

'Bean' clue to origin of vision

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More than 350 million years before humans put baked beans into a tin, Mother Nature created their likeness - a seed shrimp which survives on the NSW continental shelf and which scientists believe offers a glimpse into the evolution of sight.

It is a living fossil called *Azygocypris lowryi* and it lives at depths of 300 metres, scavenging on rotting fish carcasses that fall to the ocean floor.

Scientists believe that the NSW species of seed shrimps evolved their eyes independently of the rest of the animal kingdom. By examining the creatures' DNA it will be possible to discover which genes are responsible for turning on the evolution of vision.

When fishermen haul the seed shrimps up as by-catch they call them baked beans. Research fellow in the marine invertebrate section at the Australian Museum, Dr Andrew Parker, says a pile of the crustaceans looks as though they have been poured from a can. "It's exactly the same as the fossils."

Dr Parker and molecular evolutionist from Duke University in the United States, Mr Todd Oakley, went out on the trawler Kerang last week to search for the shrimps more than 30 kilometres east of Kiama.

Leaving their nets baited with pilchards overnight on the continental shelf, Dr Parker and Mr Oakley collected four of the seed shrimps.

The scientists also caught hundreds of other deep-dwelling animals from the continental shelf, several of which may be new species.

The evolution of eyes and sight are the subject of much international research, with some scientists arguing



Four shrimps are checked by Oakley and Parker at Kiama. Photograph by PETER RAE

that vision was a phenomenon that could have evolved in a twinkling 100,000 generations.

The first known eye is thought to have evolved around half a billion years ago, while seed shrimps are thought to have had their light turned on about 350 million years ago.

An eye is an evolutionary freak that has probably evolved only a few times over billions of years - human eyes share some of the genes with insects because of a common ancestry.

However, while scientists are able to study creatures without eyes and those whose eyes are fully developed,

the seed shrimps off Kiama are one of the few known creatures whose eyes are at an intermediate stage.

Seed shrimps have three eyes, consisting of photosensitive flaps with hairs growing outside and all over the eye flaps. In terms of sight, said Dr Parker, the creatures were at the base of the evolutionary tree.

By sequencing the DNA from the eyes of the NSW seed shrimps Mr Oakley hopes to settle one of the great controversies of arthropod research - whether compound eyes evolved more than once.

"It's a glimpse at how an early eye evolved," Mr Oakley said.