

Ecology and Evolution: Toxins in the Hudson



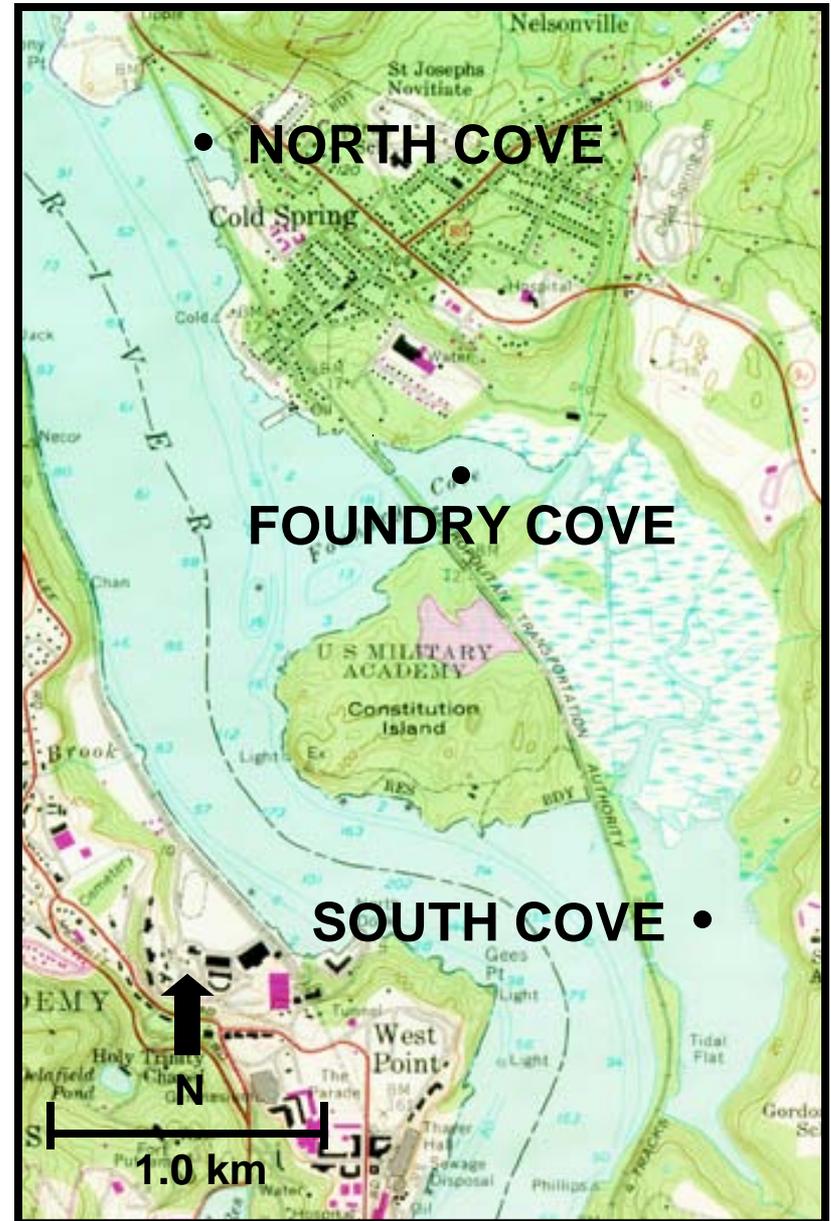
Cadmium in the Cove



Scientists collecting samples in Foundry Cove



Marathon Battery Factory
made nickel-cadmium
batteries in Foundry Cove
from 1952-1979.



Heavy Metal Pollution

- between 1952 and 1979, over 112,000 pounds of **cadmium** was released into Foundry Cove
- Foundry Cove became “the most cadmium polluted site in the world”
- **nickel** and **cobalt** were released in much smaller amounts

Periodic Table of the Elements

1	2																	10	18	36	54	86	
1	2																	10	18	36	54	86	
3	4																	13	14	15	16	17	18
11	12																	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36						
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54						
55	56	57	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86						
87	88	89	104	105	106	107	108	109	110														

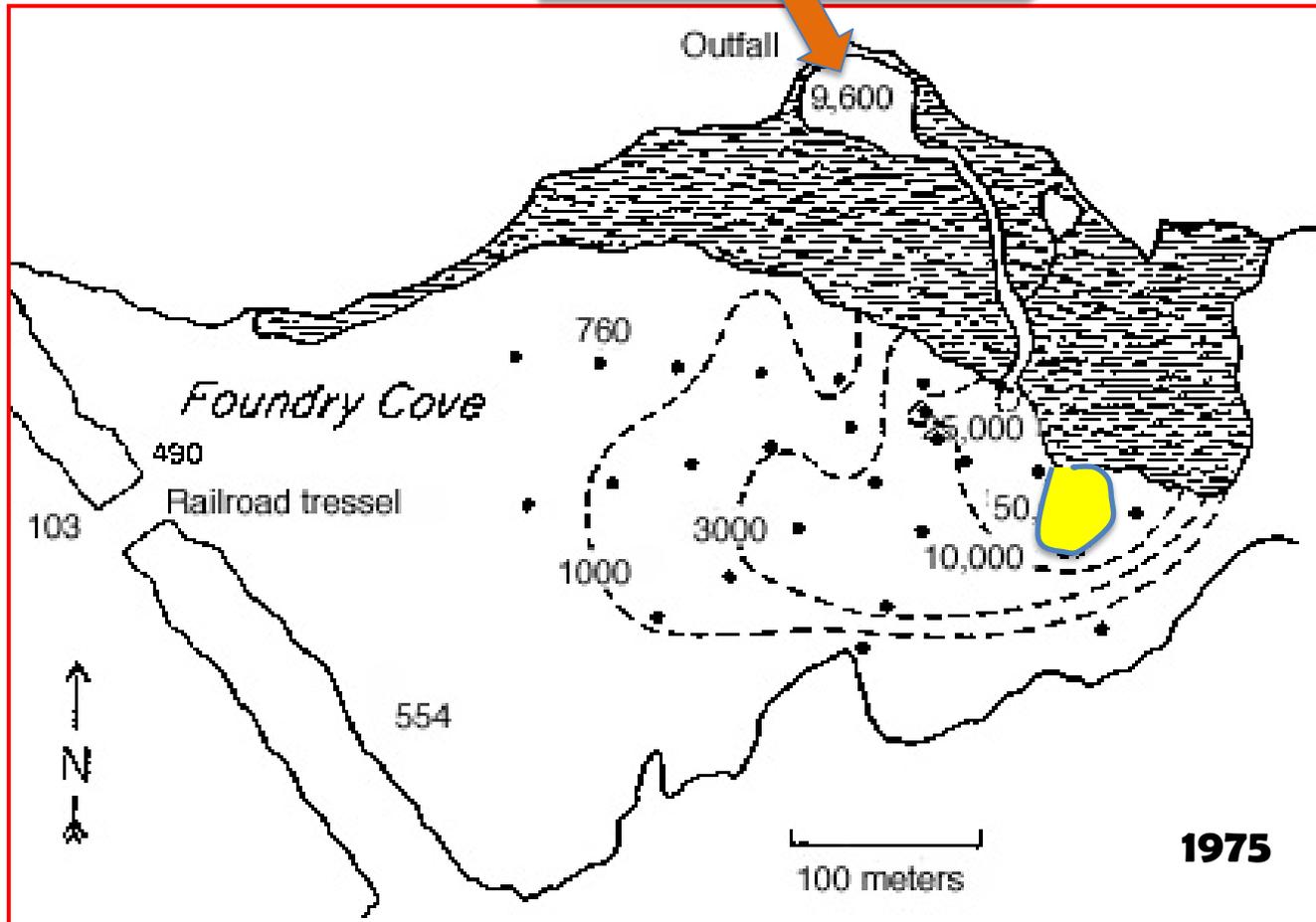
* Lanthanide Series	58	59	60	61	62	63	64	65	66	67	68	69	70	71
	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
+ Actinide Series	90	91	92	93	94	95	96	97	98	99	100	101	102	103
	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

How could scientists find out where the cadmium went after it left the Marathon Battery outfall?



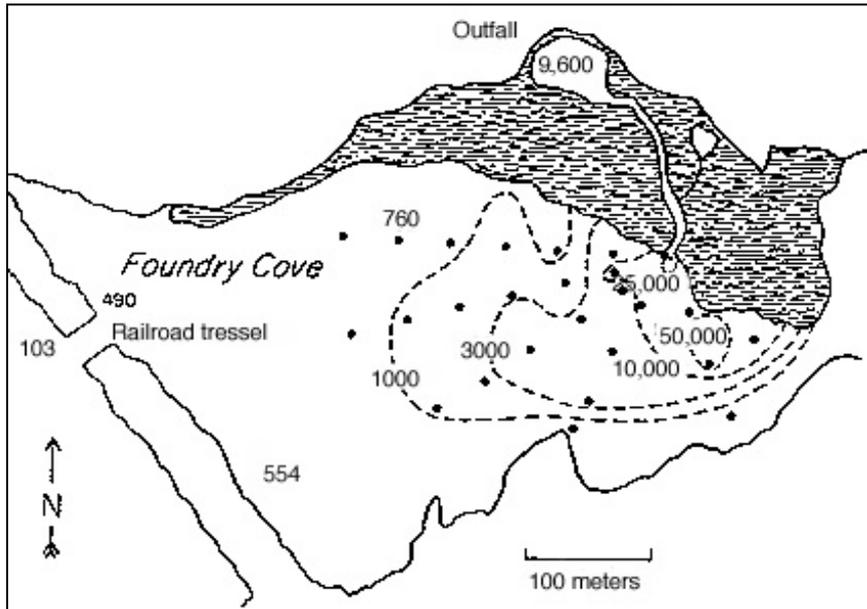


Marathon Battery Factory

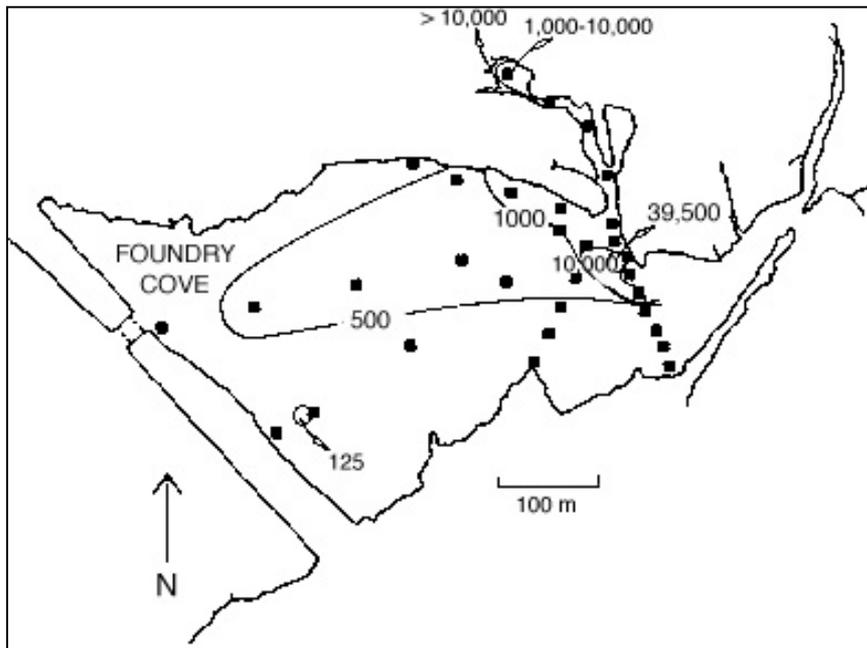


= 50,000+ ppm cadmium in sediments of Foundry Cove

ppm = parts per million



1975
Distribution of cadmium
in surface sediments in
East Foundry Cove

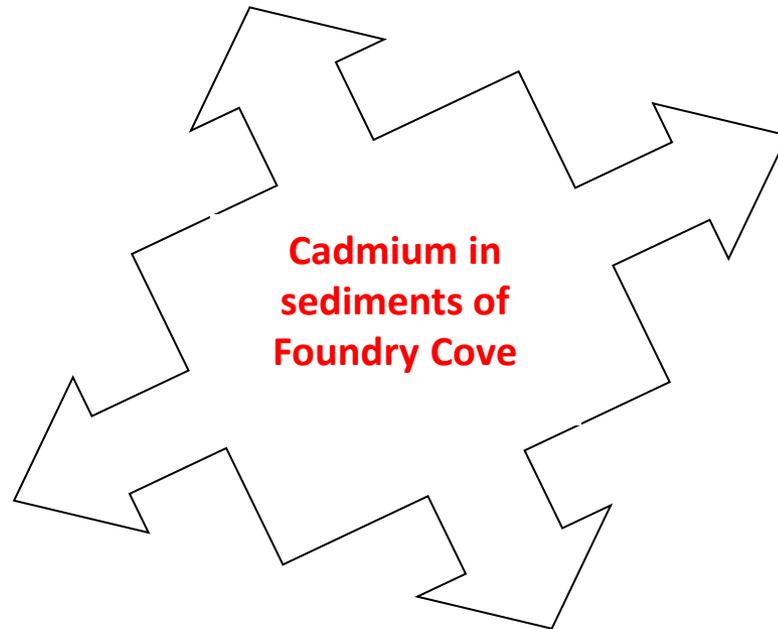


What changed?

1983
Distribution of cadmium
in surface sediments in
East Foundry Cove

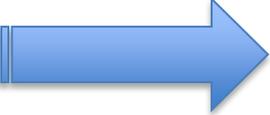


What happened to the cadmium between 1979 and 1983?



Where could it have gone?

Sampling at the train trestle, Foundry Cove

Outgoing  Tide  Incoming



Major Cadmium Pathways

What happens to cadmium that gets eaten?

Eaten by organisms

Buried by sediments carried in by tides or freshwater runoff

Cadmium
in
sediments
of Foundry
Cove

Transported out by tides

Redistributed by water
Movements within the cove