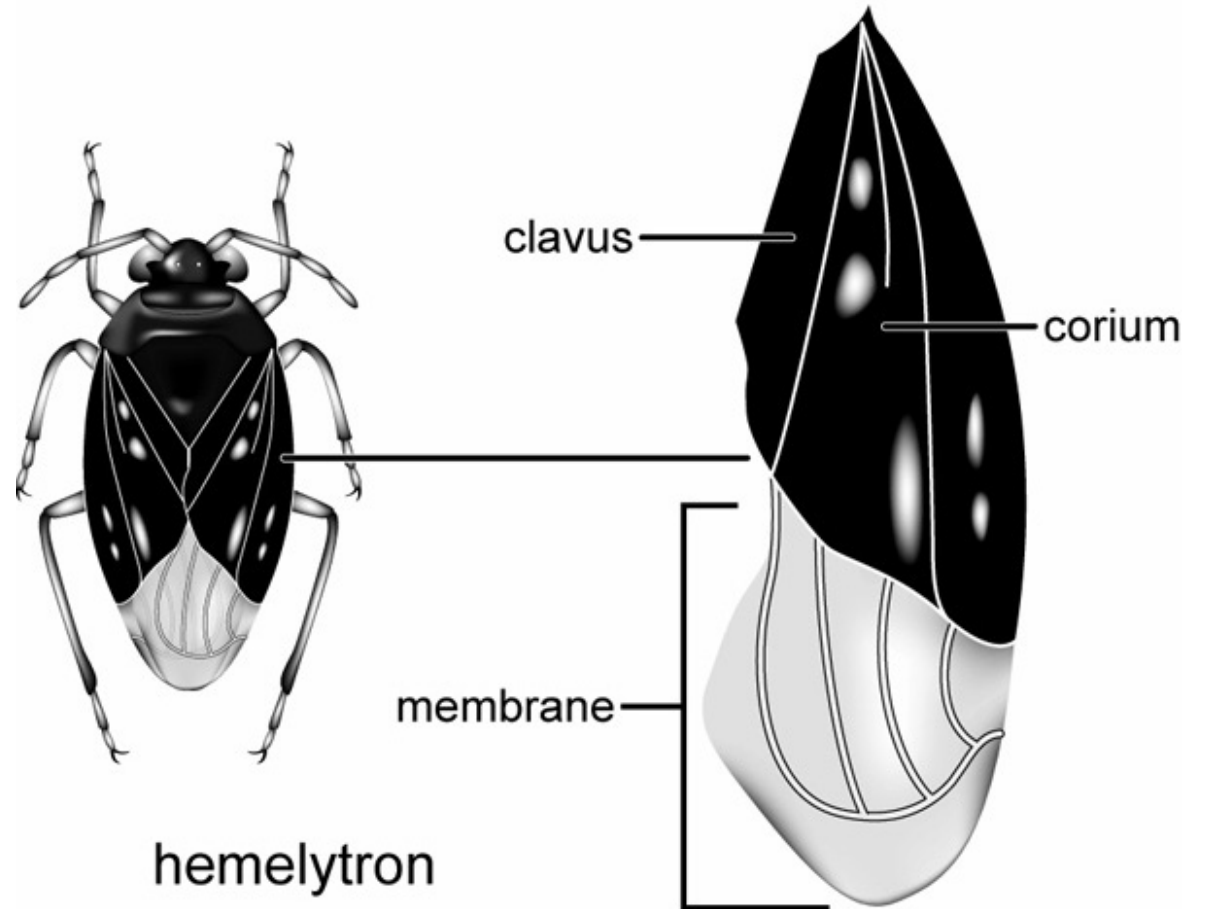
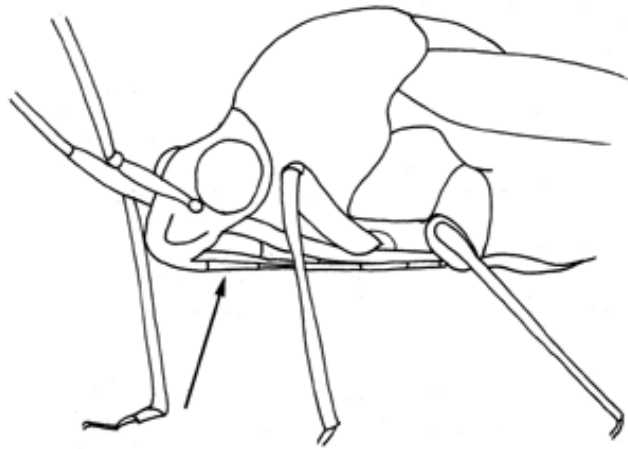


ORDER: Hemiptera – True Bugs, Hoppers, Aphids
- Suborder: Heteroptera



ORDER: Hemiptera – True Bugs, Hoppers, Aphids

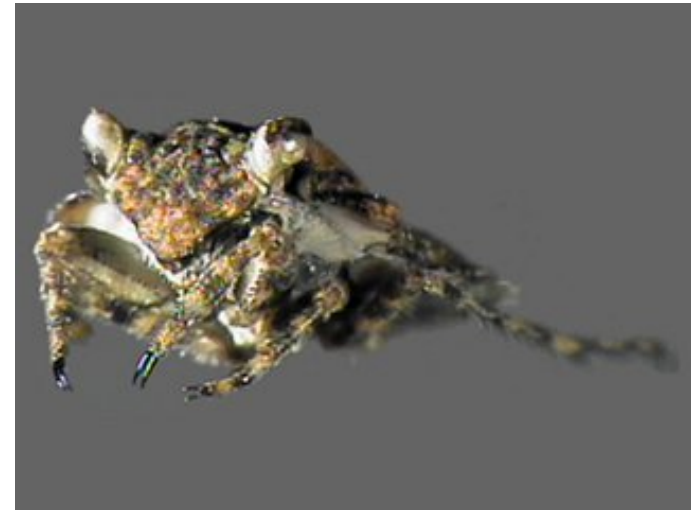
- **Suborder: Heteroptera**

The Aquatic Families (antennae shorter than head)

- ocelli present

1. Gelastocoridae – Toad Bugs

- small family; eyes protuberant, along margins of ponds – look nymphal but winged adults. 10mm



ORDER: Hemiptera – True Bugs, Hoppers, Aphids
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The Aquatic Families (antennae shorter than head)

- ocelli present

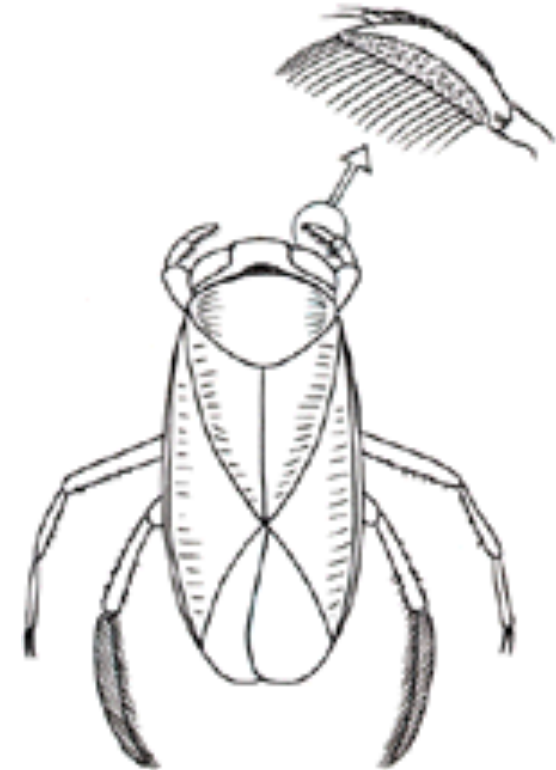
1. Gelastocoridae – Toad Bugs

- ocelli absent

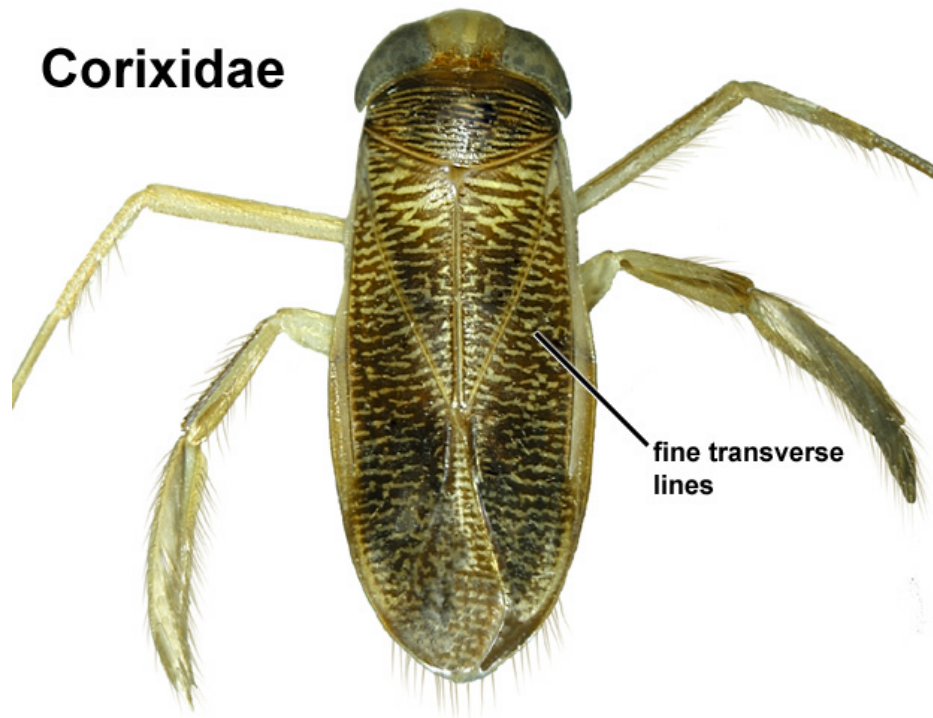
2. Corixidae – Water Boatmen

- front tarsi 1-segmented and expanded into a scoop/"oar"

Dorsal surface with transverse lines, mostly algivores



Corixidae



ORDER: Hemiptera – True Bugs, Hoppers, Aphids

- Suborder: Heteroptera

The Aquatic Families (antennae shorter than head)

- ocelli present

1. Gelastocoridae – Toad Bugs

- ocelli absent

2. Corixidae – Water Boatmen

3. **Nepidae** - **Water Scorpions**

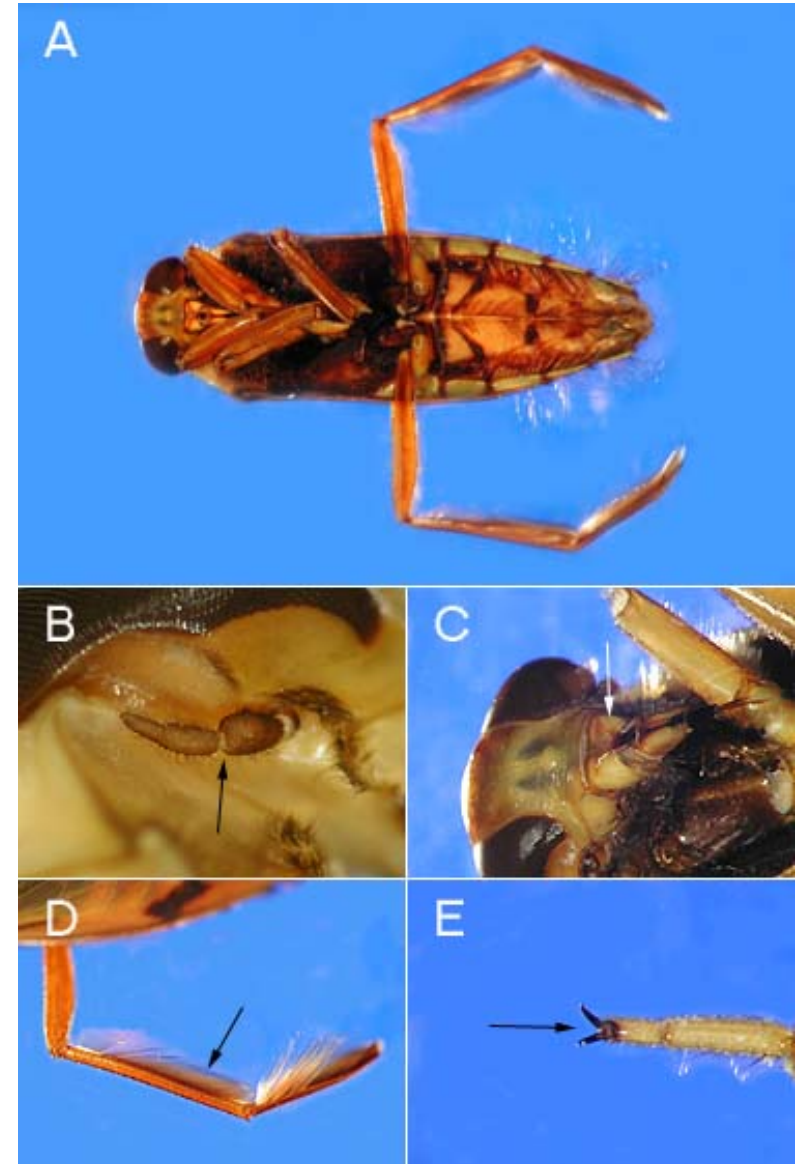
- small group but easy to identify: 2 long filaments and raptorial forelegs



ORDER: Hemiptera – True Bugs, Hoppers, Aphids
- Suborder: Heteroptera

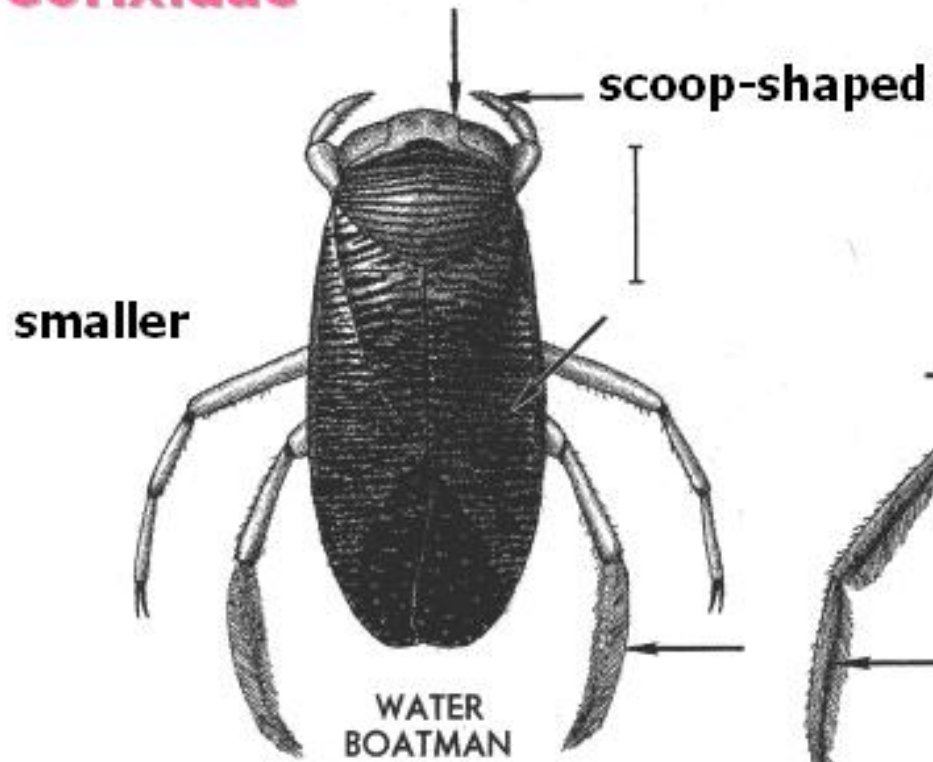
The Aquatic Families (antennae shorter than head)

- ocelli present
- 1. Gelastocoridae – Toad Bugs
 - ocelli absent
- 2. Corixidae – Water Boatmen
- 3. Nepidae - Water Scorpions
- 4. **Notonectidae – Back swimmers**
 - Hind legs long and oar like; forelegs not oar like, swim on back, **bite!** predaceous



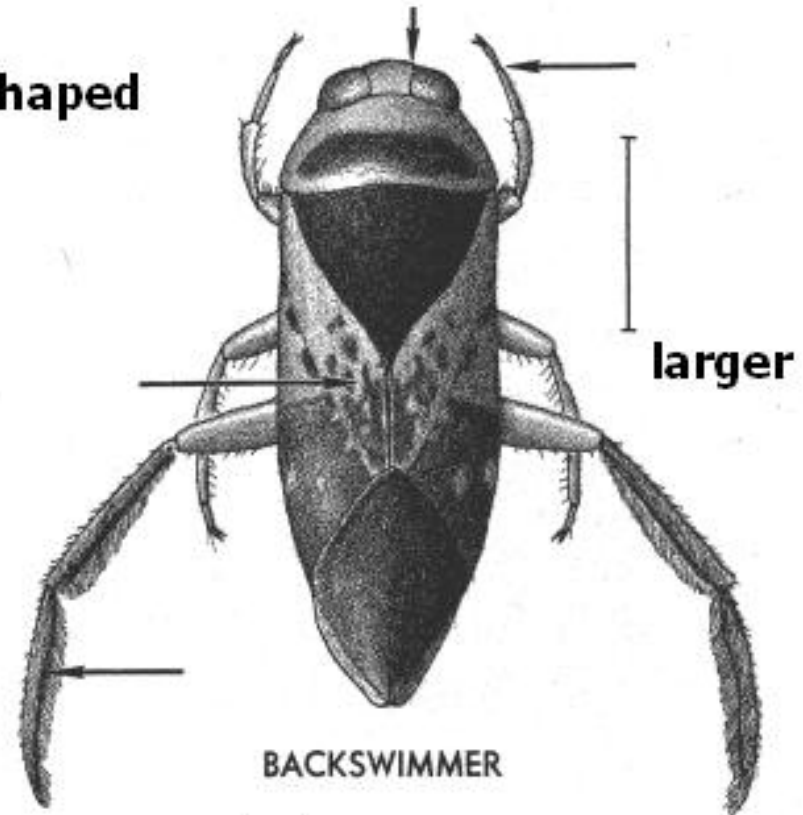
For comparison . . .

Corixidae



dark notum
light sternum

Notonectidae



light notum
dark sternum

ORDER: Hemiptera – True Bugs, Hoppers, Aphids
- Suborder: Heteroptera

The Aquatic Families (antennae shorter than head)

1. Gelastocoridae – Toad Bugs
2. Corixidae – Water Boatmen
3. Nepidae - Water Scorpions
4. Notonectidae – Backswimmers
- 5. Belostomatidae – Giant Water Bugs**
- raptorial forelegs without caudal filaments of Nepidae; **BITE!**



ORDER: Hemiptera – True Bugs, Hoppers, Aphids
- Suborder: Heteroptera

The **Terrestrial Families (antennae longer than head)**

6. Gerridae – Water Striders

- rather un mistakeable, skimming on water; only confusion would be with Riffle Bugs (Veliidae) that are smaller and have shorter femora

Halobates sp.



ORDER: Hemiptera – True Bugs, Hoppers, Aphids

- Suborder: Heteroptera

- antennae longer than head; 4 segmented

7. **Reduviidae – Assassin Bugs**

- beak fits into a groove in the prosternum, raptorial forelegs,
predatory, **BITE!**



Blood-sucking cone nose



Ambush Bugs



ORDER: Hemiptera – True Bugs, Hoppers, Aphids

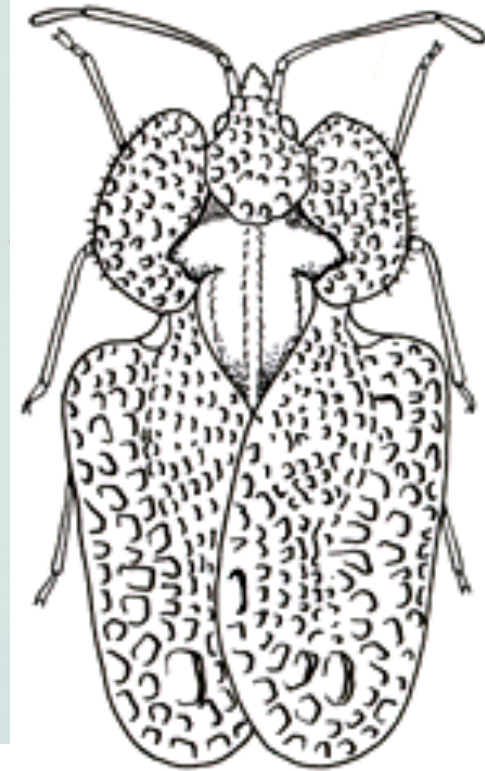
- Suborder: **Heteroptera**

- antennae longer than head; 4 segmented

7. Reduviidae – Assassin Bugs

8. Tingidae – Lace Bugs

- distinguished by heavily sculpted dorsal surface of body; **small**



ORDER: Hemiptera – True Bugs, Hoppers, Aphids

- Suborder: Heteroptera

- antennae longer than head; 4 segmented

7. Reduviidae – Assassin Bugs

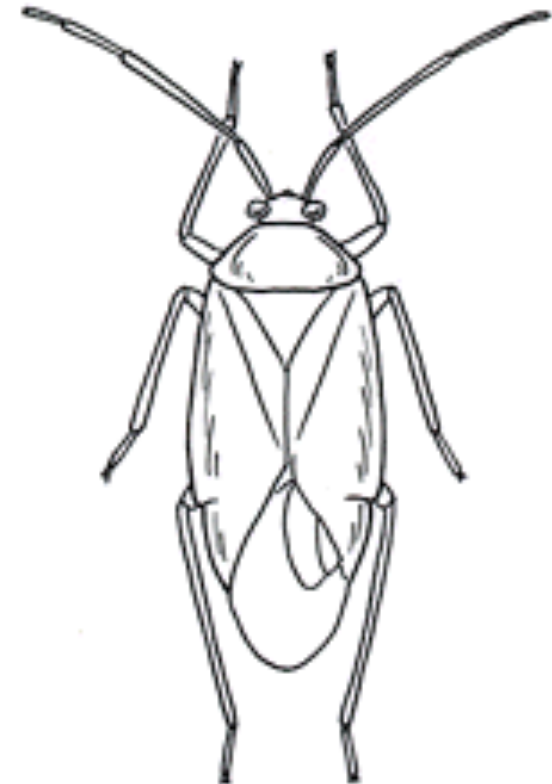
8. Tingidae – Lace Bugs

9. Miridae – Plant / Leaf Bugs

- soft bodies, to 10mm

- **1-2 closed cells** in membranous part of forewing

- has a cuneus – a subsegment of corium



ORDER: Hemiptera – True Bugs, Hoppers, Aphids

- Suborder: Heteroptera

- antennae longer than head; 4 segmented

7. Reduviidae – Assassin Bugs

8. Tingidae – Lace Bugs

9. Miridae – Plant / Leaf Bugs

10. Lygaeidae – Seed Bugs

- abdominal spiracles dorsal

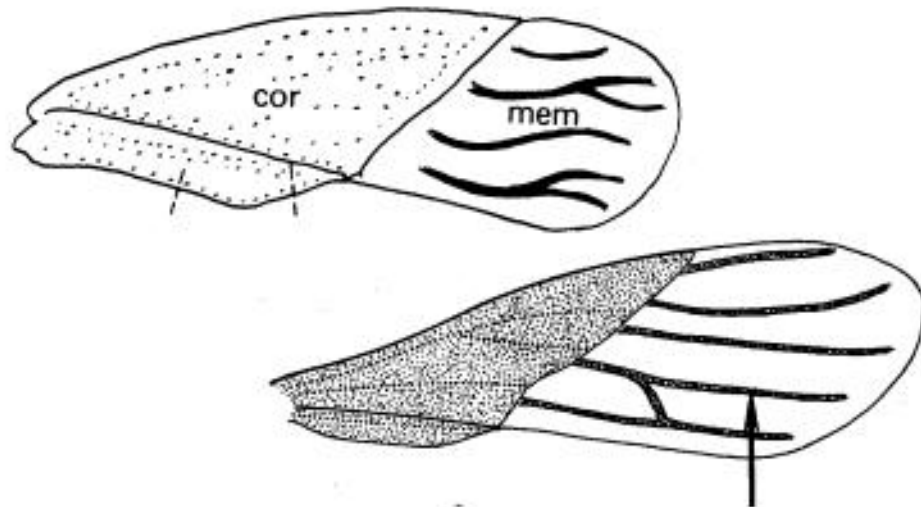
- 4-5 veins in hemelytra



Hemiptera:

Lygaeoidea

seed bugs, chinch bug,
milkweed bugs



- membranous portion of wing with **4 or 5 veins**
- 4-segmented antennae, **ocelli present**, 4-segmented beak, 3-segmented tarsi
- **antennae arise below a line drawn through the eyes**

ORDER: Hemiptera – True Bugs, Hoppers, Aphids

- Suborder: Heteroptera

- antennae longer than head; 4 segmented

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8. Tingidae – Lace Bugs

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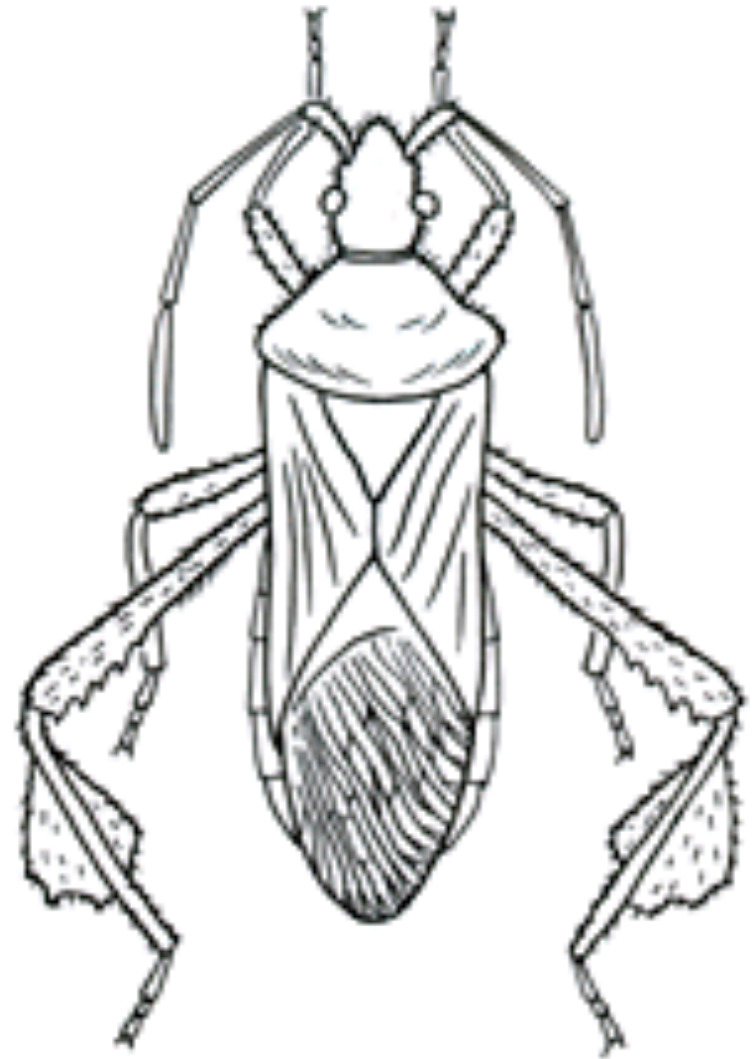
10. Lygaeidae – Seed Bugs

11. Coreidae – Leaf-footed Bugs

- hemelytra with many veins

- scent glands

- males with expanded hind femora with spines





ORDER: Hemiptera – True Bugs, Hoppers, Aphids

- Suborder: Heteroptera

- antennae longer than head; 4 segmented

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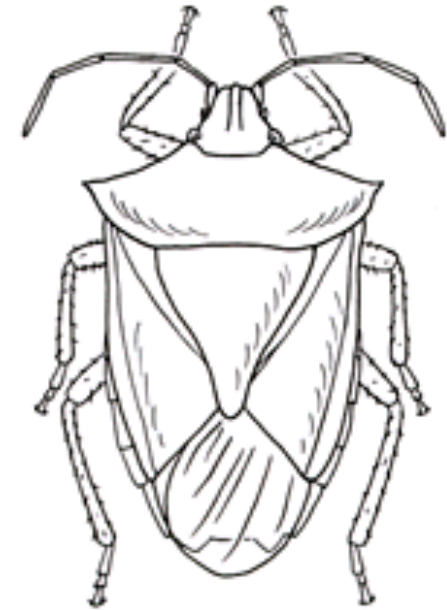
11. Coreidae – Leaf-footed Bugs

- antennae longer than head; 5 segmented

12. Pentatomidae – Stink Bugs

- **scutellum** triangular, corium broad

- if scutellum large and corium narrow, then a tooth at corner of pronotum



James L. Castner

ORDER: Hemiptera – True Bugs, Hoppers, Aphids

- Suborder: Heteroptera

- antennae longer than head; 4 segmented

7. Reduviidae – Assassin Bugs

8. Tingidae – Lace Bugs

9. Miridae – Plant / Leaf Bugs

10. Lygaeidae – Seed Bugs

11. Coreidae – Leaf-footed Bugs

- antennae longer than head; 5 segmented

12. Pentatomidae – Stink Bugs

13. Scutellaridae – Shield-Backed Bugs

- scutellum extends to tip of abdomen

- corium of wing narrow

- never with a tooth at corners of scutellum

