C.4: *To Use DDT or Not to Use DDT* Performance Assessment Task

) Use DDT or Not to Use DDT

hen DDT enters an aquatic ecosystem, it is eventually taken up by animals and stored in their fatty tissues. It is not excreted. DDT becomes a part of the food chain. In the 1940s until the 1970s, DDT was used to control pests such as mosquitoes and lice. Mosquitoes spread malaria and dengue fever while lice transmit typhus. All three of these diseases can be fatal to humans. The use of DDT resulted in dramatic reductions in these diseases.

The bald eagle population in New York State began declining in the early 1900s, and by 1952 bald eagles were very rare. Scientists learned that this was partially due to the extensive use of DDT. DDT and several other pesticides inhibited eagle reproduction by causing them to produce egg shells that were too thin and therefore easily broken. By 1974, the N.Y. state population consisted of a single, non-reproducing pair in Livingston County.

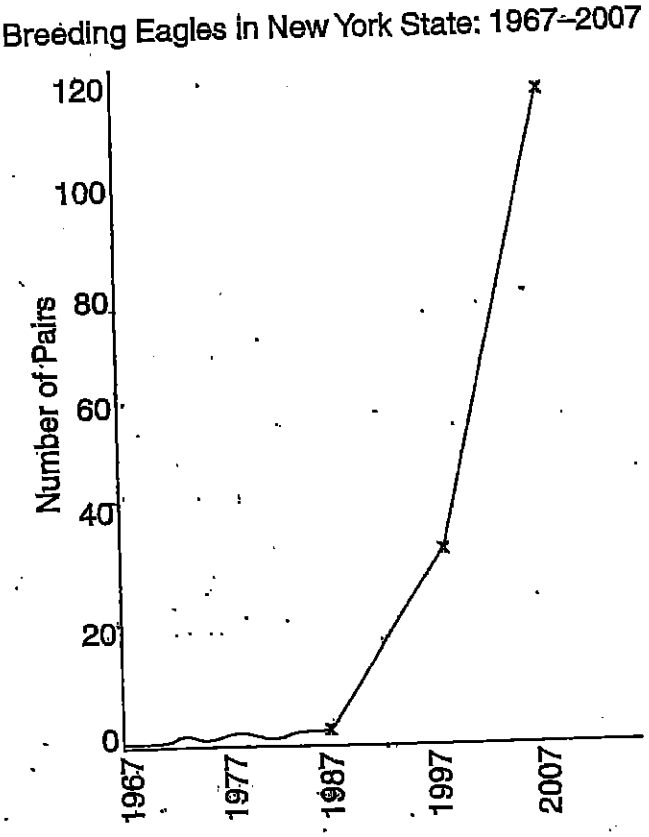
The chart below illustrates how DDT accumulates in a food chain.

Concentration of DDT in Aquatic Food Chain

Location of DDT	Concentration in ppm (parts per million)
Water	0.000003
Zooplankton	0.04
Small fish	0.5
Large fish	2.0
Fish-eating birds	25.0

The graph below shows the changes in the New York bald eagle population from 1967 to 2007.

With an increase in the spread of West Nile virus by mosquitoes and the number of cases of bedbug outbreaks, some people argue that DDT should again be used. Others people are concerned about animals such as bald eagles.



Your Task

1. Review the data about the accumulation of DDT in aquatic food chains provided in the table, *Concentration of DDT in Aquatic Food Chain.*
2. Review the data provided in the graph, *Breeding Bald Eagle Populations in New York: 1967–2007.*
3. On June 14, 1972 the domestic use of DDT was banned in the United States. Has this ban been successful based on the data recorded on the graph? Cite evidence and data to support your answer.
4. Explain how the banning of DDT can be described as a trade-off. Describe the positive and negative consequences, both environmental and economic, associated with DDT to control pests that transmit disease.
5. Address potential and economic consequences associated, both positive and negative, associated with not using DDT to control pests that transmit disease.

Please write your response in paragraph form.

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Scoring Rubric

4 POINTS	3 POINTS	2 POINTS	1 POINT
• Uses extensive data from the table and graph to support whether or not the DDT ban has been successful. • Without any misconceptions, uses extensive data from the table and passage in describing the consequences of using and not using DDT. • Shows strong evidence of evaluating multiple environmental and economic consequences. • All statements are strongly based on scientific evidence and/or principles.	• Uses data from the table and graph to support whether or not the DDT ban has been successful. • Without any misconceptions, uses data from the table and passage to recommend whether or not DDT should be used to control pests that transmit disease. • Shows some evidence of evaluating environmental and economic consequences. • Most statements are based on scientific evidence and/or principle	• Uses data from the table and graph to support whether or not the DDT ban has been successful. • With minor misconceptions, uses data from the table and passage to recommend whether or not DDT should be used to control pests that transmit disease. • Does not show evidence of evaluating environmental and economic consequences. • Some statements are based on scientific evidence and/or principles.	• Does not use data from the table and graph to support whether or not the DDT ban has been successful. • With some misconceptions, recommends whether or not DDT should be used to control pests that transmit disease. • Does not show evidence of evaluating environmental and economic consequences. • Few to no statements are based on scientific evidence and/or principles.