

## PARENTAL CARE IN AMPHIBIA

The nursing of eggs and embryos by the parents called **parental care**. In amphibians, there are many methods for the protection of the eggs and the young.

These methods fall under two heads.

1. Protection by the parents by means of nests, nurseries or shelters
2. Direct caring by the parents

### 1. NESTS

The parents of frogs and toads construct nests or shelters of leaves into which the eggs are laid. Four types of nests are constructed. They are

- i. Mud nest (in enclosures in the water)
- ii. Foam nest (in holes near water)
- iii. Tree nest (in nests on trees)
- iv. Gelatinous bags

#### i. Mud nest

A large tree frog, *Hyla faber*, protects its progeny by building **basin-shaped** nest or nursery in **shallow water** on the border of the pond. The female scoops mud to a depth of 7.5 to 10 cm. The eggs and larvae are thus protected from predators.

#### ii. Foam nest

Japanese tree frog, *Rhacophorus schlegelii*, the female first produces a secretion from cloaca which is beaten into a froth. The eggs are deposited into the froth.

#### iii. Tree nest

*Phyllomedusa* deposits the egg in the leaf nests. The leaf nests are constructed by folding the margin of the leaves. Leaf margins are glued together by cloacal secretion. These leaf nests are seen in the branches of trees overhanging the water. After hatching the larvae jump into the pond.

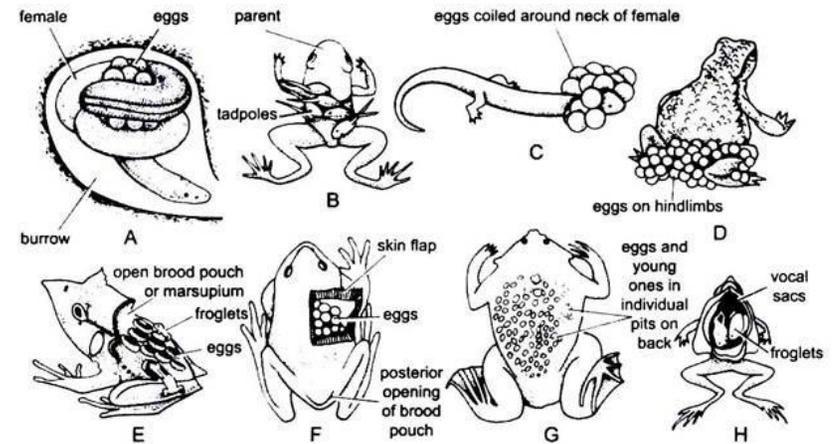
*Hyla resinifictrix* collects bees wax from the hives of certain stingless bees and applies it on the inner surface of a shallow cavity on the tree. When this cavity is filled with rain water, the female lays eggs.

#### iv. Gelatinous bags

The eggs of *Phrynixalus biroi* are large which are enclosed in sausage shaped transparent membranous bag secreted by the female and is left in the mountain streams. The whole development takes place within the eggs and little frogs go out in perfect condition.

## 2. DIRECT CARING BY THE PARENTS

Some species of amphibians directly care their eggs and young ones.



**Fig. 20.2.** Direct parental care in Amphibia. A—Female *Ichthyophis* coiling round eggs; B—Transportation of tadpoles attached to back of a parent; C—*Desmognathus fuscus* with eggs; D—*Alytes obstetricans* carrying eggs around his thighs; E—A marsupial frog with eggs exposed in open brood pouch on back; F—*Nototrema* or *Gastrotheca*, with flap of dorsal brood sac cut open to show eggs; G—In *Pipa*, eggs develop completely into individual capsules on back of female; H—Froglets inside vocal sacs cut open of female *Rhinoderma darwini*.

#### i. Tadpoles transported from one place to another

Small South American frogs, *Phylllobates* and *Dendrobates* lay their eggs on ground. The hatched tadpoles adhere by their sucker-like lips and flattened abdomen to the back of one of their parents. Thus, they are carried from one pond to another.

#### ii. Eggs protected by male

The eggs (17 in number) of *Mantophryne* are held together by an elastic gelatinous envelope forming a clump over which the male sits for development.

#### iii. Eggs carried by the parents

The toad of Europe, *Alytes obstetricans* the eggs are wrapped round the back of the thigh of the male and the male withdraws himself into a hole near the pond. Now and then the male carries the egg to the water to moisten them.

In tailed amphibian, *Desmognathus fuscus*, the female carries the egg around the neck in the form of a string.

**iv. Eggs in back pouches**

In a Brazilian tree frog, *Hyla goeldii*, the female carries the eggs on the back within an incipient brood pouch in which the eggs remain exposed.

In **Nototrema** also the eggs are placed over the back in a single large brood pouch covered by the skin.

In *Pipa Americana*, the eggs are carried on the back of the mother. During breeding season, small cutaneous pits develop on the dorsal skin of the female. The male places the eggs on these small pits. Each pit has an operculum which covers the pit. The partition between the pits is highly vascular. The larvae develop inside these brood pits. The tadpole larva comes out of the pit in about 80 days.

**v. Coiling around eggs**

Ichthyophis, limbless amphibian, lay eggs in burrows in damp soil and coil around them until they hatch.

**vi. Ovoviviparous**

Some amphibians are ovoviviparous. The female retain their eggs in the oviduct and they give birth to young ones. Eg. *Salamandra salamandra*, *Typhlonectes*