Postmetamorphic Survival and Community Interactions

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Goal of the Lecture

To familiarize students with post-metamorphic survival strategies.

Reading Assignments:

1) **Duellman and Trueb: Chap 8 (197-223), Chap 9 (all), Chap 10 (247-259)**

2) **Pinder et al. (1992): Handout**

Lecture Structure

I. **Estivation & Hibernation**

II. **Acquiring Food**

III. **Predator Defenses**

Estivation

State of reduced metabolism seen most commonly in anurans inhabiting xeric environments

Lack of Water and High Temperature

Breaking Estivation:
1) Rain, Barometric Pressure, Thunder
2) Photoperiod
3) Temperature

Burrows:
Non-random distribution
Few in pond bottoms
Summer: 5 cm
Fall: 20 cm
Winter: 50 cm
Must remain moist!!

Cocoons: Shed skin and mucous forms a capsule
Evaporative water loss reduced by 90%

Hibernation

State of reduced metabolism seen most commonly in anurans inhabiting cold environments

50% Mortality
Cold Temperatures
Salamanders???

Strategies:
1) Submergence in water (hypoxia) → Ranids
2) Hibernation in a burrow (avoid cold) → Bufonids & Pelobatids
3) Hibernation on land (tolerate freezing) → Hylids




Food Acquisition

Visual Detection
- Most are sit-and-wait predators
- Pursuit may occur

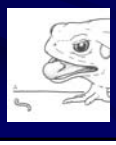
Primary Stimuli
- Size
- Movement

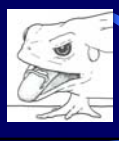
Prey Capture Protrusible Tongues

Trough

0.10-0.15 sec
Capture Prey
(0.07 sec)

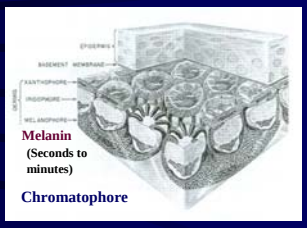
Lingual Flip



Predator Defenses

Xanthophore
Red, yellow, orange
Iridophore
Reflect light
Melanophore
Dark brown or black



Melanin
(Seconds to minutes)

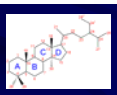
Chromatophore

Prevent Nerve Cells from Transmitting

Heart Stays Contracted!!

Cryptic Coloration

Coloration that reduces probability of predator detection



Aposematic Coloration

Coloration that warns predators of toxins

Bufo: Cardiotoxic steroids

Dendrobates: Steroidal alkaloids

Some are hallucinogenic