

PARENTAL CARE IN AMPHIBIA:



PARENTAL CARE:

Any form of parents behaviour that appears likely to increase the fitness of an offspring



Introduction:

Amphibians show great diversity in Parental care, looking after the eggs or young until they are independent to defend from predators is known as parental care.



- ❖ It is a common experience to most of us to see that the cat transport its kittens by carrying them at the neck with its teeth. the young ones are not hurt but some times they even become ferocious when we try to go near their young ones.
- ❖ Parental care is seen among chordates right from fishes to mammals and this reached to its zenith in man.
- ❖ Parents take care of their young ones until they become self dependent
- ❖ Parental care is very diversified in amphibians, no other groups show more diversity than the amphibians

The parental care of AMPHIBIANS can be categorised in three ways :

1. Protection by parents by means of nests or nurseries
2. Direct caring by parents
3. Viviparity

NEST AND NURSERIES

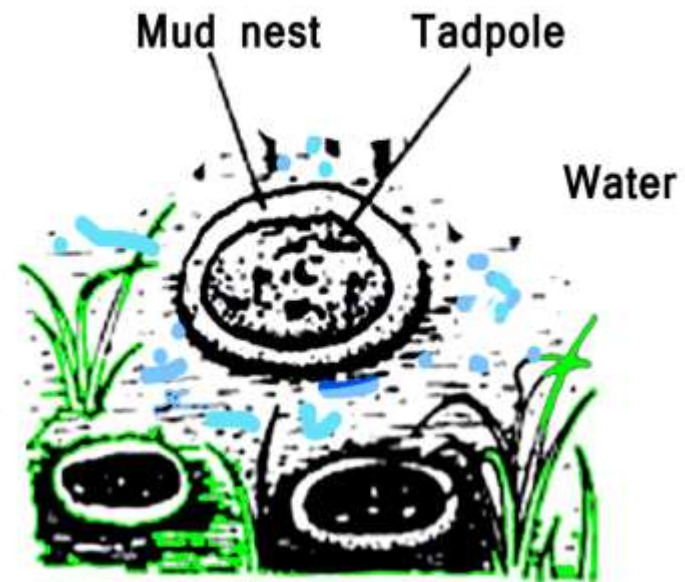
Many AMPHIBIANS build nets and nurseries to protect their progeny. These are of 8 types:

1. In enclosures in the water
2. In holes of water
3. In nests on trees overhanging water
4. and rocks on banks
5. Gelatinous bags in the water
6. On trees away from water
7. Defending territories
8. Mud nests
9. Direct development



In enclosure in the water:

- A Brazilian tree frog *HYLAFABER* known as Ferrerio protects its progeny by constructing a basin shaped nursery on the edge of the pond.
- In the first instance the female digs a pit of 3 to 4 inches depth.
- Then with the mud that has come out, it constructs a circular wall which extends out of the surface water.
- The bottom of the pit is levelled by its belly and hands.
- The inner surface of the wall is smoothed by the webbed feet. The eggs are deposited in the pit and the parent protects them and the early larvae from enemies



In holes of water:

- Japanese tree frog *Rhacophorus schlegelii* adopts another method.
- Male and female frogs embrace and burry themselves in a pit at the bottom of the pond, a few inches above water level .
- The wall of the pit is polished.
- Female releases a secretion which is made up made into a Froth.
- Then the eggs are liberated into it and the male releases the sperms.
- Later the frogs get separated.
- The path used by the male and female frog to enter into the pit will be used by the larva to come out of the pit and completed life history



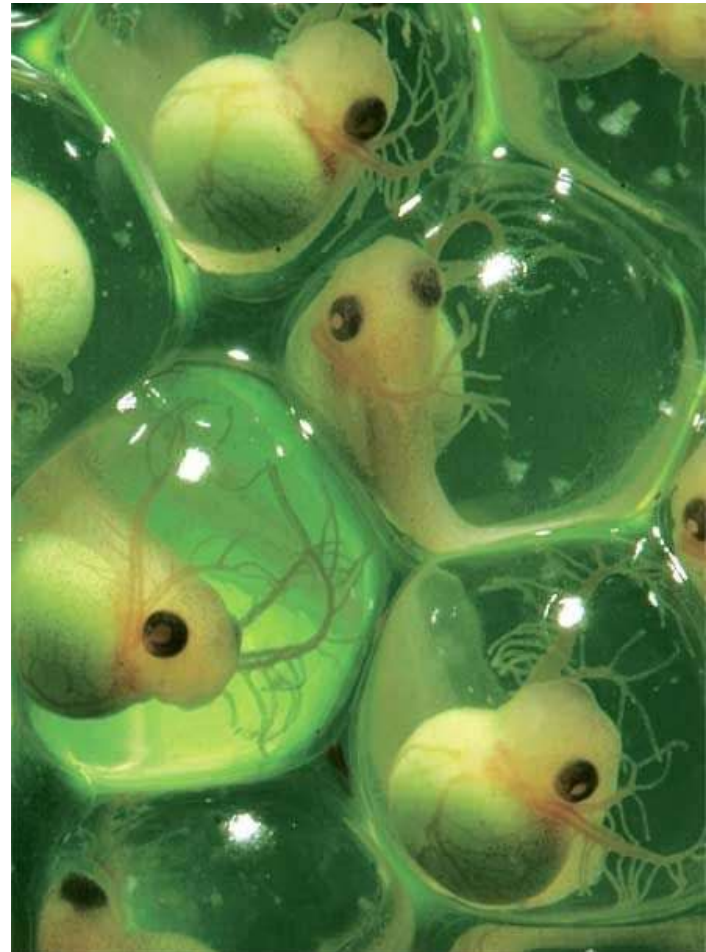
In nests on trees over hanging water and rocks on banks:

- Some tree frogs like *Phyllomedusa* of South America, *Rhacophorus malabaricus* in India and *Chiromantis* of Africa lay their eggs on trees in nest made up of froth which is attached to one and or many leaves of branches over hanging the water.
- The Larva move in the froth.
- They fall into the water after external gill stage and complete the life cycle.
- That was drop into water when the eggs hatch, the frog lines the cavity with the bee wax the end development in the microhabitat.



Gelatinous bags in the water:

- Female frog of *Phrynxalus biroi* prepares sausage shaped transparent gelatinous membraneous bags and lay large eggs in them and leave it in the mountain streams. After the completion of development small frogs come out of the bag,with large tail.
- Large tails serves as respiratory organ of young months as gills are absent.
- Salamandrella keyserlingi* lays 50 to 60 small eggs in a gelatinous pouch and attaches it to aquatic plants.



On trees away from water:

- Many species of Hylodes of America, deposit the eggs in damp places under stone, or leaves of the plants.
- The eggs are large in size. As they have lot of yolk in them, entire development is completed there only and a young one with a vestigial tail comes out.
- The tail act as an respiratory organ as gills are not present.



horned marsupial frog
(*Gastrotheca cornuta*)
female

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- **Defending territories:** Male frogs of *Rana clamitans* guard its territory by attacking the intruders while female protect the eggs.
- *Mantophryne robusta* another frog, the male sits over and holds the gelatinous elastic enveloped filled with eggs.

Mud nests:

In Hylafaber a Brazilian tree frog, male digs a hole in mud in Shallow water and the female Lays the eggs there.



Direct development:

In some frocks like Eleutherodactylus, Arthroleptis, Hylodes etc. The eggs directly hatch into small frogs. so larva mortality is prevented.

DIRECT NURSING BY PARENTS(3 TYPES)

Transportation of tadpoles:

- South American frogs like *Phylllobates* and *Dendrobates* carry the well developed tadpoles on their back.
- The tadpoles hold the frogs with suckers like lips .
- This feature helps to carry the progeny from one pool to the other when they are getting dried up.

Protection of eggs by male :

- The eggs of the *Mantophryna robusta* are attached to the body by gelatinous envelope.
- The male sits on the group of the eggs and hold them with hands.
- In the development larvae do not have the gills and hence the tail act as a respiratory organ .
- In *Alytes obstetricans* the female lays eggs and the male entangles them around its hind legs.
- It carries them till they are ready to hatch .

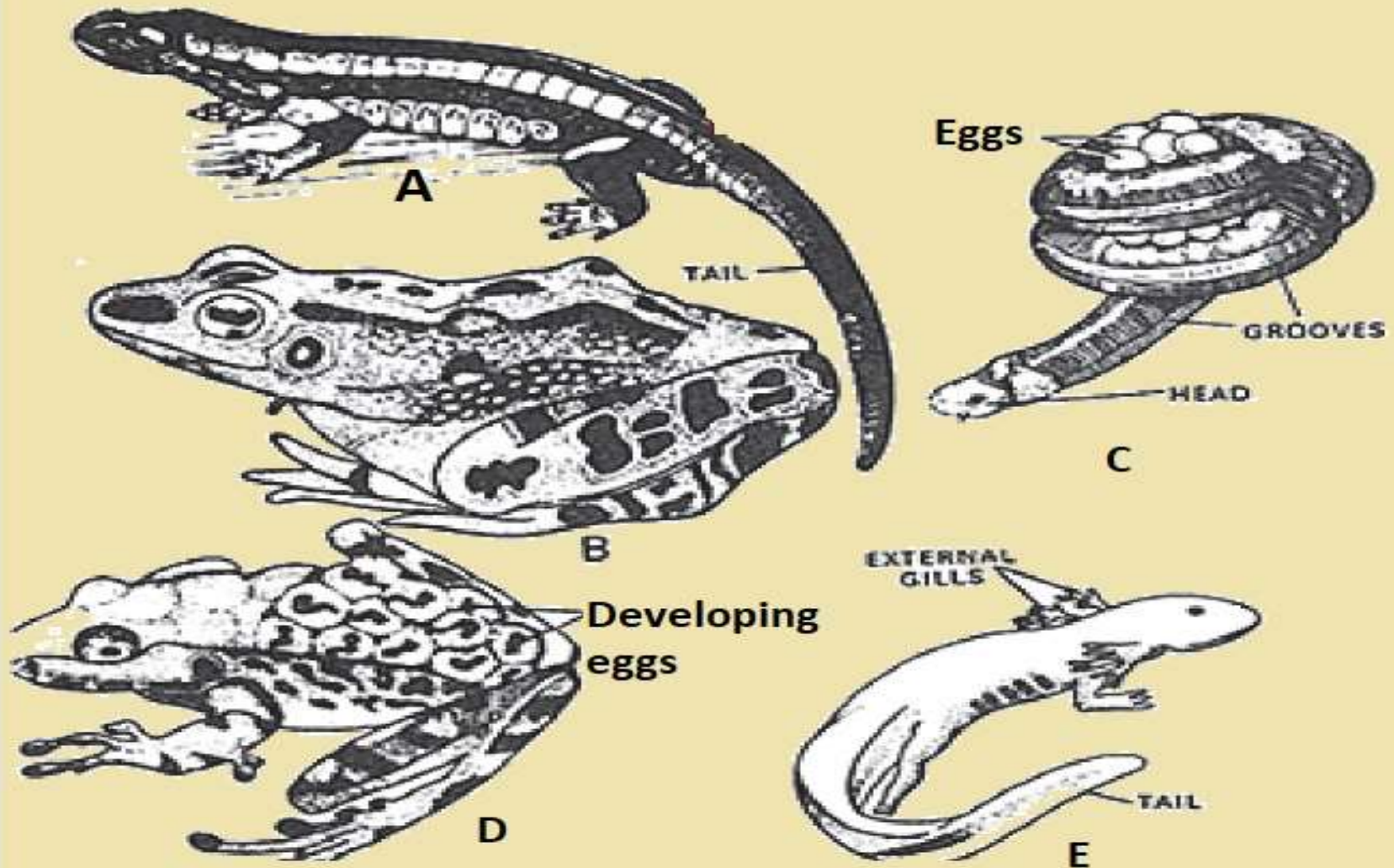
EGGS IN POUCHES:

<i>Pipa americana</i>	–carried on the back of mother.
<i>Nototrema</i>	–eggs are covered by skin forming a large brood pouch.
<i>Rhacophorus reticulatus</i>	-eggs are carried on the belly .
Gular pouch	-frogs push fertilized eggs into vocal sacs.
<i>Hylambates breviceps</i>	- eggs are carried in buccal cavity of female.
<i>Arthroleptis</i>	–carry the larvae in the mouth .
<i>Rheobatrachus silus</i>	-female keeps the eggs in stomach.



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Parental Care in Amhibians



Eggs in back pouches

VIVIPARITY:

Two small East African toads *Pseudophryne vivipara* and *Nectophryne tornieri* are viviparous and give rise to young ones.

They retain eggs in oviducts.

URODELA: In some forms larvae comes out soon and parental care is absent but in some forms parental care is observed by building nests or directly take care by the parents.

Protected by means of nests will be taken up by two methods.

In holes on lands or in trees: A urodel by name *Autodax* lays its eggs in a holes on ground or settles a hole on the tree and there it lay eggs .Both the parents take care of the young ones which remains from a considerable time in the pit.

In transition bags:

Salamandrella deposits its eggs in a gelatinous bag which is attached to an aquatic plant present below the water level .

The larva remain and bottom of the bag.

