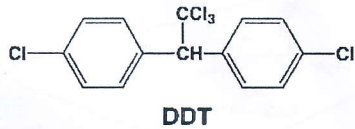


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DDT: The Story



Background

In the 1940's large areas in North America and other parts of the world were sprayed to get rid of mosquitoes. The miracle substance was DDT. It seemed too good to be true. And it was. In a few years, there were dramatic changes in ecosystems. Top predators like hawks and falcons died or laid thin-shelled eggs. Scientists warned of the dangers. By the 1950's, whole food chains worldwide had been poisoned. Rachel Carson published a book in 1962 called "Silent Spring" that brought the problem to public attention. Through research, other scientists discovered causes and lobbied governments and chemical industry to stop using DDT.

So what was the problem with DDT?

DDT is stored in the fat of organisms. A frog or bird eating mosquitoes with DDT in them would end up with more DDT in its body for each mosquito it ate. This gradual build-up of a chemical in the living tissue of an organism is called **bioaccumulation**. Instead of dispersing in the ecosystem, DDT was becoming concentrated in the tissues of organisms.

Biomagnification

With each new step up the food chain, DDT was concentrated further or magnified. The number of times greater a chemical is concentrated in an organism than its prey or food source is a measure of **biomagnification**. DDT levels are measured in **ppm** (parts per million).

DDT in the food web

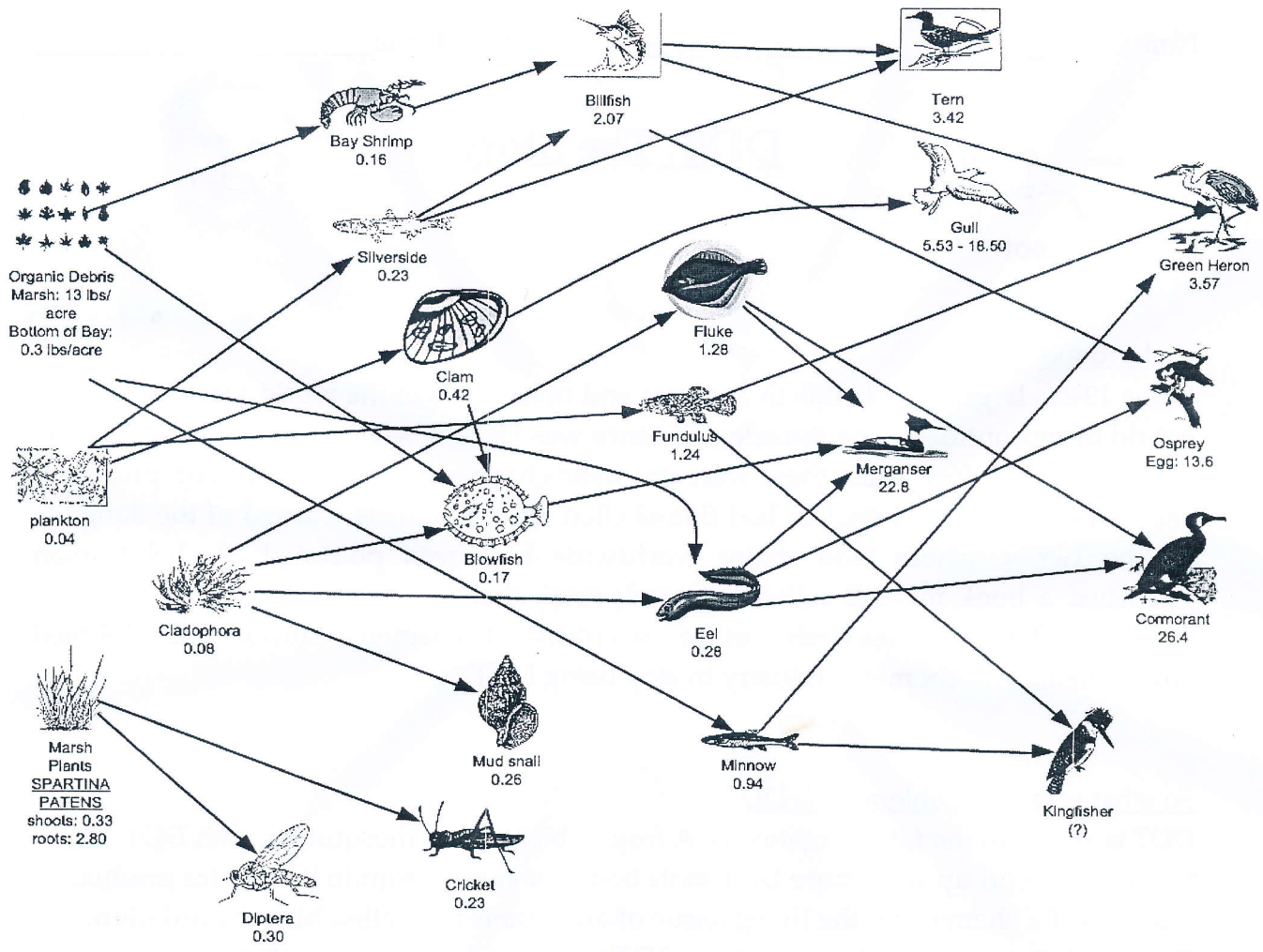
In the food web diagram on the back of this sheet, the DDT level is shown in ppm next to the organism. Use the diagram to answer these questions:

e.g. How many times more DDT is there in eels than Cladophora?

Cladophora = 0.08 ppm

Eels = 0.28 ppm

$$\text{Biomagnification} = \frac{0.28 \text{ ppm}}{0.08 \text{ ppm}} = \sim 3.5\text{X}$$



Questions:

1. Find the DDT levels of 2 producers, 2 primary consumers, and 2 secondary or higher order consumers using the information above.

Food Web Level	Name of Organism	DDT level (in ppm)
Secondary or Higher Order Consumer		
Primary Consumers		
Producers		

Name: _____

Date: _____

2. What do you notice about DDT levels as you travel up the food chain?

3. What organism has the:

a) lowest DDT level in their body? How much exists?

b) highest DDT level in their body? How much exists?

4. Name a living thing not shown in the diagram in your opinion may be affected by high DDT levels in one of the organisms that is shown. Explain why.

5. How many times more DDT is there in osprey eggs than in clams?