RUTH PATRICK

1907–2013, UNITED STATES

American botanist and limnologist specialized in river ecology. She was the first scientist that used diatoms as indicators of water quality, and a pioneer in studying the effect of pollutants on aquatic organisms.

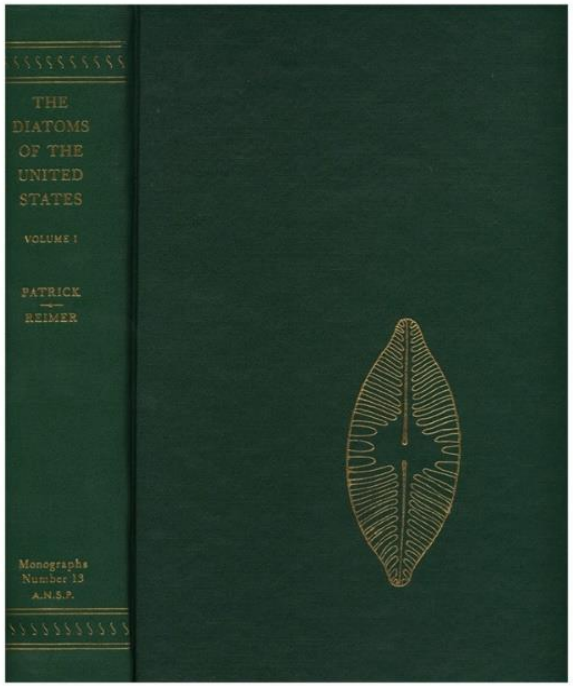
She authored more than 200 papers, developed ways to measure the health of freshwaters and established numerous research facilities.

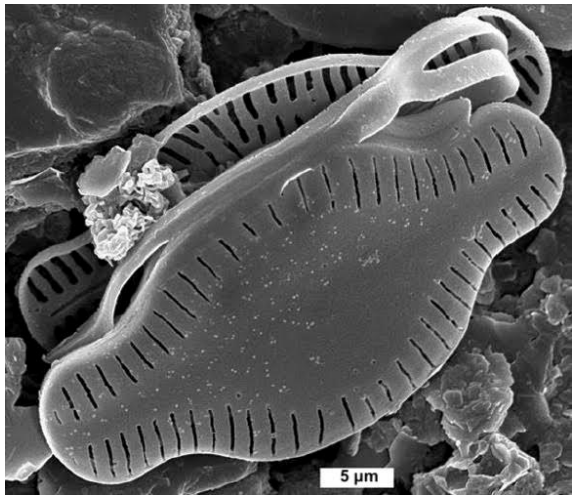
She waded into 850 rivers around the globe, including the Amazon River (expedition 1955).

HERSTORY

For 8 years, Ruth worked for free at the Academy of Natural Sciences. She worked 5 days a week until she retired at the age of 97. Yet, she did not receive any recognition for her achievements until she was 63 years old.

DIATOMS COMMUNITIES





With her colleague Charles Reimer, she published the first two comprehensive books on the diatoms of the United States in 1966 and 1975.

Before the publication of these volumes, North American scientists were dependent largely on European literature for studying diatoms. These volumes led to a flurry of activity in diatom science in the United States.

Ruth Patrick and Charles W. Reimer. (1966). Diatoms of the United States (Vol I).

Ruth Patrick and Charles W. Reimer. (1975). Diatoms of the United States (Vol II).

BIOINDICATORS

Bioindicator. Any species or group of species whose function, population, or status can reveal the qualitative status of the environment.

GROUP	SPECIES	TOLERANCE
Algae	Family Chroococcaceae	
	Anacystis cyanea	P
	Gomphosphaeria lacustris	N
Invertebrate	Family Nepidae	
	Ranatra sp.	P
	Family Belostomatidae	
	Belostoma sp.	P
	Family Corixidae	
	Trichorixa calva	N
Fish	Family Ictaluridae	
	Ictalurus catus	N
	I. natalis	P
	I. nebulosus	P

P = Pollution Tolerant, N = Characteristic of Natural Conditions

Example: Algae, invertebrate and fish species that are tolerant (or not) to pollution.

This study emphasized that the **organisms that live in a given place are the best indicators of change.**

We need more meaningful biological monitoring using carefully selected methods.

Modified from: Ruth Patrick. (1994).
Academy of Natural Science of Philadelphia.

RELEVANT CONTRIBUTIONS

Patrick, R. (1948). Factors affecting the distribution of diatoms. Botany Reviews, 8, 473

Patrick, R. (1963). The structure of diatom communities under varying ecological conditions. Annals of New York Academy of Science, 108, 359.

Patrick, R. (1968). Structure of diatom communities in similar ecological conditions. The American Naturalist. 102, 173.

Pye, V.I., **Patrick, R.** (1983). Groundwater contamination in the United States. Science, 221, 713.

Patrick, R. (1988). Importance of diversity in the function and structure of riverine communities. Limnology and Oceanography, 33, 1304.

Patrick, R. (1994). The value of species as indicators of water quality. Proceedings of the Academy of Natural Science of Philadelphia, 145, 55.

LOOKING FOR MORE?

You can find more information about her story and research at:

https://en.wikipedia.org/wiki/Ruth_Patrick

https://ansp.org/research/environmental-research/people/patrick/

Lowe, R. (2015) . Ruth Patrick: The River Doctor. Limnology and Oceanography Bulletin, 24: 108-111.