Devonian Fact File

Acanthostega
This early reptile is possibly related to *Ichthyostega*, but appears to have been much more confined to the water than its larger relative.

Going for a paddle
Here in the early Devonian, it seems that many amphibians were looking at the land and thinking about moving in. Some, like *Ichthyostega*, had already appeared with adaptations that may have helped them but others seem to be still at the beginning of this major change. These animals show a strange and varying mix of fish-like and land-animal features; *Acanthostega* is a good example of an animal with more fishy features than land features.

It appears that at some point, the front fins of early fish began to become stronger, longer and full of bones rather than cartilage. *Acanthostega* had four legs, but it is not likely that they were strong enough or flexible enough to allow it to walk on land. They were more likely adaptations to the shallow waters that *Acanthostega* lived in, and helped it to paddle along through the water, or drag itself through very shallow areas. Its belly was covered in bony scales that may have been there for protection as the amphibian slithered over logs and rough gravel. *Acanthostega* also had short, thin ribs very unlike the thick overlapping ribs of *Ichthyostega*, and so would probably have had great difficulty in moving around on land – and breathing! One other land adaptation it may have had is an ear that appears to be adapted for hearing on land rather than in water, with a tiny bone sitting in a hollow of the skull, rather than a simple eardrum on the surface of the skull.

Fishy features
However, despite limbs that are beginning to look more like legs than flippers, and an ear that might have suited an animal that spent a lot of time basking in shallow streams, much of the rest of *Acanthostega* was firmly focussed on a life in water. For example, detailed examination of the skeletons has revealed that it had a lateral line system – an intricate series of lines along the body that help fish to sense tiny electrical charges in water. They can use this to navigate through murky water, and some today (such as sharks) can use it to track down prey over long distances. Did *Acanthostega* hunt smaller amphibians in shallow streams filled with silt? It also had large eyes, so maybe it did live somewhere gloomy.

To go with this fishy system, *Acanthostega* also still had internal gills, much like a fish. These would have had a good blood supply and helped it to breathe underwater; in fact, it would have had to be in water to breathe – just like a fish. And to help propel it through deeper water, it had retained a deep tail with a tail fin supported by tiny rays of cartilage, making it look just like a fish from behind!

Again, as with *Ichthyostega*, it was discovered that the amazing limb-paddles of *Acanthostega* had more than the five fingers that everyone thought it ought to have. In fact, this time *eight* digits were discovered in a hind foot – making us wonder why many animals have settled for five!

See also: Ichthyostega