Brood parasitism

Brood parasites manipulate hosts to care for their young

- It reduces costs and risks of caring for young.

- Ants, wasps, birds, fish

- Cuckoo catfish
- Cuckoo wasp
- Cuckoo being fed by host

Brood parasitism

Parasites can be generalists (uncommon) or specialists in regard to # of host species.

- Over 200 species can be hosts to cowbirds

- Whydah

Brood parasitism

Facultative brood parasitism - parents build their own nests but will also “dump” eggs into others’ nests when nest sites are limited

- Some ducks, gulls, starlings, coots, others
- Often intraspecific

Brood parasitism

Obligate brood parasitism -

- Cuckoos, cowbirds, several other species
- Parasites have lost nest building and parental abilities
- 1% of bird spp.
Parasite young often have great impact on host RS
cowbird and wren chicks  cuckoo ejects host young

"Arms race"
Defenses against parasitism
- Attack parasite adults
- Desert or bury nest
- Reject parasite egg
- Low intra-clutch variation
- Reject foreign young

Low intraclutch variation with high interclutch variation
Parasite reduced to ‘guessing’ and suffer rejection

"Arms race"
Parasite counteradaptations:
- Egg laying timing
- Mimicry of eggs, chicks

Parasite eggs inner circle
Host eggs outer circle
**Common cuckoo ‘races’** – females that use redstart hosts lay blue eggs; those that use reed warblers lay spotted eggs.

- Egg color determined by genes passed from mom to daughter

![Common cuckoo egg](image1)

**Egg appearance influences rejection**

![Egg appearance influences rejection](image2)

**Variation of egg rejection**

Presence of cuckoos selects for rejection

<table>
<thead>
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<th>Britain cuckoos present</th>
<th>Iceland cuckoos absent</th>
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<td>5</td>
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<tr>
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<tr>
<td>Keep</td>
<td>11</td>
<td>23</td>
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![Meadow pipit](image3)

![Pied/white wagtail](image4)

**Egg discrimination**

- Host rejection rate influences closeness of egg mimicry
  - Birds have enhanced color vision
  - Objective measures of reflectance show amount of overlap in appearance

![Egg discrimination](image5)
Arms race stages
If egg mimicry is strong but parasitism is low, hosts may not evolve further defenses
- Costs of rejection errors
- Imprinting on eggs vs. chicks

Some parasite hosts can discriminate young
Coots experience intraspecific parasitism. Eggs and chicks can be rejected.
- Adults imprint on young with first brood

Host feeding of parasite young

Chick mimicry relatively rare
Mouthpart and body mimicry
Mimicry of host chick calls

Horsfield's bronze-cuckoos

Superb fairy-wren (don’t reject eggs, but abandon 40% of chicks)

Shining bronze-cuckoos