MIGRATION

Insects

Monarch Butterfly

Monarch Butterflies are an essential part of the eco-systems across North America.

They pollinate flowers on their way from Canada to Mexico

Look on a map to see how far that is and compare the distance to the length of Britain

Do some maths and science to see what insects can tell us

It is 2250km from Minnesota to the Mexico border
During the autumn it takes these butterflies about 30 days to travel that distance.

Question. On average how many kilometres a day do they travel?

Answer

Question. If they fly for 10 hours every day. What speed are they actually doing per hour?

Answer

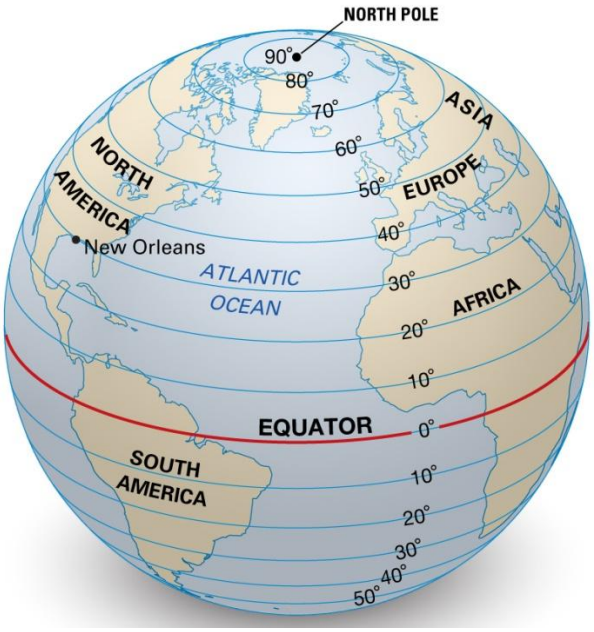
MIGRATION – Pupils Resource Sheet – Insects

Environmental scientists measured the speed of the Monarch butterflies migration.

Question - What is an Environmental Scientist?

Answer

The scientists measured speed as **'degrees of latitude per day'**. These degrees of latitude are the distance travelled between the North and South Pole. The degrees measure the angles around the earth



FACTS ABOUT LINES OF LATITUDE

- Are known as parallels.
- Run in an east-west direction.
- Measure distance north or south from the Equator.
- Are parallel to one another and never meet.
- Cross the prime meridian at right angles.
- Lie in planes that cross the Earth's axis at right angles.
- Get shorter toward the poles, with only the Equator, the longest, a great circle.

Question. What is the angle between the North Pole and the Equator?

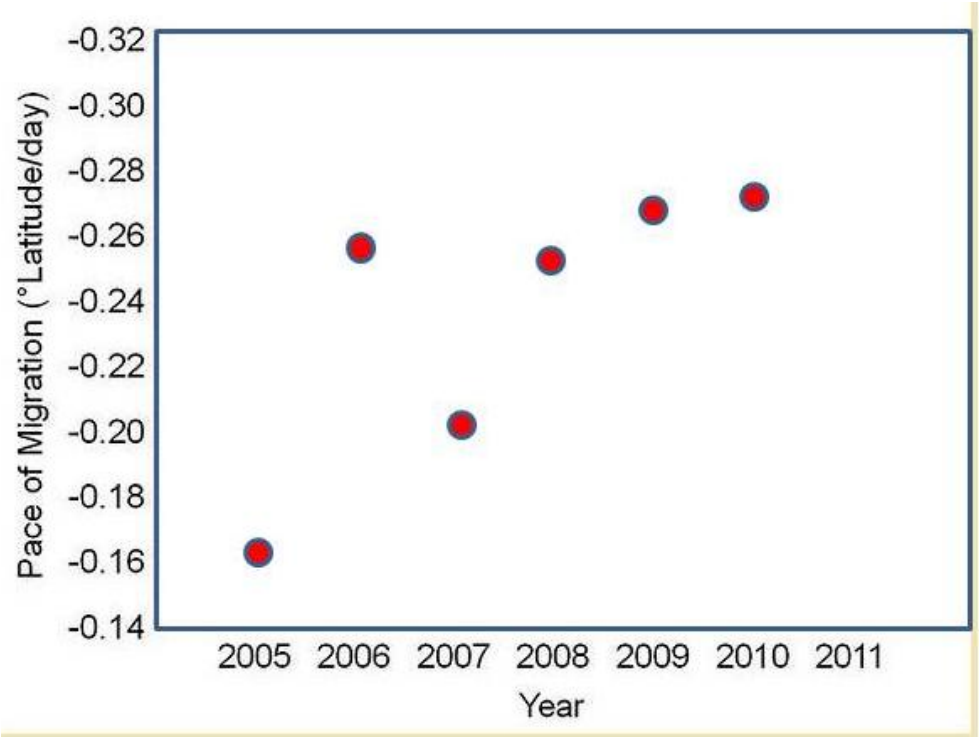
Answer

Question. What is the Angle between the North and South poles?

Answer

In 2011 the butterflies travelled 0.32 degrees of latitude per day.

Question. Mark this on the graph



Question. Does this graph suggest they migrating faster or slower?

Answer

Question. Why has the speed of their migration changed?

Answer

Use a ruler to draw one straight line that starts with the 2005 point and then goes through or near as many other points as possible.

Question. Can you extend this line to predict the speed in 'degrees of latitude' per day in 2020? You may need to extend it on to another sheet. What speed do you predict?

Answer

Question. Is it possible that they will keep going faster and faster?

Answer

Question. What does it suggest is happening to this species which is an important pollinator for eco systems across America?

Answer

The Globe-Skimmer Dragon Fly.

The Globe Skimmer is a species programmed from birth to migrate. This Dragon Fly lays eggs on its migration before it dies and its off-spring continues the journey. The exact same species is found on every continent which means they can fly across oceans.

The Silk Worm

The silk worm was once unique to China but is now found all over the world.

Question. How does the silk worm get all around the world with its heavy body, tiny wings and no legs?

Answer

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The silk worm is a domesticated insect like a farm animal. Because it is farmed it is transported to new places and fed to produce silk.

Question. Find some other insects that are used by farmers and forced to travel

Answer

Question. What pulls or pushes migrating insects?

Cut up these different reasons and put them in priority order.

Following a food source
Staying ahead of colder weather
Finding the right conditions for mating
Parasites would kill them if they stayed in one place
They want to pollinate flowers
They know how to fly high and use the jet stream winds
They can save energy because their wings enable them to glide instead of just flap
They are used by humans and transported by them