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School: secondary school

Type of material: information material, online search, discussion

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Intention: Becoming acquainted with the endangered kiwi & developing conservation measures

1. Plan for teachers

1. Video about kiwi as introduction (e.g. Youtube or Wikimedia Commons
2. Worksheet with two questions -> then create a list with the different hypotheses and a chart showing the biological and human influences
3. Task: finding information on the different kiwi species with the help of the Internet -> Presentation of the results, everybody can complete the chart for the different species
4. Discussion: With your knowledge of the different species, discuss what a Kiwi Recovery Program could look like?

2. Solutions & helpful information

1. Worksheet

Question 1: *Why do Kiwis only live in New Zealand? Establish a hypothesis.*

Millions of years ago New Zealand was separated from the original continent Gondwana leading to the development of a unique flora and fauna.

Through this isolation endemic species, including the kiwi, evolved. Thus, there were many opportunities for species to evolve. The species in New Zealand are more specialised and only exist on these islands.

Prior to colonisation there were no terrestrial mammals except bats. This meant that kiwis had no natural enemies and their wings became redundant.

Nowadays, many of the ratites in New Zealand are critically endangered because of predator mammals introduced to New Zealand by settlers.

Question 2: *What is responsible for the decrease in the kiwi population? Take human influences into account.*

<u>Human influences</u>

Mammals were imported by the Maori settlers. Some of those were new predators to the kiwis, leading to the extinction of the little grey kiwis in the north of New Zealand. Together with the hunting Maoris, the Kiwi was eradicated in many places. That is the reason why it is unevenly spread over the islands.

In the 19th century the colonialists exterminated the kiwis in the east and south of the southern island because many Europeans found it fashionable to decorate their clothes with kiwi feathers; taxidermied kiwis were also popular. Further, newly imported animals intensified the kiwis' struggle for survival. Especially predators like dogs were responsible for the decimation of the population. Young kiwis are

particularly easy prey, due to the fact that they are left alone to fend for themselves after only a few days. Therefore, hunting was prohibited in 1896, and since 1921 the kiwi has been a protected animal. In 1991 a Kiwi Recovery Program was instituted by the New Zealand government in order to keep their national animal from extinction.

Biological influences

The only means a kiwi has of warding off an attack is to run away or to use its beak to defend itself. However, these tactics are mostly unsuccessful, making it easy prey for predators.

A further problem is the long reproduction process. If a population has been decimated kiwis are not able to reproduce fast enough. Breeding takes up to three months, generally only produces one egg, and then it is several years before the young reach sexual maturity. Often the young kiwis do not even reach adulthood because they are eaten by predators.

2. Task: research on the Internet:

Chart 1: Comparison of the different kiwi species (solutions for teachers)

	The great spotted kiwi *Apteryx haastii* (also: roroa)	The little spotted kiwi *Apteryx owenii*	The brown kiwi *Apteryx australis* (also: tokoeka) subspecies 1. A. mantelli 2. A. australis	The Okarito kiwi *Apteryx rowi*
geographical range	• South Island, New Zealand • Snow-covered mountains, mountain forests • alpine altitudes	• Kapiti Island, in remote forests of South New Zealand	• North Island (only *A. mantelli*) • South island & Stewart Island (*A. australis*).	• Okarito forest
Habitat	• Alpine/subalpine areas of northwest New Zealand	• temperate, evergreen, broadleaf forests and shrublands •	• subtropical & temperate forests, grasslands • Prefers large, dark forest areas	• Okarito forest
Special characteristics	• biggest species of kiwi	• formerly wide-spread, today endangered	• 1-2 times* 2-4 eggs/year	• grey plumage with some white feathers • can live up to 100 years
Population	• ca. 17000	• 1500	• 25000	• ca. 250

3. Discussion & helpful information about the Kiwi Recovery Program

The Kiwi Recovery Program

- foundation of the Kiwi Recovery Program in 1991
- main target: recovery of the original habitat in New Zealand
- sanctions: Hunting of rats and opossums, only a limited number of dogs & cats
  wildlife sanctuary for kiwis," Operation Nest Egg" (captive breeding, then release if viable)

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