kinds of insect eyes

stemma

structure

corneal lens - modified cuticle

crystalline lens to focus light on rhabdom

rhabdom

several adjacent retinula (nerve cells)

visual pigment that changes conformation when light strikes it

pigment cells to isolate retinula cells from surrounding tissue

occurrence - larvae

resolution - low but very light sensitive

ocelli

structure

corneal lens

many retinula cells beneath lens

on dorsal side of head

plane of focus below retinula cells, so image is blurry but light sensitivity is high

detect horizon and changes in light

compound eyes

collection of ommatidia

each ommatidium has

corneal lens

crystalline cone

retinula cells with rhabdomere

kinds of eyes

apposition eye-

each ommatidium separated by pigment cells

series of points of light of different intensities

good for acuity but poor light sensitivity

superposition eyes

no isolation by pigment cells

lenses cooperate to focus light on a rhabdom

enhanced light sensitivity

functions
vision
acuity varies greatly among insects
basic compound eye detects movement and patterns well
concentration of ommatidia in mantids gives them sharper vision
orientation
detection of plane of polarization
ants use to find nest in the absence of landmarks

Reproduction in insects

How do the sexes find each other?

Habitat sharing

Swarming
Visual markers identify a site
Can be male-only or female only
Allows for efficient mate finding or outbreeding

Leks
Aggregations of males that defend territory against conspecific males or court arriving females
Found often in fruit flies

Pheromones
One or both sexes emits pheromone
Attracts individuals of other sex and stimulates them to mate

Courtship

Close range intersexual behavior that induces sexual receptivity prior to and during mating
Allows for discrimination among species and among individuals
includes
visual displays
ritualized movements (dancing)
sound production
tactile stimulation
nuptial gifts
prey item
spermatophore
salt from urine, feces, sweat
male's own body?

Does the male 'offer' himself as nutrition to the female?
Little evidence for this, although females do benefit feeding on their mates
Internal fertilization

Spermatophore deposition—found in 'primitive' apterygote insects
Direct transfer through copulation—found in most winged insects

Spermatophore—packaged sperm
Direct sperm transfer—found in some bugs, beetles, flies, wasps