Where have all the takahē gone? Help Sheet

Part 1: Completed research portfolio. Due: _____

Go through your resources. Highlight and arrange your information so that it is easily accessible to you. Include a detailed *bibliography* of **all sources** of information that you have used on a separate page.

Part 2: Report. Read through task and remind yourself what you are required to do. Collect more information if necessary.

Note: You cannot pre-write your report. The guidelines below are to help you in your planning.

1. **Introduction: It should include the following:**
    - Scientific names of the takahē, stoat, red deer and snow tussock.
    - A **brief** history of the takahē; a timeline in a paragraph with dates and numbers may include information such as when the takahē were thought to have arrived in New Zealand, and where throughout New Zealand takahē were thought to be distributed for all this time. Approximately how long were takahē without introduced mammals? Approximate date when the first humans arrived? Include dates when takahē were thought to be extinct then rediscovered – where were they distributed when found? For how long were takahē considered to be critically endangered, and when were they first shifted to offshore islands where introduced mammals had been removed? Where takahē are found today and in what numbers.

For example, using kākā as a model answer, your introduction might look like this: *The North Island Kākā (Nestor meridionalis septentrionalis) is a large forest parrot, endemic to the North Island of New Zealand and therefore not found naturally anywhere else in the world. They are thought to have evolved from an ancestral parrot species, in the absence of mammals as a result of New Zealand's separation from Gondwana. Kākā were abundant when Europeans arrived in New Zealand but by 1930 only found in a few localised areas[1]. Kākā were locally extinct in Wellington since the early 1900s until a few birds were transferred to ZEALANDIA, a fenced mainland sanctuary, in 2002. Within the sanctuary, they have increased greatly in number due to the absence of introduced mammals and are now spreading throughout the Wellington region.*

    - An introduction to **the purpose** of your investigation

For example: *'This investigation is looking at the impact of introduced mammals on an ecological community where kākā are present. I am looking at data from two communities to see if there is a pattern in the distribution and numbers of the kākā. The first is Tararua Forest Park where kākā are found in the wild and where introduced mammals such as*

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[1] https://www.doc.govt.nz/Kākā

possums and stoats are also found. The second is ZEALANDIA, where kākā have been transferred to and where no introduced mammals are present.'

2. Data you used to identify a distribution pattern

This could be graphs, tables or maps. Compiled by you, it needs to be included in the report and internally referenced if it is from another source, either as an appendix or in the body of the report.

3. Describe the pattern found, using the data researched and analysed

In using your findings to identify the pattern, make sure where possible, you quantitatively describe (using numbers) it and specify where you are talking about.

e.g. Since kākā can fly, it is impossible to state at any one time exactly how many kaka are present in the sanctuary. At the end of 2017 over 800 kākā chicks had been banded. This is a measure of abundance. Kākā are found in relatively high numbers in ZEALANDIA, where there are no introduced mammals such as possums and stoats, whereas in Tararua Forest Park, outside of trapped areas, an area where possums and stoats are present, the number of kākā is declining.[2]

4. Describe the environmental factor

You need to be able to describe how the factor affects at least **TWO** named species

5. **An explanation of the pattern** giving reasons **why** the pattern exists and **how** the biology of the Ecological Community (the adaptations of and interrelationships between takahē and other species) relates to the pattern observed.
   - A description of the **ecological niche** of the takahē and at least **ONE** other species (e.g. snow tussock, stoat and red deer)

You can use HAFA (Habitat, Adaptations, Feeding, and Activity) to help you describe the ecological niche.
   - Describe the **interrelationships** between these organisms
   - Describe the **abiotic and any other biotic factors** in the communities you investigated

6. **Discussion: Relate the pattern to the biology of the takahē and the environmental factors in the ecosystem.**
Include:
   - The impact of introduced mammals in the Murchison Mountains, Fiordland
   - Explanations of how and why the biology (adaptations , interrelationships) of at least 2 species relate to the pattern

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[2] https://www.doc.govt.nz/Documents/conservation/land-and-freshwater/land/project-kaka-report-to-2013.pdf

- How the environmental factors might affect the organisms in the community, (habitat destruction by deer, beech masting, temperature extremes and rainfall, trapping/culling, tussock flowering/masting)

Important : To investigate in-depth or comprehensively (the how and why questions) you must make the links i.e. write a statement or description and then explain asking why is this so? How has it happened? How does this relationship affects both organisms?

See the examples below of how to link your ideas.

Example 1: Brush tail possums are competitors of kākā. (*Why?*) They compete with kākā for nectar of native flowers.

(*How?)* Possums are very agile and have sharp claws (description of adaptation) that enable them to be good climbers so they can reach the rata and mistletoe flowers that are high up the tree (function). Kākā use their wings (adaptation) to fly to the flowers and use their long curved beak and 'bottle brush- like' tongue(description of adaptation) to feed on the same nectar (function).

(Then relate back to the pattern) This means in Tararua Forest Park where possum numbers are high, the number of kākā will be low due to competition, as there is less food to sustain a large number of kākā in that area.

Example 2: Stoats are predators of the kākā (*Why*?) as they eat the eggs, chicks and adults.

(*How*?) Kākā are cavity nesters and nest in burrows in cavities in trees, low to the ground (description of adaptation). This keeps them hidden from predators that rely on sight (function) but stoats hunt using their sense of smell (description of adaptation), entering the single entranced burrows of the kākā leaving no way of escape (function).

(Then relate back to pattern). This means in Tararua Forest Park where stoats are present, the numbers of kākā are reduced due to predation.

(*How do we know this?)* The data below (insert graph/table) shows the difference in survival/numbers/distribution of kākā where possums numbers are controlled, compared with where they are not. This shows….

In depth and comprehensively

Link your statement with phrases such as 'this means, because, however, whereas, as a result of, consequently, in comparison to,' to answer the 'how' and 'why' for your statements. Analysing more data to support your pattern of distribution of takahē, explaining how and why the environmental factors above affect takahē and their distribution and comparing the two areas where takahē are found.