

Scientists watch evolution in action

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A three-toed skink. Credit: Australian Traveller

(PhysOrg.com) -- The yellow-bellied three-toed skink (*Saiphos equalis*) is one of only three reptiles known to have different methods of reproduction in different places. In the coastal areas of New South Wales (NSW), near Sydney, Australia, the skink lays eggs, while in the northern highlands of NSW, it tends to favor giving birth to live young. Scientists say we are witnessing evolution in action, with the skink half-way in its transformation from an egg-layer to a bearer of live young.

The skink resembles a small snake, but with miniature legs. It reaches a length of about 18 cm, and is mostly nocturnal, feeding on insects.

Biologist James Stewart, of East Tennessee State University, and colleagues in the US and Australia have been studying the skink and have found 'intermediate' skinks that retain their eggs internally longer

than others. It appears the live-bearers evolved from these.

The scientists have also discovered that as they retain their young internally for longer, the thickness of the eggshell is reduced until, for those bearing live young, the shell is merely a thick membrane. Having a thinner shell enables the mother to keep the embryo well fed while the egg is inside her body, but there is less calcium available for the embryo. Stewart and the team found that the uterus in the egg-layers secreted calcium that became incorporated into the embryo. “It’s basically the early stages of the evolution of a [placenta](#) in reptiles,” Stewart said.

[Giving birth](#) to live young is an advantage in colder areas, such as the northern highlands of NSW, since the embryo develops for longer within a warm body. The negative side is that keeping the fetus in the uterus is more physically demanding on the mother. In warmer areas such as coastal regions of NSW, eggs have a better chance of surviving the climate, but the negative is a greater vulnerability to attack from predators.

Live birth is known to have evolved 132 times among animals with a backbone, 98 of these in reptiles, which Stewart said suggests that while it seems a complex transition, “it’s looking like it might be much simpler in some cases than we thought.” Two other species of reptiles are known to use both types of reproduction: a European lizard and another species of skink.

Stewart's paper is published in the *Journal of Morphology*.

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