posterior portion of the carapace
  - 6 Pedipalps (or "palps"): the small front-most leg-like appendages. Serve as a copulatory organ in males. Most adult males will have obviously swollen palpal tips.



## **Spider External Anatomy**

B. Ventral Features <u>Dorsal features</u> <u>Legs</u> <u>Back to Key</u>

1 Abdomen: the posterior segment.

2 Coxa: First segment of each leg

3 Spinnerets

4 Sternum: the ventral side of the cephalothorax

5 Endites: structures anterior to sternum, beneath chelicerae

6 Epigynum: the external female genitalia



C. Leg Segments (In order: proximal to distal) **Dorsal features** 

Ventral Features

Back to Key

1 Coxa

2 Trochanter

- 3 Femur
- 4 Patella
- 5 Tibia
- 6 Metatarsus
- 7 **Tarsus**

8 Claws (At tip of tarsus)

- D. Other structures
  - 9 Sternum
  - 10 Endites
  - 11 Chelicerae
  - 12 Pedipalps ("palps")



#### **References (Under construction)**

## spider anatomy

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