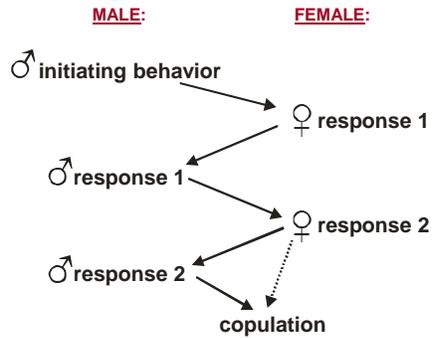
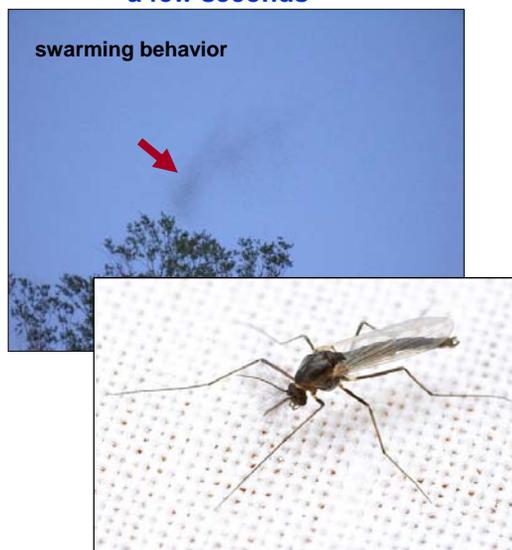


Courtship and Mating
 (behavioral or ethological premating RIMs)
 (often includes multiple modalities)



Males in particular *must answer a series of questions* in order to pass the test
 (the essence of **sexual selection**)

“Flyby” matings: midges
 (Diptera: Chironomidae)
 -- a few seconds --



“Slow dancers:” *Euxestus* sp.
 (Coleoptera: Cerylonidae)
 -- 5 days! --



Comparing courtship modalities: *information content, propagation, blocking, and privacy*

A. **Visual** (vision)

1. **visible**
2. **ultraviolet**



B. **Chemical/Olfactory** (pheromones)

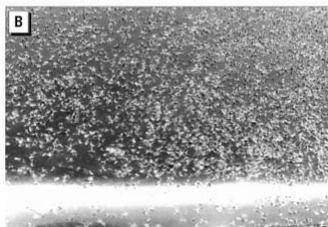
1. **substrate-borne** (incl. cuticular hydrocarbons)
2. **airborne**

C. **Mechanical** (movement)

1. **tactile** (touch)
2. **vibrational** (periodic signals)



Visual cues: simple **aggregation**

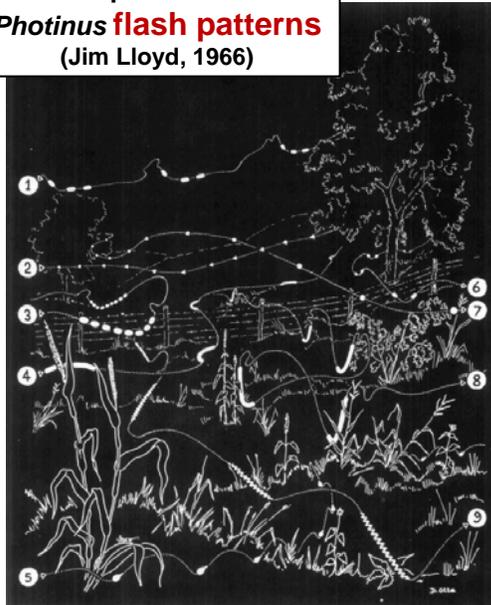


Chironomidae (Diptera):
mating swarm



Coccinellidae (Coleoptera)
Lekking (?)
(site has no resources
to offer)

Visual cues: complex courtship interactions -- *Photinus* flash patterns
(Jim Lloyd, 1966)



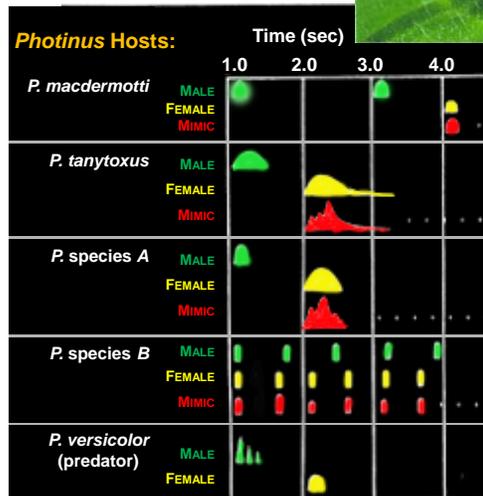
Photuris "femme fatale" eats male *Photinus*



Visual cues: *Photuris* *femmes fatales* producing the correct female response for different *Photinus* hosts

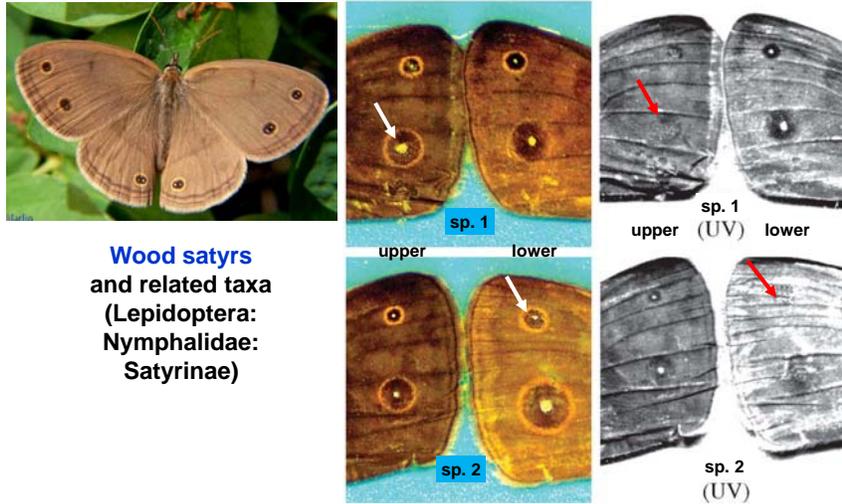


Photo: J.E. Lloyd



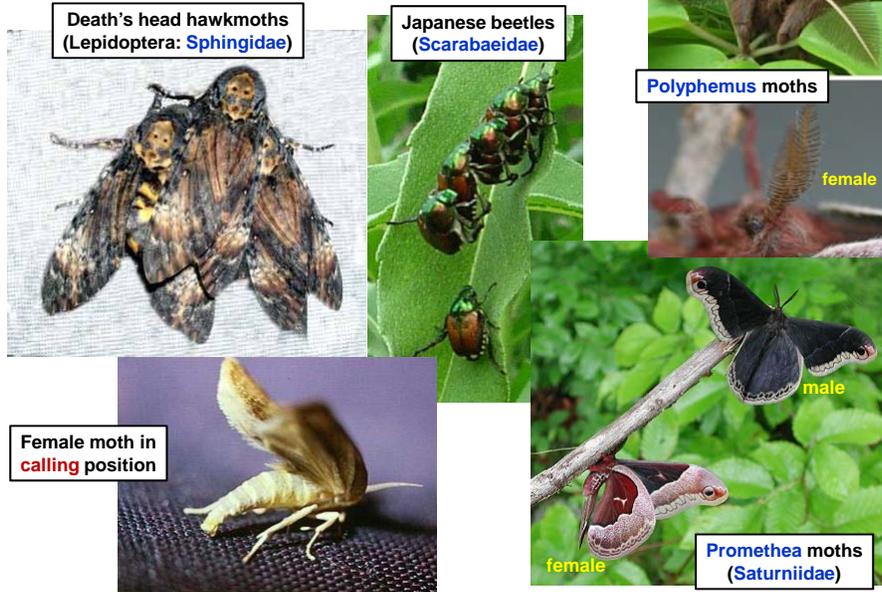
█ = male call
█ = female response
█ = *Photuris* response (mimic)

Ultraviolet reflectance (“hidden” visual cues)



Wood satyrs
and related taxa
(Lepidoptera:
Nymphalidae:
Satyrinae)

Chemical (pheromonal) cues: aggregation

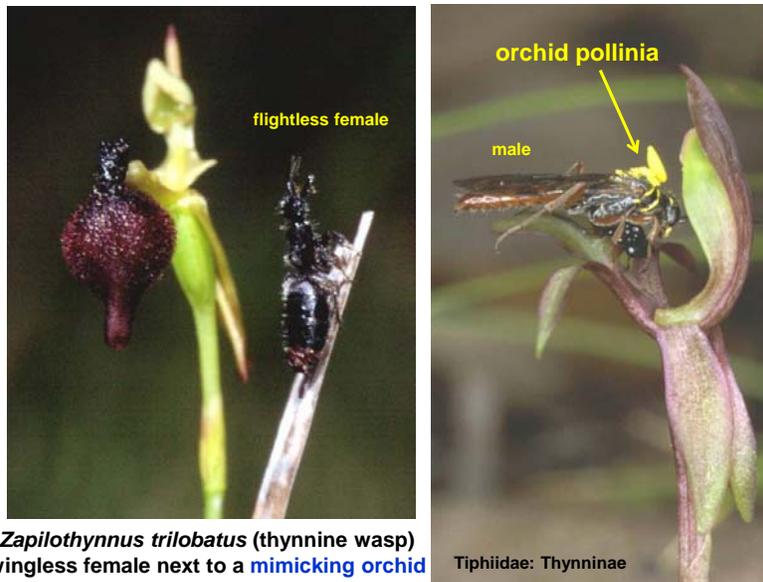


Female moth in
calling position

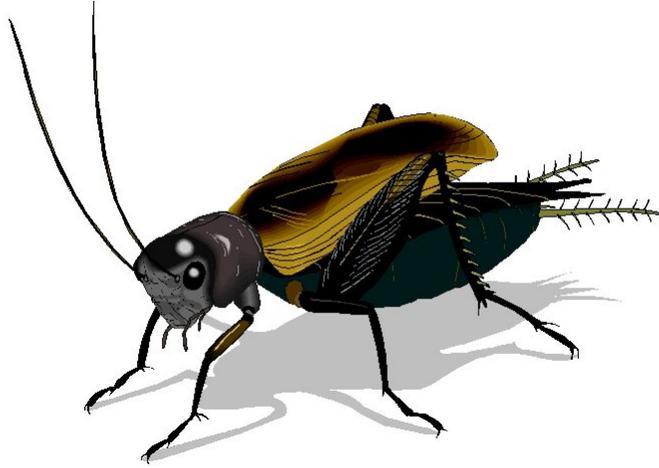
Promethea moths
(Saturniidae)



Deceitful use of the pheromone channel (cross-kingdom)



Acoustical cues: inter- and intrasexual competition
(more later)



Acoustical cues (to be continued), plus **exploitation**



Snowy tree cricket
(*Oecanthus fultoni*)



Ormia fly parasitizing
a singing **gryllid cricket** male



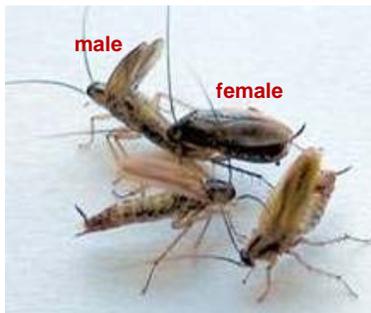
Sexual Selection

- Darwin (1871) first distinguished it from natural selection: selection for *mating success* rather than for viability & fitness.

-
- Far-reaching consequences:
 - **intersexual** competition (**female choice**)
 - **intrasexual** competition (**male-male contests**)
 - **sexual dimorphism**
 - **sexual conflict**

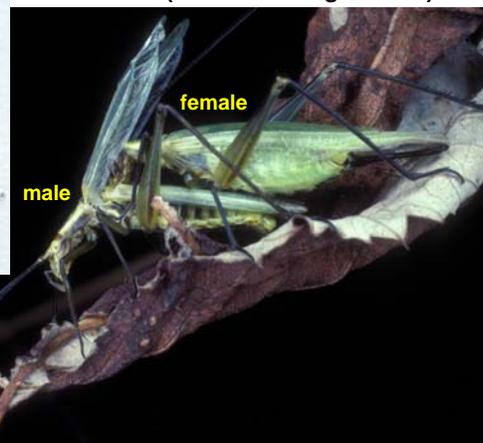
Courtship feeding, beyond the spermatophore: Intersexual sexual selection (female choice)

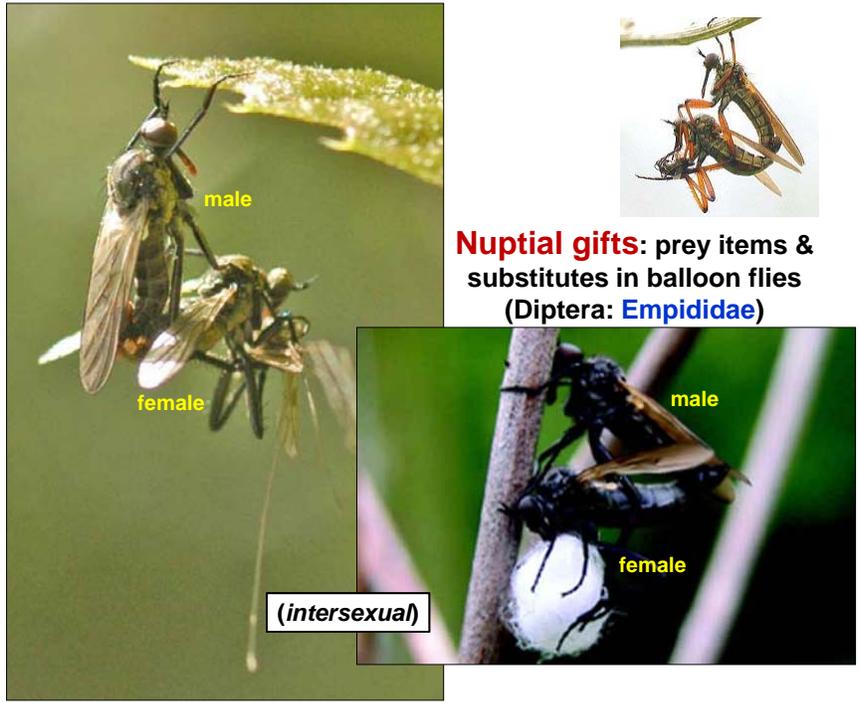
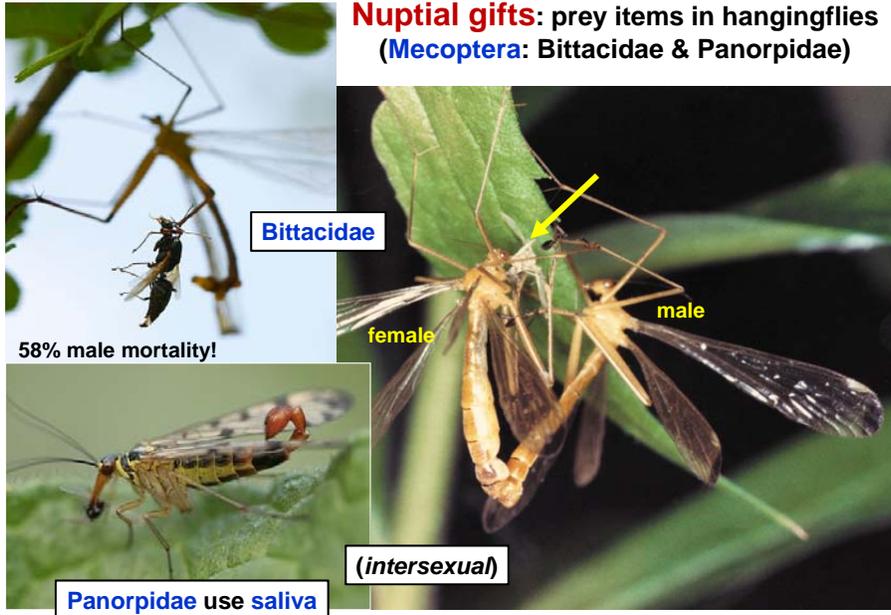
German cockroach (*Blattella germanica*)



Tree cricket (*Oecanthus nigricornis*)

(intersexual)

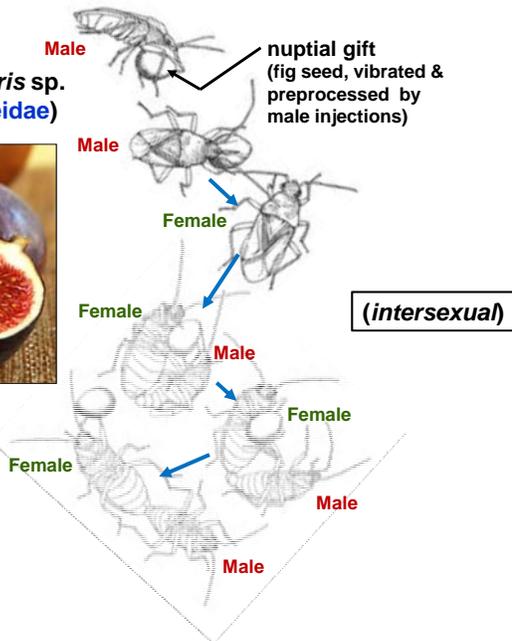




Nuptial gifts: other food items

Seed bug *Stilbocoris* sp.
(Hemiptera: **Lygaeidae**)





Male nuptial gift (fig seed, vibrated & preprocessed by male injections)

Female

(intersexual)

The diagram illustrates the process of nuptial gift exchange. It shows a male seed bug (labeled 'Male') offering a nuptial gift (a fig seed) to a female (labeled 'Female'). The gift is described as being 'vibrated & preprocessed by male injections'. The diagram shows a sequence of interactions: a male offers a gift to a female, she accepts it, and then they both move on to find another partner. This cycle repeats, showing multiple males and females interacting. A box labeled '(intersexual)' is placed near the diagram.

Male-male aggression:

Intrasexual sexual selection (male-male contests)

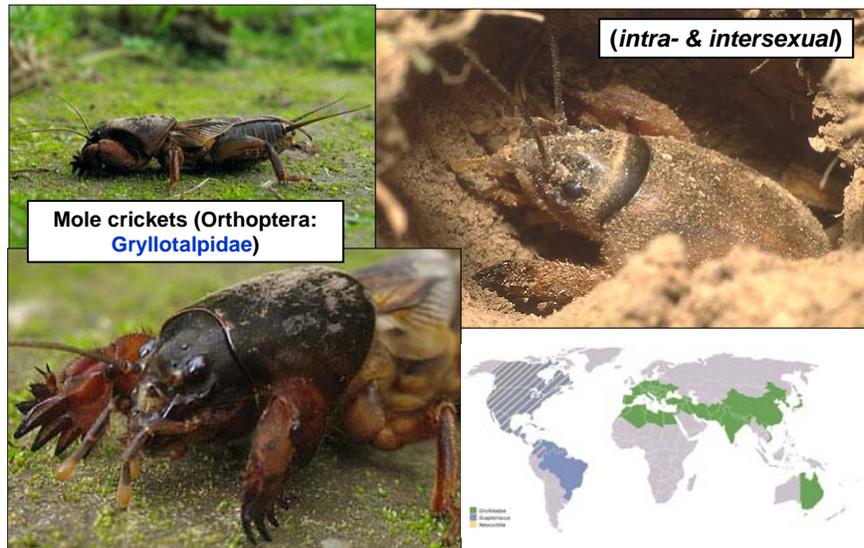


Stag beetles (Coleoptera: **Lucanidae**)





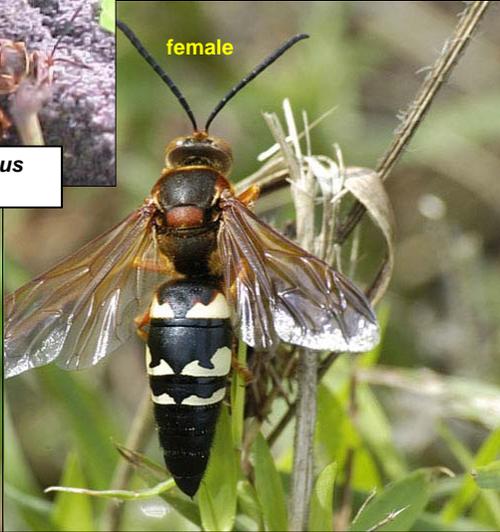
Territoriality: Defense of a resource (= burrow)



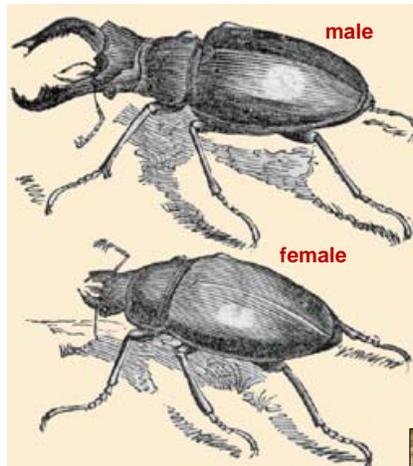


Territoriality:
 Defense of a resource
 (= virgin female in a burrow)

Cicada killer, *Sphecius speciosus*
 (Hymenoptera: **Sphecidae**)



Consequences of **sexual selection:**
 Sexual size & shape **dimorphism**



More complex interactions: **Uniparental care**

An Australian Sawfly:
(Hymenoptera: Symphyta: family?)



Biparental care and sexual role reversal



Burying beetles (*Nicrophorus* spp.)
Coleoptera: Silphidae

Giant water bugs
Hemiptera:
Belostomatidae



eggs

Eusociality: the “superorganism” & caste polymorphism

Hymenoptera: bees, wasps, & ants

Dictyoptera: Isoptera: termites

