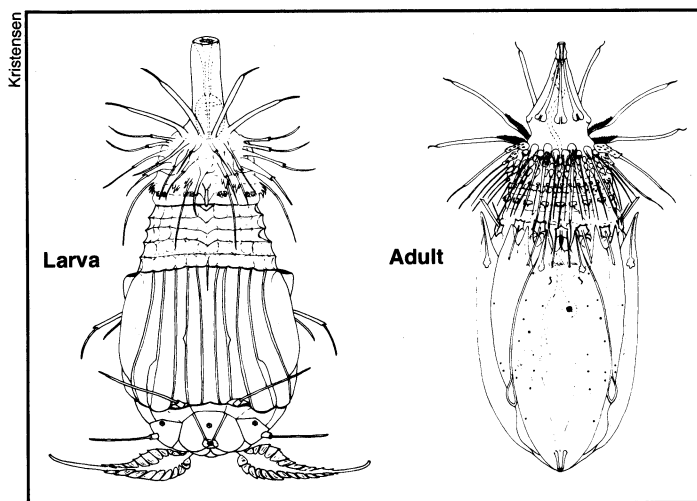


Microscopic animal in a new phylum

With a flexible, retractable tube of a mouth, a girdle of platelets and a crown of clawlike and club-shaped spines, a newly discovered marine animal called Loricifera is in a class—or rather a phylum—of its own. Its discoverer proposes creating a new major division, a thirty-fifth phylum, in the animal kingdom. Only one other phylum, for another group of microscopic marine animals, has been added to the animal kingdom taxonomy since 1900.

Members of the newest phylum live between grains of shell gravel beneath oceans around the world. Their name, Loricifera, means “girdle wearer,” for the cuticle platelets that encircle their midsections. Reinhardt M. Kristensen of the University of Copenhagen in Denmark first noticed the larval form in 1975 in sediments dredged off the coast of Denmark. But it wasn't until last year, off the Atlantic coast of France, that he found any adults.

“This is the first time any person has seen this particular beast,” says Robert Higgins, who collaborated with Kristensen last year at the Smithsonian's National Museum of Natural History in Washington, D.C. The reason Loricifera were not observed earlier may be, Higgins says, that no one was looking in ocean gravel “for a microscopic organism that hangs on tenaciously to grains of sand.”



Loricifera display a unique combination of characteristic parts. The larvae propel themselves with a pair of toes (with appendages) attached to the body by a ball-and-socket joint. The adults, about 230 microns long, lack appendages for swimming. Both larvae and adults have a telescoping mouth tube and head spines.

Another reason Loricifera have evaded scientists is that, being so tenacious, these microorganisms are not extracted from sediment by the usual collection methods. Kristensen finally detected the adult forms only when he did not have time to prepare a sample in the normal manner and just rinsed it in fresh water. The animals were released by the fresh water shock treatment, he says. Using this method, Kristensen and Higgins have collected more larval and adult Loricifera off the Florida coast. The animals grow by molting. “They just change corsets when they need a bigger size,” Higgins says.

The phylum has a far-reaching distribution and may be fairly common. The scien-

tists suspect there are several species of Loricifera among animals collected in the Coral Sea in the South Pacific and off the coasts of Greenland, Denmark and North Carolina. While the relationship of the new phylum with other marine microorganisms is not clear, Kristensen suggests it may resemble an ancestral form and thus provide the “missing link” between three other groups.

“We are describing a new species, and it is the first one of a new phylum,” Higgins says. “Loricifera is unique. If it is not a new phylum, then it must be assigned elsewhere, and there is no satisfactory elsewhere for it.” Thus he does not expect any serious argument. — J.A. Miller

Pesticide is banned, but Congress asks why it took so long

The Environmental Protection Agency (EPA) moved last week to substantially limit human exposure to ethylene dibromide (EDB). The compound, now believed to be a potent human mutagen and carcinogen, is a major ingredient in 122 pesticide products. The compound is also used as an additive in leaded gasoline to control engine knock. EPA's immediate emergency suspension of EDB for soil fumigation—its major application—was the most drastic option available. But many believe the agency's Sept. 30 announcement, which included plans to phase out over the next year all other agricultural uses of the chemical, comes too late. In particular, Congress has been questioning why an expediting measure to re-evaluate the safety of this pesticide took years longer than it was supposed to.

Only 20 million of the 300 million tons of EDB produced in the United States each year finds its way into pesticides (the rest goes into gasoline, but in extremely low concentrations). However, 90 percent of the pesticide applications involve pumping the chemical into the ground to kill nematodes and other soil-dwelling pests. Data reported to the EPA this spring showed EDB contamination of groundwater in at least four states at levels be-

tween 0.02 parts per billion and 300 ppb. And EPA attributes this contamination to soil fumigation.

The first reports of EDB's carcinogenicity surfaced in 1974. Since then, animal studies have shown exposure to the chemical (through skin, by ingestion and by inhalation) to cause cancer in both sexes, at high and low doses, and at sites distant from initial contact points.

Even at the limits of detection in water—0.20 ppb—the human cancer risk to those drinking contaminated water would be 3 in 100,000, EPA's Richard Johnson told SCIENCE NEWS. And EPA data indicates that at exposure levels encountered by an estimated 14,000 soil fumigators, including farmers, between 3.5 and 35 in every 1,000 could eventually develop EDB-initiated cancers.

Congressman Mike Synar (D.-Okla.) chairs the House subcommittee on environment, energy and natural resources that last week held hearings on the RPAR (rebuttable presumption against registration) process. This process ultimately led to the EDB-pesticide suspension. RPAR was intended to expedite EPA's re-evaluation of the safety and permitted uses of a registered pesticide if new scientific findings pointed to a major hazard. However,

Synar told SCIENCE NEWS, “EDB is a good example of how that process has broken down.”

Congress gave the RPAR process a 45-day window to review any data presented to rebut signs of a new hazard, he said, allowing only one 60-day extension. Notwithstanding, it took EPA seven years to complete its RPAR on EDB, Synar said, “and that's EPA's fault.” Moreover, he said, “There are a number of other pesticides and chemicals that have been waiting three to five years for a final decision under the RPAR process by EPA.” He said, “It's obvious to me that either the RPAR process has got to be tightened up or we're going to have to go in and legislatively mandate it.”

The Occupational Safety and Health Administration (OSHA) also tried to move against EDB last week. However, two days after proposing a standard 200 times more stringent than the existing one, OSHA withdrew its proposal. OSHA's administrator, Thorne Auchter, explained the situation as resulting from a snafu in protocol—namely that he mistakenly thought the Office of Management and Budget had already cleared the proposal. The proposal was expected to be reissued formally on Oct. 7. — J. Raloff