

PARENTAL CARE IN AMPHIBIA

Introduction: -

Struggle for existence and ^{Respectively} ~~Perpetuation~~ perpetuation of race are rules of nature. Parental Care is an important phenomenon in the trend of evolution and is met with ~~an~~ in different vertebrate groups. It was first manifested in a brooding instinct or tendency for one or more parents to remain with the eggs. In amphibia it seems to have independently developed.

The various ways of Parental care in amphibia are as follows: -

1. Deposition of eggs in suitable place and bodies.
2. Construction of nests.
3. Carrying of the eggs by parents.
4. Development of brood pouch.
5. Development in uterus.

1. Deposition of Eggs in Suitable Place and Brooding: ⇒

Eggs are generally laid in such a place where they can develop properly. For this the eggs are deposited in a hole on muddy bank of river or pond as in *Rhacophorus schlegli*. The eggs are then covered by ~~form~~ foamy mucus, a dermal secretion, to prevent desiccation. Most amphibians which lay their eggs in water abandon them after fertilization. Ex - Hylodes, Triton, Tynobid salamander and Cryptobranchids.

2. Construction of ^(Eg) Nests: -

many amphibians have been observed to construct nests of various types for protecting the eggs. *Rhacophorus*

maculatus. digs a hole just above the water level and fills with froth and foam by the wriggling movements of hind limbs of both the male and female. the eggs are laid in the frothy mass ~~where they are~~.

Hyla faber digs a basin-shaped hole in shallow water and constructs a well with surplus mud around the rim of the basin. Phyllomedusa builds a nest by folding the margin of leaves. Shoots of trees are used for making nests by piton. Cryptobranchus builds nest on the river bottom and Salamandrella the eggs are deposited in a gelatinous bag which is fixed to below the level of water.

3. Carrying of the ^(Fig) Eggs by Parents: ⇒

Some amphibians are found carrying the eggs on their body. The female of Ichthyophis, Amphiuma and Siphonops lay the eggs in damp places. The females coil round the egg masses guarding them until hatching. In Alytes, the eggs are laid in two strings and become attached to the waist and hind limbs of males. When the eggs are about to hatch, the male carries them to some pond for hatching. The larvae come out and metamorphose into adults. In Hyla gaeldii, a Brazilian species, the females carry the eggs on their back. incipient brood pouches. In Desmognathus the females carry the eggs clustered around their heads and live in underground hole.
Ex - Ichthyophis, Alytes, Pipa. etc

Fig - ①

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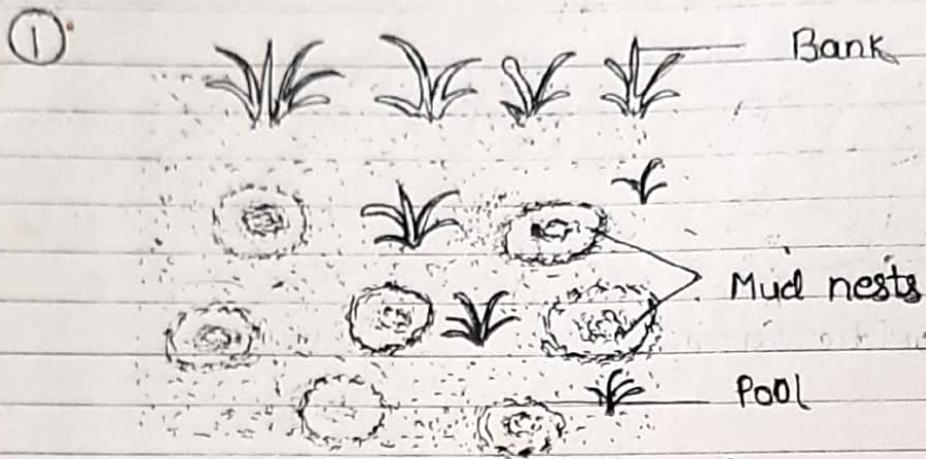


Fig:- Mud nests of hyla faber

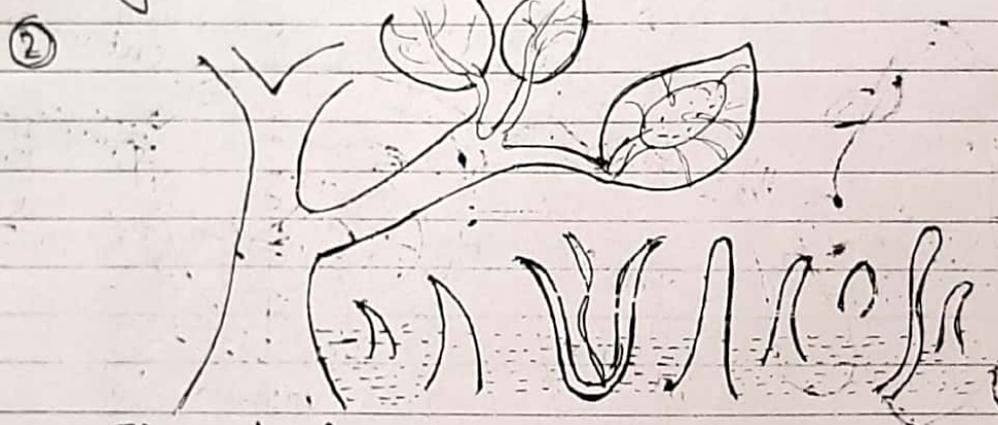


Fig:- Leaf nests of Phyllomedusa

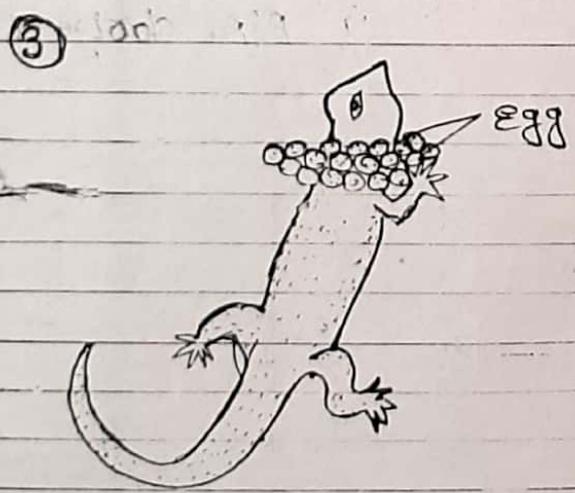


Fig:- Desmognathus fucus with eggs on the neck.

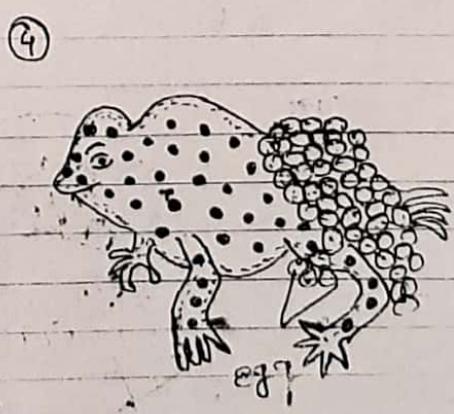


Fig: Mid wife toad

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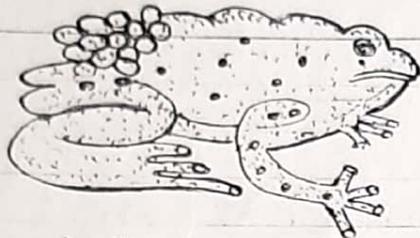


Fig. *Hyla goeldii* Carrings
eggs

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Fig: *Pipa* showing dorsal pits

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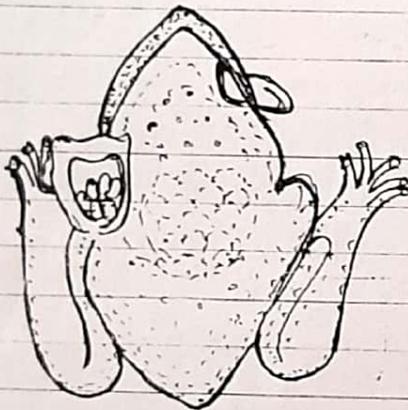


Fig: - *Nototrema marsubium*
with broad pouch

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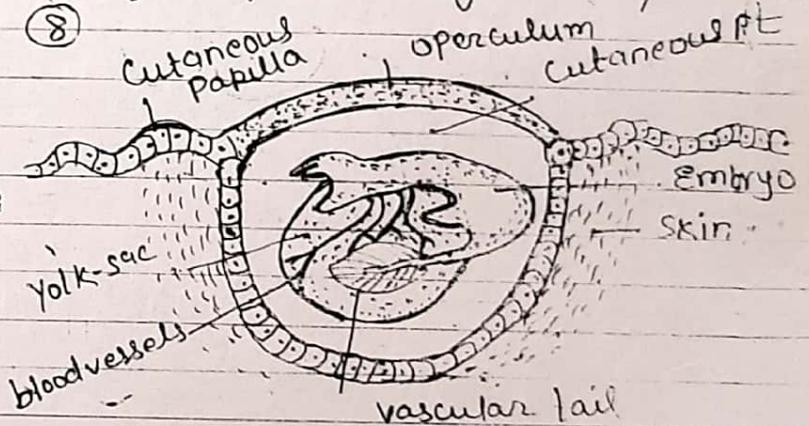


Fig: - Pseudo placental in
Pipa ~~clavigera~~

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Eggs

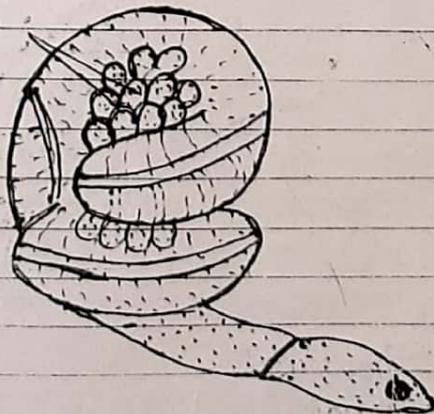


Fig: - *Ichthyophis glutinosus* coiling around eggs.

4. Development of Brood Pouch: ⇒

In some amphibians special pouches are developed for protecting the eggs. In *Crautotheca marsupialia*, the female develops a special brood pouch on her back for carrying the eggs. The pouch is closed on all sides except for a small slit-like opening in the posterior side. The female *Nototrema* carries her eggs in a dorsal horse-shoe-shaped pouch which develops during the breeding season.

In some species of *Rhinoderma* the males carry the eggs and tadpoles in special gular pouches which develop from vocal sacs. In *Arthroleptis* the larvae are kept inside the buccal cavity of the male at the time of danger. Ex - *Crautotheca*.

Fig - (2)

5. Development in uterus: ⇒

In geotrypetes the yolky eggs remain in the last part of the oviducts. The small embryos hatch and remain inside the oviducts till they grow in length to about 75 mm. The uterine milk provides nutrition to the developing embryo. The viviparous amphibians like *Salamandria atra* and *S. maculosa* exhibit further modification. Here the eggs are retained inside the uterine cavity. The larvae hatch out and become attached to the uterine wall by means of a membrane which allows metabolic exchange of materials. The broad vascular tail also serves this function.

Conclusion:

The above account indicates the various degrees of parental care exhibited by different amphibians. This instinct first manifests itself in simple brooding which affords protection to the eggs. The bond between parent and eggs gradually becomes stronger. However, the brooding habit in some cases may have resulted merely from exhaustion of the female after egg laying. But complex modification in structure and behaviour are observed in amphibian in respect of this particular instinct. In fact parental care has contributed much to the success of amphibians in perpetuating the race against many odds in the new terrestrial environment.