Study of food-web and inter-relationships among organism in river stream

Dragonfly Nymph

Small Long-armed Shrimp

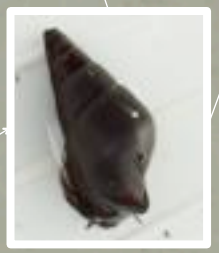
Sucker-belly Loach

Broken-band Hillstream Loach

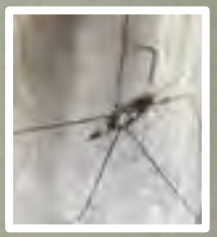
Fishfly larva

Water Penny

Toothed Bee Shrimp



Stream Snail



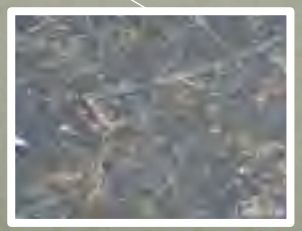
Water skater

Mayfly Nymph

FOOD WEB

of stream in Tsuen Wan

Algae



Detritus

zooplankton

Interpretation of the food web

- *Algae is producer and is at the lowest trophic level.*
- *Stream Snail, sucker-belly loach and Broken-band Hillstream Loach are herbivorous and the main consumer of algae, situated at primary trophic level.*
- *Water penny feeds on algae and situated at primary Level.*
- *Mayfly nymphs are herbivorous , feeds on algae and are at primary trophic level.*
- *Fishfly larva are carnivorous, feeds on stream snail and are at secondary trophic level.*
- *Dragonfly nymphs are carnivorous and feeds on small fish, situated at secondary trophic level.*
- *Water Skaters feeds on zooplankton and insects , and situated at primary trophic level.*
- *Small long-armed shrimps are carnivorous and feed on stream snail and small fish, situated at secondary trophic level.*
- *Red Cheek Gobies are ommivorous and feed on shrimps ,and situated at secondary trophic level.*

Inter-relationship among organisms

- **Commensalism**
- 1. Nymph attaches on the surface of stream snails to seek protection and camouflage.
- 2.Stream snails attach on the roots of aquativ plants , seeking substratum.

Inter-relationship among organisms

- **Mutualism**

1. **Red cheek Goby provide sharp eyesight while the bottom-dwelling shrimps(weak eye-sight) do most of the digging and dwelling.**

Characteristics of Site A&B

Site A

- Velocity of water current is relatively slower.
- Water quality is worse

Site B

- Velocity of water current is relatively high due to the narrower stream bed.

Effects: lower the biodiversity as channelization destroy the natural habitat of most organism. There is a reduction in habit, elimination of riffles and pools, greater fluctuation of stream levels and water temperature and shifting substrates. The biomass will be reduced up to 20% of the original.

- how to convert the present channelized river into an environmental and ecological friendly river?
- Aim: To keep the environment as natural as possible by minimizing the interference by human activity

1)the river bed should not be covered with concrete. river bed covered with concrete is not available for organism to live as a habitat.

2) Aquatic plants should be grown on the two sides of the river, rather than channelized be concrete. This can increase the biodiversity as roots can act as an attachment site for some organisms(ie.snail),providing a microhabitat. Growing plants on the two sides of the river can also relieve the problem of global warming due to the cooling effects of transpiration of plants.

3)There should not be any artificial modification on the water flow pattern. For example, there should not be anything that blocks the river to slow down the water current or even the formation of stationary pools.

4)there should not be any drainage discharging untreated sewage into the river. any discharge should be treated before. This can improve the water quality of the river.

5) "no net loss of wetland" policy. It means that stream channelization in one place has to be offset by the creation of new wetlands in another, a process known as "mitigation.