

# Exercise 18

**Aim:** To study the adaptations in animals living in xeric and hydric conditions

**Principle:** The aquatic ecosystem exhibits a different pattern of abiotic factors as compared to those in terrestrial ecosystem. The temperature of the water, penetration of sun light, the physicochemical characteristics of water body affect the growth and survival of the biotic community. In order to overcome the cumulatory effects of these factors, certain morphological and anatomical features, as well as physiological processes develop in the organisms. These modifications in animals are called adaptive features. We will study adaptations in selected animals living in aquatic and xeric condition.

**Requirement:** Animal specimen/models of xeric (rat, camel, squirrel) and hydric (fish, frog, prawn, etc.) conditions

## Procedure

Observe the animals provided and note down their adaptive features in the observation table with example.

## Observations

### Hydric adaptations

Features	Adaptations	Example (For students)
Body colour	(a) On dorsal surface (b) On ventral surface	
Body contour	(a) Streamlined (b) Disappearance of neck constriction (c) Tail enlargement (d) Position of external nostrils (e) Loss of external ears (f) Position of eyes (g) Presence of eye protecting membrane	
Locomotory	(a) Fins or fin-like expansions of the body wall (b) Loss of limbs (c) Webbed feet	

Integument	Presence of dermal/epidermal derivatives (a) Scales (b) Hairs (c) Mucous glands (d) Oil glands	
Mouth	(a) Position (b) Presence of teeth a. Upper jaw b. Lower jaw	
Respiratory organs	(a) Gills/lungs (b) Cutaneous	

### Xeric adaptations

Features	Adaptations	
Moisture getting	(a) Preference for juices as food (b) Hygroscopic skin	
Moisture Conservations	(a) Storage of water in body (b) Avoidance of evaporation (non-perspiring)	
Body colour	(a) Protective mimicry (b) Predating mimicry	
Body contour	(a) Position of a. Nostrils directly upward b. Reduction to pin-head size (b) Position of eyes a. Covering of eyes b. Size	
Skin	(a) Hard (b) Spiny (c) Poison glands	
Limbs	(a) Speed (b) Long slender (c) Padded feet	
Scrotum	Present or Absent	

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### Discussion

You may have noticed many features in the body of aquatic animals which support their life. As the different aquatic bodies vary to a great extent, there are many other adaptive features you may notice. For example the aquatic organism in ponds, lakes, river and sea.

### Questions

1. Name the features that helps a frog for aquatic life.
2. What are the adaptations present in xeric animals for conservation of water?

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