**Types of Parasites, Parasitic Life Cycles, and Hosts**

**Types of hosts**

1) **Definitive host**:The definitive host is the one in which a parasite reaches sexual maturity and undergoes sexual reproduction.

2) **Intermediate host:** The host in which asexual development of the parasite occurs is referred as intermediate host.

3) **Paratenic host**: Also known as Transport host or Carrier host or Transfer host. Sometime the parasite enters a host in which it does not undergo any development but remains alive till it gains entry in the Definitive or Intermediate host. Such a host termed as paratenic host. They are believed to bridge the ecological gap between the Definitive and Intermediate host**.**

**4) Reservoir host:** Also known as Temporary host. In the absence of regular hosts, some parasites survive in the reservoir hosts. Reservoir host become the source of infection to regular hosts.

5) **Vector host**: It is the host in which a part of life cycle of a parasite takes place and is also instrumental in the transmission of the parasite from main host to other.

**Type of Parasites**

* **On the basis of Generation**

**1) Monogenetic Parasite-** These require hosts of only one species to complete their life spoon**.** **e**.g.-*Ancylostoma duodenale*, *Diplozoon paradoxum*

***2)* Digenetic Parasite-** These require hosts of two different species to complete their life spoon. e.g.-*Leishmania donovani* and *Fasciola hepatica*

* **On the basis of Pathogencity**

**1) Pathogenic Parasite-** Those parasites which are caused disease and act as a pathogen called pathogenic parasite. **e**.g.-*Taenia solium* (caused taeniasis in Man)

**2) Nonpathogenic Parasite-** They are not cause any disease in the host. e.g.-*Taenia hominis* (habiting in the intestine of Man without causing harm or disease)

**3) Intermittent Parasite-** They are not constantly associated with the host. They obtain nourishment from host at time to time. e.g.-*Bed bugs* (Suck the blood meal from Man)

* **On the basis of Localization**

**1) Ecto Parasite-** Those parasite which are live on the host or Outside of the host are called ectoparasite. e.g.- *Bed bugs* (Mostaly Arthropods Parasites)

**2) Endo Parasite-** Those parasite which are live in the host or Inside of the host are called endoparasite. e.g.- (Generally Protozoans, Helminthis & Neamtods Parasites)

**On the basis of Dependency**

**1) Facultative Parasite-** this parasite which can live in hosts if it is available, but capable of living independently if its host is not available, are known as facultative parasite. e.g.- *Mycobacterium tuberculosis* (cause tuberculosis in man is a facultative parasite)

**2) Obligate Parasite-** Those parasite which depend upon the specific host throughout life are called obligate parasite. e.g.- *Taenia solium*

* **Depending on size:**

**1) Macroparasites**: parasites which are visible to the naked eye, such as helminths, tick, mosquitos etc.

**2) Microparasites**: Parasite which are typically smaller or microscopic in size, such as protozoa.

**The life cycle**: All parasites have a life cycle that involves a period of time spent in a host organism and that can be divided into phases of growth, reproduction, and transmission. Life cycles of parasites can be further divided into two categories: **direct** and **indirect**.

**Types of life cycle**

1. **Direct life cycle:** Parasites with direct life cycles have only a single host. For example, most adult monogeneans are found on fish, whereas their larvae are free-living.
2. **Indirect life cycle** Parasites with indirect life cycles have several hosts. Adult digeneans, for instance, are found in various vertebrates and their larvae infect at least one and often several hosts.



**Direct life cycle**



**Indirect life cycle**

**Symptoms of diseases and parasites in fishes**

How do you recognize that a fish might be ill?

* Colour may fade out / change
* Body shape, condition and / or behavior will be abnormal
* The fish may refuse to feed or overfeed and trailing faces appear at vent.
* Condition of the fins and gills will deteriorate. Fins may be clamped close to body.
* The fish may not keep its swimming position.
* There may be signs of growth or abnormalities in injuries.

**Importance of studying fish parasitology**

1. For identification parasite
2. For identification of diseases

**Classification of different parasites**

**1- Protozoa**

**a. Ciliata**

**b. Flagellata**

**c. Sporozoa**

**d. Sarcodina**

**2- Metazoa (helminthes)**

**a. Nemathelminthes (roundworms)**

**b. Platyhelminthes (flatworms)**

**i. Trematoda (flukes)**

**ii. Cestoda (tapeworms)**

1. **Some arthropods**
2. **Leeches**
3. **Crustacea**