Evolutionary approach to animal behavior

Learning how and why animals behave is an intrinsically fascinating business.

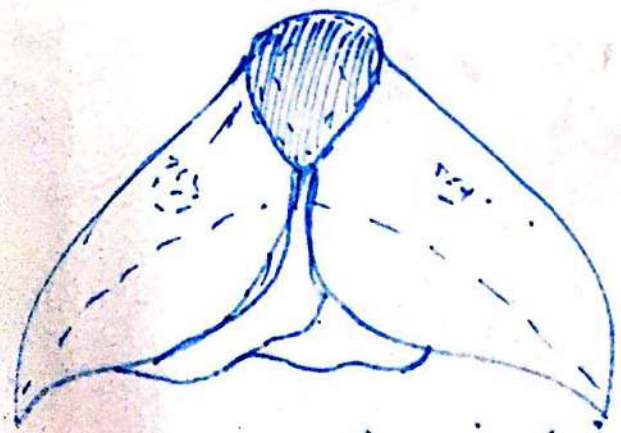
Ex: ① male damselfly actually use their penis as a scrub brush to remove the sperm of rival males from their mates.

② female Seychelles warblers could control the sex of their offspring so as to have daughters at times when it was most advantageous.

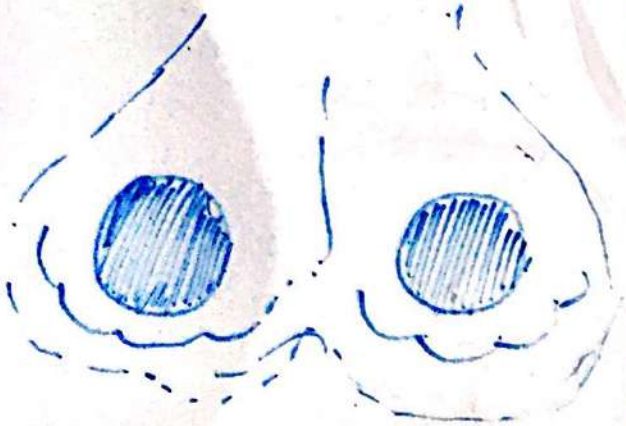
Animal behavior study deals with the introduction to entertaining findings. In addition, it also help us to understand how scientists have determined that the damselfly penis serves as a competitive weapon or the control of offspring sex ratio by the Seychelles warbler is an adaptation with a particular purpose.

Proximate and ultimate questions about behavior:

Example : moth, Automeris sp.



(1) moth in its resting position



(2) moth with exposed hind wings.

Some questions will arise by seeing this behavior of Automeris sp.
These queries can be assigned to two different fundamental categories:

1) proximate mechanisms (how questions) inside the moth that cause such behavior

2) ultimate or evolutionary reasons for the behavior (why questions).

How questions: ask how an individual manages to carry out an activity. This category of questions requires explanations about how an animal's internal mechanisms developed and how they then cause the animal to behave in a certain way.

Why questions: ask why the animal has evolved the mechanisms that underlie its actions.

How questions about Proximate causes:

For the wing flipping reaction of an Automeris moth, following questions can be considered

1) How do the moth's muscles make its wings move, and what controls those muscles?
2) How does the moth know when it has been touched?
3) Did the foods the moth ate as a caterpillar influence how it behaves as an adult?
4) Did the moth inherit this behavior from its mother or father?

Subdivision of proximate causes into complementary groups:

1) it deals with the interactive effects of heredity and environment on the development of the mechanisms underlying wing-flipping.

2) other one deals with how the fully developed physiological mechanisms actually operate when the behavior occurs.

Why questions about ultimate causes.

1) what do today's moths gain, if anything, by wing flipping?
2) Has the behavior changed over evolutionary time
3) If so, what were the predecessors of today's wing flipping response?
4) If the behavior has changed, what caused the changes.

Interweaving proximate and ultimate questions about behavior:

Example: (1) Bee wolves and Homing behavior
Philanthus triangulum

(2) Gulls and Egg shell removal.

• How to discover the causes of Behavior — Scientifically!

1) HOMING BEHAVIOUR IN BEEWOLVES

2) EGG SHELL REMOVAL IN SEA GULLS

When researchers are describing causes for a particular behavior, why did they think that their discoveries were valid? Why should we take their claims seriously?

The answer to these questions requires that we take a look at the logical foundations of a scientific inquiry, an endeavor that employs a successful approach for sorting out possible explanations.