NATALIE FORSDICK AND MADISON KELLY

Kakī Reared and Sampled

NATALIE FORSDICK

Kakī are considered to be the world's rarest wading bird, yet surprisingly, they are also one of the most easily accessible of our endangered birds – they can be seen by day in the river deltas at the foot of Aoraki Mt Cook free of charge, with no visitor restrictions or fences, unlike the nocturnal kiwi, or many of our other birds that can most easily be seen in wildlife sanctuaries or on offshore islands. With a small population confined to a single location, prospects may not appear good for the kakī. However, this population has not only persisted but it is growing, thanks to intensive conservation management by the Department of Conservation. A vast amount of genetic data has been generated to inform these management decisions, including data assessing the threat of hybridisation with poaka, using the most up-to-date genetic techniques available. I've always had a passion for conservation, and through postgraduate research, I've discovered that genetics is a vital tool in the conservation kit, and a way in which I can contribute to conservation. My PhD project is focussed on using the most up-to-date DNA sequencing methods to definitively determine the effects of this hybridisation on the kakī genome. Moving from the genetics sphere to the genomics sphere has been a good challenge, as the amount of data produced is vastly greater, and the analyses are much more technical. But knowing that my contribution will make a difference and improve the chances of successful kakī recovery is incredibly motivating.

MADISON KELLY

My practice aims to question and investigate contemporary interactions between human and non-human animals, particularly those involving New Zealand's native endangered species.

Kakī, Reared and Sampled responded to the variable ways critically endangered kakī /black stilts are represented to, and perceived by, Natalie across three sites of research. In the Canterbury-based conservation facility, and Natalie's Otago-based lab and office spaces, the population shifts between whole and sample, physical and digital. Four unfixed charcoal drawings explored these shifts through examination of the captive rearing facility, blood samples, DNA samples, and computer coding. Made on a wall in Otago Museum's HD Skinner Annex, the work (in its two-week life-span) aimed to directly activate the space as a fourth site of engagement with broad issues of endangerment, as well as specific manifestations of conservation work between geneticist and threatened population.

KAKĪ, REFLECTED.

The following is a conversation reflecting on the collaboration process, as well as the individual and shared connections made between Natalie's research and the work *Kakī, Reared and Sampled* since its making and exhibition through the Art and Genetics project.

MK: I thought to start with, we could talk about how we worked together at the start of the project, that being via a back-and-forth between studio and lab. For me it was a really rewarding experience, because although I had been in labs before (in an educational context), it was very different to go through a space that was yours specifically, and experience from the perspective of a total outsider.

NF: I can totally understand that. It was really great to have you come through, because you see everything a little bit differently from an outsider perspective. You look at our gear and you suddenly think "what is that?"

MK: That's the thing. Initially, I was looking for objects that might be representative of what you were experiencing in your work. I started looking at everything in more abstracted ways—what kinds of shapes were there, how are they arranged in the different work spaces? There was a push and pull between me looking at things in this way whilst responding to you also starting to examine things in the same way.

NF: Absolutely. It was really fun having you in the lab.

MK: With so many shared concerns emerging in our early conversations, the most difficult part was figuring out which of those I would focus on. It was a privilege to have actual lab work and the lab environment itself guide what I was thinking about, and respond to what you were thinking about.

NF: I felt like that was a really good jumping-off point. We worked out where we were going after that.

MK: Especially because up until that point [of visiting your lab] I knew that I was interested in how you were interacting with your samples and the population, but had no idea how those relationships might actually manifest.

NF: It really made me think about it more. I have all these opportunities to interact with them (kakī) in the field: the actual birds, and then as blood samples or DNA, and then sending it away and getting it back as this raw data which I'm dealing with right now—it was cool to think about it in those little compartments and have it circle back to being the birds again in the end. Which is obviously the most important part.

MK: So was that something you'd thought about already, just not in an immediate way?

NF: Probably. I was really thrilled with my research project because I get to handle the birds and be involved with release days, which is great because I haven't had that opportunity before. So those interactions had been in the back of my mind, but I hadn't really followed it in depth or seen how it tied together in that way.

MK: As an artist, it was exciting to hear you talk about those experiences, and try to resolve them in a representational way, because there's so much about making art that seems really personal. I'm often trying to present an internal question or idea, so trying to apply the same processes to someone else's experience or a whole other field of knowledge is an interesting challenge. I already held issues of endangerment and conservation close to my heart, but it was from a very different place, from someone who is probably closer to an everyday observer that has interest in animals and our native ecosystems. Once we focused in on your own experiences with the population and the ways that population shifts for you personally, the work came together quite quickly.

In thinking about the various spaces the kakī occupied for you as a researcher (the rearing facility in Canterbury, in the lab, in different tubes as blood and DNA samples), I knew I wanted to engage with drawing because of the way it [as a process] is tied to mapping and understanding spaces in a very direct, physical way. Once I decided to work on the walls, all these ideas of absence or impermanence started to take form, which was unexpected but quite analogous to the issues facing the kakī population.

NF: It became so metaphorical, there were so many connections between the birds and the lab work and the art. I think that's been the biggest thing I've taken away from it. I've loved the whole process of being involved in this project, but the most rewarding part was seeing all these reflections of different aspects of the work and the population start to appear.

MK: Reflections is a good word for it. I've been thinking about the drawings as analogies for the processes and relationships we came across through the collaboration, but thinking about them as reflections is nice because the project does seem like a very direct and reflective dialogue.

NF: Exactly, in the same way that we're reflecting on it now!

MK: Yes! I was surprised by the amount of parallels between the making of my work and your work that kept cropping up. The more I thought about how the drawing process could be similar to your processes, the more connections I started to identify in parts of the work that had already naturally emerged. The shelving, for example, initially came about from a lot of thinking about how to evoke the relationship between the whole population and the samples you eventually work with. Although the shelves originally served to present samples of each drawing, they ended up also preserving a gradient that reflected how the drawing was made. To me it seemed like a simplified visual code for

Figures 1 and 2. Charcoal dust residue on shelves from drawing *Kakī Reared and Sampled.*

the drawing itself, but then you also talked about how the dust collections could be representing hybridisation processes as well—with the shifting from light, bare areas to the completely covered black areas. It was nice to have those trace elements there, because I feel the way you work with your population is in the form of all these tiny segments.

NF: It's true. Recently I've been working on trimming out the poorer-quality bits of DNA sequences, which feels a lot like the charcoal dust you generated.

MK: I wonder if you could talk about hybridisation, and how the work might have shown that to other people—because it's such a specific biological process, and it's difficult to represent it succinctly in just one work.

NF: Hybridisation has been a challenge for kakī for the past 100 or so years. They interbreed with poaka (pied stilts), and it tends to happen when the kakī population is really small in the landscape and are having trouble finding mating pairs. I think it came across really well in the art work, especially with the use of just black and white (as kakī are pure black, poaka are black-and-white, and hybrids are intermediate with varying amounts of black and white). Actually, each picture is basically a hybrid, of lab work, data work and the actual birds.

In the last few years hybridisation has been occurring less frequently, but it's a real issue for conservation in that it can hinder species recovery, and even lead to extinction of species through waste of genetic resources and genetic mixing. That's what I'm specifically looking at for my project—we want to look at this hybridisation with new genomic tools that are now available, which involve whole genome sequencing. It's crazy that we can do that now, look at almost every base pair, and absolutely compare the two species all the way across the genome. I never thought I'd do anything like this before. As a kid, I envisaged myself as one of those DoC rangers who's out there in the field— I never thought I'd be coding or doing genetics.

MK: That's a valid point, because that was one of the earliest things we talked about, that perception of what happens in conservation work. You're now working in this very specific interior environment and it's a different relationship, but equally significant. Similarly, I've really enjoyed making work *about* conservation issues or issues of endangerment because it is another way of engaging with those topics.

NF: It's just another form of science communication at the end of the day. I think it can get out there to a lot more people because it's visual, and gives a kind of opportunity to personally interpret it all. I get so excited when I see any kind of communication about threatened species, because it's just encouraging better access for other people to those issues.

MK: It seems accessibility is a running problem in so many different parts of conservation work—not just accessibility of the population themselves (which kakī are an interesting example of because they *are* accessible, but fixed in one place), but also the accessibility of information about those species, and availability of that information to the public. There are a lot of barriers that can prevent people from engaging with it, so this project has been great in that people have been able to come through and see the exhibition, and learn, and ask questions not just about the work but also directly questioning what the work is about as well.

Figure 3. Madison Kelly, *Kakī Reared and Sampled*, 2017, charcoal and shelves on gallery wall, ~100 x 40cm. Installation view.

NF: It's really exciting. I really appreciated the opportunity to give a public talk where we could engage with people; we had some great questions where people were clearly thinking about what we had to say.

MK: I'd like to return to something you mentioned whilst talking about hybridisation, that threat of eventual loss. I think that idea of loss was a big thing that took hold in the project once we discussed what would happen if things did go badly, the worst possible outcome. It could be pessimistic, but it did drive me to make a work that was impermanent.

NF: It worked really well, because the population is so vulnerable, and it is just like the piece on the wall, where it may disappear eventually. The question that arises is how to prevent that happening.

MK: Those are the kinds of questions that motivated the project's development; there was a drive to use the opportunity to make work that could encourage that train of thought. That potential loss of the population informed my medium choice as well, with charcoal being an organic, unfixed, almost-dust matter. The fact it was on the wall and could be scrubbed, or even blown away, elicited some interesting reactions. Many people were surprised that it wasn't paper or stuck on in some way, and when you say it's going to be removed at the end—
NF: They were shocked.

MK: Yes, shocked, exactly! And I felt like saying, "Well, that happens all the time. Things can just disappear; entire species go extinct constantly". When people can attach a preciousness to something, the threat of it disappearing is suddenly enough to initiate action. There's a kind of urgency that comes with it.

NF: That's really relevant in terms of conservation prioritisation, where there are different values attached to different species, and based on those values they either get conserved or don't, the resources are put into them or they're not. It's interesting to think about the criteria. It's more in-depth than just saying "Kakī are cool, so we're gonna save them".

MK: It's about more than charisma.

NF: Yeah, but that does definitely play into it.

MK: I suppose visibility is a big thing—there are a lot of species that don't have that visibility, so there's no drive to continue with them or introduce new recovery options. That kind of tension between seeing and not seeing was quite present in the making of the work.

I drew very differently from how I normally would, drawing over and blocking out areas with masking tape to create tiny negative spaces that were heavily controlled. It was meticulous, but at the same time there was all this smudging and blurring occurring over and around those areas, before the tape was peeled off in the final stages. In that sense, I was often thinking in binaries— "this is the fixed part/the free part, the visible/the obscured". Then, while those relationships started operating and the project was developing, the scale became smaller and smaller [each drawing eventually being 27x16 cm]. It felt like a bottleneck situation, where the space I had allocated for each drawing was so small, and my hands seemed so big and clumsy, that any mark seemed like it could change the whole picture. The consequences of decisions were amplified at that scale.

NF: It must have been stressful!

MK: That's the thing, there was an inherent urgency in making the work on installation day, despite all the preparation and background knowledge, not knowing how it would turn out. The final works were separate, new works compared to the developmental drawings in the studio, even though I was working off the same digital images, but I enjoyed that unpredictability.

NF: Again, it's really organic.

MK: It was a nice way to think personally about the uncertainty that comes with trying to present something or preserve something. Conservation work is all about looking towards some kind of future for those animals and ecosystems and still being unsure at the end of the day.

NF: You just don't know what that future will be, or what effects the work you do now will have on that population in 20, 30 years' time. So yeah, it was really similar. I can't believe the amount of connections that can be made.
MK: It surprises me! At the same time, it's often overlooked how many connections you can find between art—making processes or research processes, or science and art in general. There's so much that is similar—the handiwork, or for example the way you can think in patterns, which was another thing I thought about—how things were visually organised for you. Grids, tables, things that were contained.

NF: Like the boxes of samples in the lab.

MK: Even the birds themselves, in the rearing facility. There are a lot of parallels between how you might have to think when drawing on a wall in these contained, masked—off spaces, and working with your data that is similarly organised in a contained, quite visually consistent way.

I thought a nice way to wrap up could be to think about how these issues (conservation, endangerment) might continue to be communicated in the future. Are art/science collaborations worth continuing?

NF: Absolutely! Right now I'm thinking, how can I do the next one, how can I get involved in this? I don't have an artistic bone in my body, so being involved in this has been super cool. Like I was saying earlier, this kind of project is a really great way to step outside of your science bubble.

For example, I'm on Twitter a lot, for science. It's great, because you get to meet all these people you wouldn't normally meet, and talk about research difficulties, or you go to conferences and it's a great way to "get in" and meet people that you might not otherwise have the chance to speak with. It's easier if you already have that interaction online. It broadens your sphere so much, but it's also been described as an echo chamber, where you end up only talking to other scientists or people in your field. On one hand, it's a great tool, but on the other it's not true science communication because it's not getting beyond that little bubble. I think art can really interact with science in a way that takes it out of there.

MK: I've been thinking a lot as someone who had already been making art about these topics, but not alongside anyone's specific scientific practice, this kind of collaborative process is such a rich way to engage with these ideas. I've learnt so much more about issues I care about that have only continued to build and shape my studio practice since I made the works (for example, I have begun working more with unfixed/temporary works in my explorations of critically endangered species). Communicating with people outside of that echo chamber (because, of course, art can often also be insular and inaccessible) and opening each other's practices only makes it easier to share between those zones.

Natalie Forsdick is a conservation geneticist currently working on a PhD project investigating the evolutionary history of kakī using high-throughput DNA sequencing techniques. She can be found on Twitter @NatForsdick.

Madison Kelly holds a BVA from the Dunedin School of Art, where she is currently an Honours student.