Home Learning | Papa kāinga TV

Middle science

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| **Segment lesson planning details** |  |
| Title for segment: | Tracking our native birds |
| Year levels *(e.g. Yrs1 – 3)*: | 4-6 |
| NZC learning areas:  | Nature of science - participating and contributing (Use growing science knowledge when considering issues of concern to them - caring for endangered species)Living World: Ecology - many native birds are endangered and need to be protected, monitoring bird numbers can tell you how effective the conservation approaches are.  |
| Purpose of lesson:(What learners will learn) | To explore why and how we monitor birds in their natural environments |
| Success Criteria – students will be able to:(how they will know when they have learnt it) | Students will be able to:* Give reasons for monitoring birds in their natural habitats
* Identify different types of bird monitoring techniques
* Explain some of the benefits and challenges of a particular monitoring technique
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| **Segment production details** |
| Equipment requirements: | Whiteboard and pensPowerpoint with images and video |
| Copyright requirements:Please be specific: Source: (*Seven Sizzling Sausages* by Sam Smith –url link to the source), intended use (to demonstrate alliteration), Length (timings for video clips) | All images and video provided in the media zip folder below have been cleared for use  |
| **Segment links and attachments *(list all links to recordings or attachments, the source and confirm that copyright permissions are granted)*** |
| Links to recordings /resources |  |
| Attachments  |  |
| **Segment plan content** |
|  | Teaching and learning activities linked to purpose | High level script (key points/questions)  |
| **Activate**: Activating prior learning, knowledge of contexts and relationships | Welcome and connect to audienceHook Slide 2: Huia call: *FILE NAME: MS\_02\_Huia (Imitation).mp3*Introducing today’s topic: Tracking our native birdsSlide 3: image of a HuiaFILE NAME: MS\_02\_Huia.jpg Slide 4 with text: Tracking our native birdsActivating prior knowledgeSlide 5:File name: MS\_03\_NgaManu\_BirdCollageNamed.pngSlide 6:AUDIO FILE NAMES: MS\_03\_NgaManuBirds\_Kea.mp3 MS\_03\_NgaManuBirds\_Piwakawaka-MP3.mp3 MS\_03\_NgaManuBirds\_Red-billed\_gulls\_calling.ogg.mp3 MS\_03\_NgaManuBirds\_Ruru-MP3.mp3 MS\_03\_NgaManuBirds\_Tui.mp3 MS\_03\_NgaManuBirds-Kereru.mp3 | Kia ora! Kei te pēhea koe?*[Play Huia call]*Can you hear that? It might be a sound that you've never heard before. That’s because it's the call of the Huia [show image of Huia]. Well, it's a recording of Henare Hāmana who learnt to mimic the call of the Huia - a bird that used to live in Aotearoa New Zealand but that is now extinct. We have lots of amazing birds living in Aotearoa and unfortunately many of them need protecting - so that they don’t go extinct like the Huia. When people (including scientists) talk about plants and animals they often use words like native and endemic, and unfortunately also endangered.These words can have special meaningsNative – means a plant or animal naturally lives in an area (like New Zealand, but they could live elsewhere too)Endemic – means truly special species that ONLY come from an area. Lots of New Zealand birds are endemic.(Introduced plants and animals live here now – but were brought here from another place. A lot of the birds we see, like sparrows and blackbirds, are introduced.)See if you can pick up when I use these words.Today’s episode is all about the creative ways that people are monitoring our amazing native and endemic birds in Aotearoa. I’ve called this episode Tracking our native birds.[Words on screen: Tracking our native birds]We are going to start with a quiz, so if you’ve got some paper and something to write with, please go and get them. You may want to have a bit of a competition with other people who are at home with you. If you’ve already got your things ready, how about writing our title along the top of your page? Are you ready? Listening carefully is a really important part of making observations - something kaipūtaiao and scientists need to be really good at. Sound is important in science in so many ways. Let’s start this episode by combining our thinking about sound, with our thinking about our native birds.Have you got something to write with? I wonder what birds you already know about? Which of these ones can you name?[Show collage of birds with their names and talk a bit about some of them.]Now what about bird calls - who is good at recognising those? Remember, listening is an important skill when we’re out observing in nature.[Play calls and point to the birds, keep this chatty.]These birds are all native to Aotearoa New Zealand. That means that they’ve always lived here - they weren’t brought here by humans.You probably know that lots of NZ native birds are endangered, but most of these species we’re looking at are abundant. Which one isn’t? Can you guess? [Using the bird collage.]It’s the kea! |
| **Learn**: Introducing learningReinforce routines, provide multiple exposure to concepts, and strategies. Scaffolding learning  | Slide 7: Collage of 4x birds with audioMS\_02\_Kiwi.jpg MS\_02\_Kokako.jpg MS\_02\_Kakapo.jpg MS\_02\_white-heron.jpgSlide 8: *E koekoe te tūī, e ketekete te kākā, e kūkū te kererū.**The tūī chatters, the parrot gabbles, the wood pigeon coos.*Why kaitiaki and scientists monitor birdsConnecting with mātauranga MāoriSlide 9: VIMEO LINK: <https://vimeo.com/598619397>File name: MS\_02\_Ruru.mp4Connecting with the main learning of the episode: using sounds to collect information about birdsIntro to PMI/reflective toolHow we monitor birds using birdsongSlide 10: FILE NAME: MS\_02\_bird recording.jpgSlide 11: Counting KokakoVIMEO LINK: <https://vimeo.com/598660683>File name: MS\_02\_KokakoSlide 12: Image of recording station FILE NAME: ​​MS\_02\_Cacophonometer.jpgSlide 13:Kiwi recording in the dryFILE NAME: MS\_02\_Kiwi\_clean.mp3Slide 14:Kiwi recording in the rainFILE NAME: MS\_02\_Kiwi\_rain.mp3Slide 15 Kiwi Spectrogram:VIMEO LINK: [*https://vimeo.com/598672243*](https://vimeo.com/598672243)File Name: MS\_02\_Kiwi\_spectrogram.mp4Slide 16 Ruru spectrogram: VIMEO LINK: [*https://vimeo.com/598660867*](https://vimeo.com/598660867)File Name: MS\_02\_Ruru\_spectrogram.mp4Slide 17: images of Kakapō with transmittersFILE NAME:MS\_02\_Kakapo\_1.jpg MS\_02\_Kakapo\_3.jpg | What other endangered bird species can you think of?Quickly write a few down. I’ll have a think, too.Are there others watching with you? How many can they think of?Did you think of any of these?[Show the image and name the birds]Today we are going to learn about creative and innovative ways people gather information about our manu, our birds - including those that are endangered. We often talk about what we need to do to protect our birds, and you might know about trapping pests and planting trees for bird habitats. But it’s also important that we collect information about them, so that good decisions can be made about looking after them and protecting them - being kaitiaki. Information about our native birds can also tell us a lot about other things, like the health of the ngahere, or bush. There's a whakatuakī that goes:*E koekoe te tūī, e ketekete te kākā, e kūkū te kererū.**The tūī chatters, the parrot gabbles, the wood pigeon coos.*Te reo Māori has many different kupu, words, to describe birdsong, showing years of careful observation through listening. You might know or think of other meanings for this whakataukī - maybe it’s talking about how there are many birds in the forest that make up the chorus of birdsong. Or perhaps we could use it to mean we need all kinds of people working together to solve problems, just like how we need scientists and kaipūtaiao working together. Now, what sort of thing do you think scientists, kaitiaki, and other people working with our native birds need to know? What would you want to know if you were going to protect a special species of bird? Have a think.[Write on the board: Investigating our native birds:][Talking and writing some things that would be useful to know:* where do they live (their habitat)?
* what do they eat?
* how many are there?
* what threatens their survival?

One very important step in understanding our birds is to talk with people who have observed them over long periods of time. Kaumātua often have knowledge about an area and the birds that have lived there, and their mātauranga, their knowledge, can really help us to understand what has changed. Here’s an example:*[Play video]* [Recap some of the important thoughts from this video clip - So scientists are recognising the important place of ruru - the morepork - in repo, or wetlands - because of the ways that kaumātua talk about their presence along rivers and wetlands]We are going to look at some ways people are gathering information about our native birds using sound, and some really cool technology. While we look at these different approaches I want you to think about what is positive or useful about what they are doing [creating a PMI chart on the whiteboard], what is a limitation or challenge with using the approach, and something you think is interesting or that you are curious about. We’ll keep coming back to this. Ok, we are going to start by looking at the simplest, but still really important technique of a **5 minute bird count.** This approach requires the observer to sit quietly for 5 minutes and record any birds they see or hear. Here’s 5 year old Eva making some notes about the birds she can see and hear. It is a useful way to get information because lots of people can do it. You can do it too. So using this method gives us information on what types of birds can be found and how many can be observed in a 5 min time frame. I guess the data you get will depend on whether you can identify the birds, and how experienced you are at observing - I need to get practising! Some organisations have created some great websites with identification guides to solve this problem.[Make some notes on the white board about this method.]Maybe you could do a 5 minute bird count from the same place everyday for a week. Maybe you could do it with someone else in your bubble.I wonder what you will find out.Some of our native birds can be pretty elusive - or difficult to find. The **Kōkako** is one of them. In this video we can see rangers completing a Kōkako survey. Notice how they use sound to help them gather data.*[Play Kōkako video]*Did you see how they used a recording of the kōkako sound to attract any kōkako that are in the area? I’ve tried attracting pīwakawaka before, making cheeping sounds when I’m walking in the bush. Scratching up the ground can help too. It looks like having the recorded birdsong helps them to get more information on the birds in the area - and did you see how much the ranger seemed to be enjoying her job? [Make some notes on the PMI chart]Can you make the sound of a kōkako - or a pīiwakawaka?Another neat way of recording the number of birds in an area is using a microphone. When might this be useful? What about when you’re wanting to listen for birds somewhere that’s really remote and hard to get to? Or if you want to check for bird calls over a long time period. Look at this little station. What can you see? [Show image and talk about the phone with a recording app, the solar panel for power.]Have a listen to the recording of the Male North Island Brown kiwi. Can you make this sound?Now hear it in the rain! These recording stations create thousands of hours of audio. And each recording needed to be listened to and tagged for kiwi calls, so scientists can track where and how many kiwi were in the area.With such a large data set, manually locating kiwi calls in each file is a huge task. On top of this, identifying kiwi calls can be incredibly difficult, with forest noise and other bird, insect and animal sounds and rain obscuring the audio.A company called Qrious is developing a computer model that can automatically identify kiwi bird sounds within audio recordings faster and more accurately than human-based approaches. How cool is that! There is also software that has been developed that can show the recordings in a graph, called a spectogram. Here is a spectrogram showing a kiwi call [play video]Can you see how it shows the sounds the kiwi makes? Let’s compare it to a Ruru call [play video]Try making this sound!What differences do you notice? [You can hear differences, but they also show up as different images in the spectrogram.]These spectrograms can be super useful for scientists to learn about types of birds in an area.[Kakapō slide]Do you recognise this bird? It’s a kakapō - another one of our endangered birds. Have a look at this image [with radiotransmitter.]It shows a kakapō with a small backpack that contains a radio transmitter. This sends out signals so that the bird can be located in the dense forest where it lives. The transmitters collect and store information about each bird’s activity and then send out that information as a sequence of beeps. The DOC ranger can count the sequence of beeps to know that the bird has been up to.In this method, we’re using sound to get important information about their activities - although it’s the beep from the radiotransmitter, not the actual sound of the bird. [Make notes on PMI] |
| **Respond**: Providing opportunities to use and practice  | Reviewing learning using the PMI chart on the white board..  | Let’s have a look back at our PMI chart, and remind ourselves of the different techniques that we’ve looked at.1. 5 minute bird count
2. Using bird recordings
3. Microphones to record bird sounds
4. Transmitters

[Talk about why it’s useful to be able to monitor which birds are in an area, and how many, and some of the things you’ve noted down about the different monitoring techniques]So we’ve got some simple techniques - like just observing, and we’ve got various machines to help us collect data. I wonder what new ways may still be invented to help us keep track of our native birds - our manu - and look after them?  |
| **Share**: Learner and parent reflection on learning and engagement and what they can do next | Slide 18: SLH logo | Well, it’s that time again - the end of another episode. Thanks for joining me today, and thinking with me about our endangered birds.Next time you’re outside, take extra care to pause and notice the bird song. Maybe you could practise mimicking their calls, and see if they respond? [Shout out to the Science Learning Hub for support planning this episode]Ka kite ano, I look forward to learning with you again soon.  |