

COMMENSALISM



TYPE OF BIOLOGICAL INTERACTION

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COMMENSALISM

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DEFINITION

COMMENSALISM: definition

Commensalism is an interaction that links two living beings that share the same habitat.

Only one benefits from this interaction, the other has neither benefit nor harm.



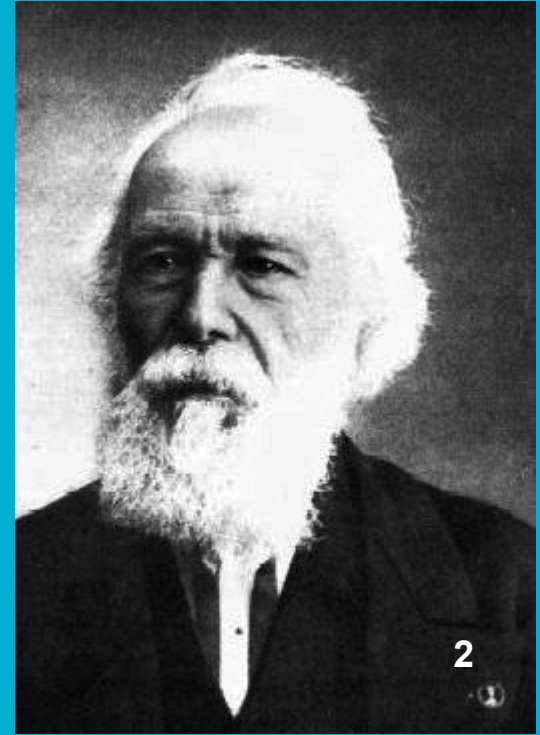
A nurse shark (*Ginglymostoma cirratum* - Family Ginglymostomatidae) carries some remora or suckerfish (Family - Echeneidae).

COMMENSALISM: definition

The term commensalism comes from commensal (cum mensa - literally meaning to share the table in Latin). The etymology might suggest only the sharing of food. In reality, the commensal, the species that benefits in this type of biological relationship, can obtain food, support, transportation, or protection, depending on the case

COMMENSALISM: definition

The term commensalism was first used by Pierre-Joseph Van Beneden, a Belgian zoologist and paleontologist who lived in the 19th century (1809 - 1894). The scholar particularly distinguished himself for his studies on parasitology and marine biology.

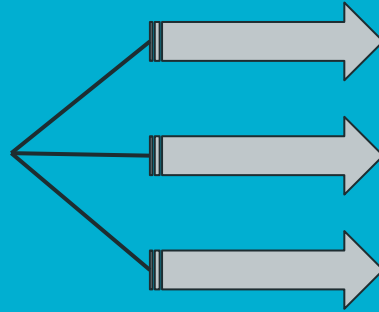


Pierre-Joseph Van Beneden

COMMENSALISM: definition

Commensalism is therefore a form of **symbiosis**. In addition to commensalism, symbiosis also includes mutualism and parasitism.

SYMBIOSIS



Commensalism

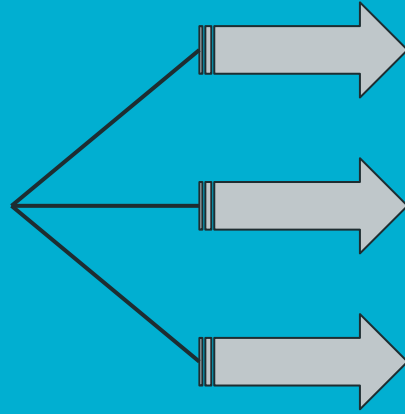
Mutualism

Parasitism

COMMENSALISM: definition

There are different types of *commensalism*.

COMMENSALISM



Inquilinism

**Commensal
Phoresis**

Metabiosis

COMMENSALISM: definition

The symbol for *commensalism* is:

(+/0)

This symbol clearly indicates the interaction between the two living beings: one benefits (+) while the other does not (0).

INQUILINISM

COMMENSALISM: inquilinism

—
One organism lives permanently on a second organism.

This is the case with **epiphytic plants** (e.g. mosses, staghorn fern, lichens and orchids) or **birds** that live in tree cavities.



A maple plant is home to mosses and lichens. All examples of epiphytic plants.

COMMENSAL PHORESIS

COMMENSALISM: commensal phoresis

An animal chooses another as a means of transport.

Let's go back to the first photo.

Remora are cosmopolitan pelagic fish that, thanks to adhesive discs, attach themselves to larger organisms (cetaceans, turtles...)



Example of commensal phoresis

COMMENSALISM: commensal phoresis

Another example is **mites**; they willingly get transported by insects like flies.

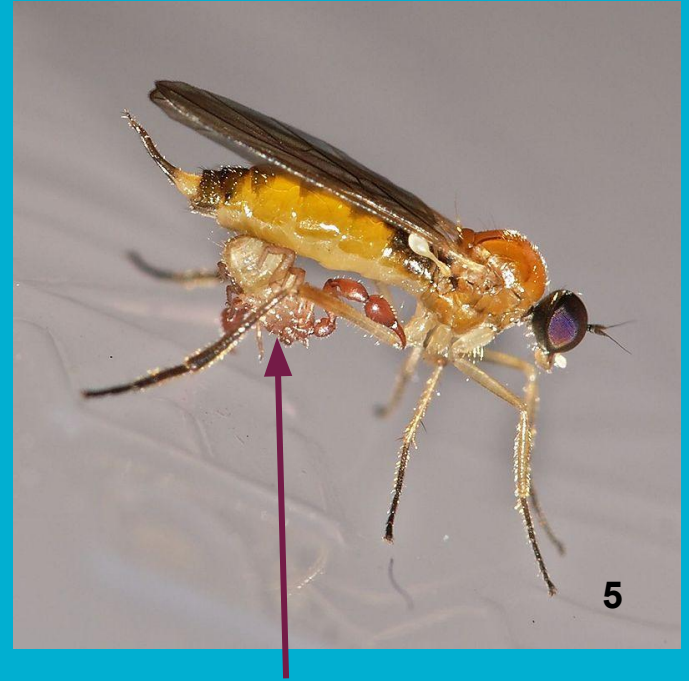
But they don't reject other "taxis" such as bees or butterflies.



Phoretic mites on a fly

COMMENSALISM: commensal phoresis

It is also very significant the case of **pseudoscorpions**, which generally choose mammals, and not only... sometimes they are not much smaller than the "transporter." This is the case when they choose dipterans (flies with two wings).



Phoretic pseudoscorpion on a dipteran known as "dance fly" in English

COMMENSALISM: commensal phoresis

In reality, they are sometimes much smaller than the organism that carries them. Look at the photo on the side; it's actually very difficult to spot the phoretic pseudoscorpion.



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Phoretic pseudoscorpion on a tipula mosquito

METABIOSIS

COMMENSALISM: metabiosis

An organism uses something that another organism has created before. A typical example is the **hermit crab** that uses the shell of a gastropod to protect its soft and defenseless abdomen.



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To the left
The hermit crab
is coming out of
its shell.

To the right
The hermit crab,
out of its shell,
shows its soft
and defenseless
abdomen.



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IN-DEPTH ANALYSES

COMMENSALISM: in-depth analyses

Several bacteria are part of the normal human microbial flora (microbiota) without causing harm or benefit and are therefore considered commensals.

For example, the bacteria that live on the skin. Their food is cellular debris and secretions from the glands. Among these are staphylococci, obviously not the pathogenic strains.

We also have to remember the bacteria that live in the intestine like *Staphylococcus faecium* or *Enterococcus faecium*.

COMMENSALISM: in-depth analyses

The case is interesting because, for example, *Enterococcus faecium* is a gram-positive bacterium that lives as a commensal in the gastrointestinal tract of animals and humans but can also become a pathogen causing neonatal endocarditis and meningitis.

We'll talk about this topic in another chapter.

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