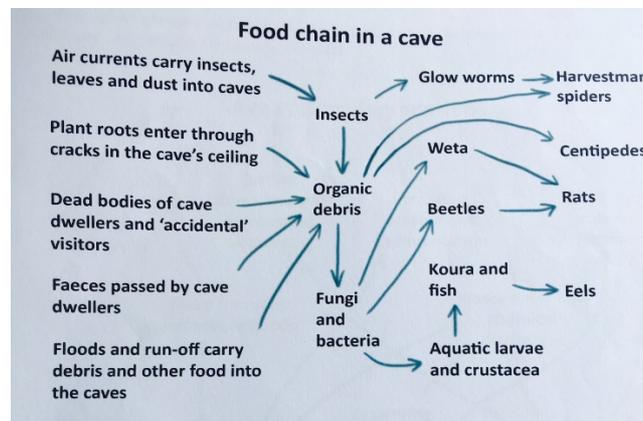


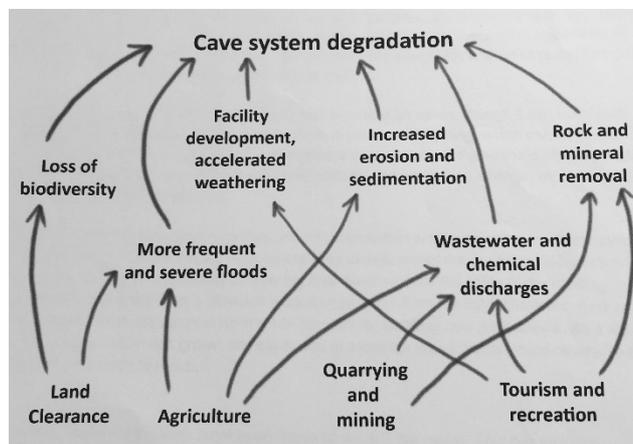
Student 4: High Achieved

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Ruakuri Cave Waitomo



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.....At Ruakuri Cave, Waitomo, Ruakuri was tapu to Maori for at least 280 years, though for 400 years, the cave at the foot of the cliff where it was located, was used as a form of shelter. The caves were sacred and respected by Maori, and they were seldom entered into. As a result of this, the Maori had minimal impact on the caves. In 1906, the cave was first entered into as a commercial cave. In Waitomo James Holden was the man who created the original cave tour. But by using the cave entrance, traditional Maori values were broken. Modifications were made to accommodate the number of people passing through....

3

Human activity and consequences on the cave system

Over the last 150 years, over 70% of the forests in the Waitomo area were removed. This has inevitably affected the caves underneath. Without the protective forest cover, floods will become more frequent and severe, washing soil and silt into caves. The organisms living in and around caves and the streams will suffer from changes and loss in habitat. The natural grow of spleleothems will also change.

4

.....When we enter caves, we breathe out carbon dioxide. Carbon dioxide levels within caves are lower than that of the environment outside. When we introduce more carbon dioxide than there is naturally occurring, the moisture in the air absorbs the gas and the atmosphere in the caves are acidified. This can lead to degradation of formations and the cave itself.

5

Vandalism is also a huge factor in the impact of caves. Many people seek to take souvenirs, which lead to broken and snapped formations. Formations can also be broken by careless people, including during the construction of a commercial cave. They could be accidentally knocked, shattering a

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hundred year old formation in seconds. Direct vandalism has also occurred, with people deliberately painting and destroying speleothems.

It is not just the caves themselves that are affected by our intrusions. An example of this is the crossing of streams. Especially in tourist caves where thousands of people cross streams a year, eels and other animals can be tramped, many under rocks, leaving them bruised, battered or even killed by being crushed. Food that is brought and left in caves can attract rats and other pests, luring them into caves and endangering the species that live within.

7

Lighting is another factor in the impact that we make on caves, though it can be of both negative and positive influence. In the presence of permanent lighting, which can be present in many commercial caves, spores in the atmosphere can settle in and germinate on cave walls. This discolours formation, turning them into many colours- green, yellow, orange etc- depending on the bacteria and/or fungi present.

8

However there are also positive factors. When construction work was being made in caves, the lights attracted glow-worms to lay eggs where they usually would not lay them. Glow worm populations usually spread slowly as they lay their eggs amongst the lights of the existing population. Very rarely does a glow-worm lay an egg away from the light. However, their artificial lighting managed to attract glow worms into new areas, creating new populations. As a result, the glow-worm population has grown and expanded in separate areas which would otherwise take many years for them to reach.

9

Management of the Caves for tourism

Nowadays, many implications have been made to protect the caves. This has included conservation work above ground, as well as implementing new structures and to reduce the impact we create on caves.

When Ruakuri Cave was open for tourism, many structures were put in place to minimise impact and bring the cave back to its natural state, whilst allowing visitors to still be able to visit the cave environments. Sliding doors and airlocks were put in place, so that the movement of air in the cave passage is minimised. Though caves naturally breathe, the cave had been sealed off for over 80,000 years. Suddenly opening up and increasing airflow would alter the cave. To reduce lampenflora, only a small section of lights are turned on at a time. As groups move through areas, lights are turned off and others are turned on, so that areas of the passage are only exposed to the light for the shortest possible time. Suspended walkways on wires were put in place in the cave, and paths were designed to be dismantled and leave no trace if they were to be removed. The materials used for construction of these were specially chosen or created, such as a concrete formula which did not leech materials into the caves itself.

10

Due to the amount of people who go through these caves, Ruakuri Cave and the nearby Glow worm cave are monitored daily and, on occasion, closed to the public to allow the cave to establish an equilibrium. With the Glow work Cave having up to 2000+ visitors a day, the carbon dioxide and temperature levels can increase dramatically.

Conclusion

Monitoring and looking after the caves is a huge responsibility, but it is everyone's responsibility to look after and protect the caves, preserving them as near as it's original state as possible. For this, we should all be educated on the development and protection of caves for they are truly time machines.