

Miscellaneous topics:

I. Navigation

Amphibians and reptiles move, and sometimes they move great distances.

Still, most stay in a remarkably small area most of their lives (local pond, field, outcrop, etc.)

There are, of course, seasonal movements, movements for breeding, etc.

One of the best times to look for salamanders and frogs is during or right after rains, particularly in the spring.

Pitfall traps in near Savannah have yielded thousands of salamanders on occasion.

How do herps find their way?

A variety of cues:

chemical/olfactory:

hatchling sea turtles are imprinted with the “smell” of their beach, and will return years later to the same beach to nest.

magnetic orientation:

Sea turtles have magnetite in their brain (inner ears). Possibly helps them in orientation (humans also have magnetite - no one knows why).

Also some evidence of magnetic orientation in Red spotted newts and alligators.

Landmarks:

Particularly important in home ranges and/or territories.

x-y orientation:

Frogs orient themselves along the “x-axis” (the shore line) and jump along the “y-axis” (into the water) when approached.

Description in text becomes is extraordinarily confusing, but seems to indicate that a view of the sky is needed.

Polarized light:

There is some evidence that some turtles and lizards can take advantage of polarized light to navigate.

(Again, the description in the text is absurdly complicated).

For our purposes, let's just say that polarization can be used to locate the sun, sometimes even behind clouds (contrary to what your textbook indicates).

Color:

Changes in color can also be used; some turtles may use color changes in water to help navigate.

Heat:

Some evidence that pit vipers may follow a thermal gradient.

Homing ability

Some can use these cues to return to their original locations if moved (homing ability).

Salamanders can't home for great distances (most less than 30m).

Some exceptions (*Taricha rivularis* up to 2 km)

Turtles:

Varies. From just a km or so, to large distances (sea turtles).

Spotted turtles - a km or so; painted turtles up to 3 km (against a current).

Lizards:

Most less than 200m.

II. Behavior

A. Communication.

Amphibians and reptiles need to communicate with each other. There are a number of different ways (and purposes) to communicate:

Visual - using movement, color, shapes, etc.

Acoustic - obvious in frogs/toads, but also in crocodiles, lizards, turtles.

Chemical - wide spread; generally by use of various secretions.

Tactile - usually occurs after one of the above; reproduction, combat, others.

Some examples:

Caecilians:

Use tentacles to detect odors; it is thought that finding a mate uses pheromones.

Salamanders:

Use pheromones to find members of the same species. Glands that produce pheromones atrophy during non-mating season.

Other glands help stimulate sexual activity in females.

Tactile feedback is also important in sexual reproduction (ritualized mating patterns (“liebesspiel”)).

Frogs:

Mostly rely on calls. Each species has a unique call.

As mentioned previously, calls can have several different functions:

(attract mate/warning/set up territory, etc.)

Also use other signals:

Foot flagging.

Chemical attractants.

Turtles:

Visual - head bobs, showing colors

May lead to aggression in males (biting, butting, etc.).

Chemical - allow turtles to find each other.

Crocodiles:

Auditory - bellowings, grunts, slapping water, etc.

Visual - various postural changes, particularly when males interact.

Can lead to chases, fights, other interactions.

Lizards:

A lot of communication is visual - many lizards have brighter colors.

Use various displays to warn other males, attract females, etc.

Dewlaps or color changes can signal mood, receptiveness, warnings, etc.

Also use chemical signals (pheromones).

Tactile (combat dances in monitor lizards).

Snakes:

Mostly chemical (pheromones).

Tactile communication important in combat and in mating.