Visiting Russian Scientist Devotes Career to Copepod Taxonomy

Russian scientist Dr. Elena Markasheva lived and worked at VIMS last fall as part of Dr. Deborah Steinberg’s Census of Marine Life Project (see article on facing page). The following profile describes the path that led to her esoteric career as a copepod taxonomist.

Markasheva hopes that the growing recognition of taxonomy’s central role in biodiversity will help fuel a resurgence in her field.

Markasheva first became interested in marine biology as a young girl after seeing a TV show featuring Jacques Costeau. “I knew then that I wanted to be included in some kind of marine research,” she says. A mentor advised her to become a biologist if she really wanted to be connected to the sea. “At that time in Russia to be a woman oceanographer was not so easy. Going on a research cruise was considered masculine work.”

At age 14, Markasheva enrolled in a marine science course at her high school. Summertime trips with her teacher to a research station on the White Sea confirmed her career choice. “When I graduated from this school I was absolutely sure that I would study marine invertebrates,” she says.

Upon graduation, Markasheva began working at the Russian Academy of Sciences’ Zoological Institute, while simultaneously taking evening classes to earn a Master’s degree from Leningrad (now St. Petersburg State) University.

She ascribes her interest in copepod taxonomy to chance. “I was working in the Institute when a position opened with a very well known researcher.” This was Dr. Konstantin Brodsky, a “copepodologist” so well regarded by his colleagues that several have paid him the ultimate taxonomic compliment—five copepod species now bear his name. Dr. Brodsky died in 1991. “I was his last student and we had a very good connection,” says Markasheva. “I decided if I am working in this department and have such a good professor, I will continue with copepods.” She earned her Ph.D. degree from the Institute in 1991.

Markasheva now says that her “whole life is devoted” to copepods. To date, she has named 15 new copepod species, and re-named numerous others. Her esoteric expertise brings her offers to travel to laboratories around the world, helping researchers identify the copepods in their samples. “Since the Iron Curtain fell, I am traveling nearly every year,” says Markasheva. “I have been in Norway, Amsterdam, U.S., and many other places.”

Her role in the Census of Marine Life project is to identify a single group of copepods called calanoids. “There are many other kinds of copepods in the samples,” she says, “but I’ve concentrated on the calanoids because it was too much for me to look at all the groups.” Copepods, the most abundant multi-cellular animals on Earth, are extremely diverse, with about 11,000 different species.

Identifying a copepod is no easy task. “You can compare a copepod to a grain of rice with a small tail” says Markasheva. “To identify these animals to species level it is necessary to dissect and look at them under the microscope, because distinguishing characters may be number of spines or spinoliths, spines on spines. They are different shape, different length, and all this plays a role in taxonomy.”

“It’s not like to catch a lobster and say ‘Oh, that’s a lobster.’ You need to work a little bit more. It is very, very laborious work.”

During her two visits to VIMS, in the fall of 2001 and 2002, Markasheva identified more than 100 copepod species. She transfers her list of species to VIMS technician Joe Cope, who enters them into a computer database. “Then it is possible to take a really interesting look at what is going on,” she says. “After this it is possible to look at their abundance and diversity and how it might change with time.”