

Scientist Maisie Carr (nee Fawcett) started one of Australia's longest-running ecological experiments

ABC Goulburn Murray

/ By Alice Walker

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Maisie started researching soil erosion in Omeo, before establishing the plots on the Bogong High Plains. (Supplied: Marion Manifold)

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In 1945, scientist Maisie Carr (nee Fawcett) erected a fence around 5 hectares of subalpine peatland on Victoria's Bogong High Plains.

That fence would form the first of Maisie's Plots, two monitoring sites that are still used by scientists today, and have recently been added to the Victorian Heritage Register.

It's one of Australia's longest-running ecological experiments, and it began with a true pioneer who had to learn to ride a horse to carry out her work, and became a friend and foe of local cattlemen in the high country.

The 'woman from Pretty Valley'



Maisie Carr (nee Fawcett) with her horse Sheila.



Maisie and Denise at the Scout Hut (Supplied: Marion Manifold)

Maisie, born in 1912 in Footscray, showed her scientific potential as a student and was awarded scholarships to Melbourne High School and Melbourne University.

After an accident paralysed part of her face, she found it difficult to work with a microscope, and she was employed by the university to research soil erosion in Victoria's high country.

"Her first sojourn up there was in 1941 which was obviously the war years," explained her niece Marion Manifold.

"So she got the position because men were in short supply and also because the salary was not very attractive for men that weren't at the war," Dr Manifold said.



Maisie (right) with other members of the Soil Conservation Board, which backed her research into erosion. *(Supplied: Marion Manifold)*

"She was known up there as the 'washaway woman' because she was always scurrying around the erosion washaways, and then she became known as the 'woman from Pretty Valley', which was likened to the Man from Snowy River."

She established Maisie's Plots — one at Rocky Valley and one at Pretty Valley — to monitor the impact of cattle on peatland and grassland vegetation, respectively.

At each site, Maisie fenced one area to keep cattle out, and marked an adjacent area. The fenced and unfenced areas were regularly monitored for plant species diversity and abundance, to assess the impact of cattle.



Maisie's Plots in Victoria's high country are still used today. *(ABC Goulburn Murray: Alice Walker)*

This led to greater controls on cattle grazing in the area, and eventually it was banned altogether.

Dr Manifold, who inherited her aunt's archives, said Maisie's many letters showed her ability to adapt to a new and challenging environment.

"She made many cattlemen friends but some cattlemen obviously saw their High Plains leases being at risk through her so there were confrontations too, which she managed quite well I think."



Maisie's Plots now track flowering conditions, as well as the impact of cattle and deer. (ABC Goulburn Murray: Alice Walker)

An innovative scientist

John Morgan, associate professor in plant ecology at La Trobe University, has been monitoring Maisie's Plots since 1989.

"Maisie is legendary, and she probably had to be to survive up in the high country," Dr Morgan said.



Maisie and her botanist husband Denis Carr later travelled the country searching for new eucalypt species. (Supplied: Marion Manifold)

He said Maisie's experiment showed what would later happen when cattle grazing was banned on the High Plains after the 2003 bushfires.

"Since that time we've seen dramatic changes as the vegetation has recovered after cattle grazing was removed, but what we saw happening inside the plots was the precursor to what was going to happen once the cows were taken off the landscape," Dr Morgan said.

Now, the major ungulate (hoofed animal) risk is deer, and a much higher fence sits outside Maisie's original enclosure at the Rocky Valley site.

The next generation of scientists continue to monitor the sites' recovery since cattle were removed, as well as the incursion of weeds and the conditions that see more flowers in bloom.

And they do it using the same technique Maisie came up with back in the 1940s, to ensure the data is comparable.



John Morgan says he's part of the fourth generation of scientists to work on Maisie's Plots. (Supplied: John Morgan)

"No-one thought 75 years ago we'd still be doing this," Dr Morgan said.

"When Maisie started her experiment in the 1940s, this is at the dawn of the scientific discipline of ecology — we didn't even know how to measure things at that point."

Point quadrats method

With her colleagues, Maisie came up with the point quadrats method — sticking metal pins in the ground at regular intervals and counting the species touched by the pins.



Maisie's work in ecology inspired much of her niece Marion Manifold's artwork. (Supplied: Marion Manifold)

Dr Morgan and his colleagues continue this method today.

"In this modern era we could use different techniques, we could even potentially use drones to take imagery and upload the imagery and what have you," he said.

"But we continue to do it this way because of the long history ... and it's actually been shown to be super accurate for detecting changes.

"We know really well how the weather changes through the last century, we know even how well the stock market has changed over the last century.

"But when it comes to ecological systems we have almost no parallel to this type of study, so one of the real reasons we keep it running is to understand how ecosystems change long-term."



Now the cattle are gone, the fence at Maisie's Pretty Valley site is largely for historical value. (ABC Goulburn Murray: Alice Walker)

A place in history

Dr Morgan describes Maisie as a "stickler for detail" and an "ardent observer" in her many journals and notebooks.

"She was a true scientist."

Dr Morgan is a member of the Research Centre for Applied Alpine Ecology, which supported the nomination of Maisie's Plots to the Victorian Heritage Register.

Centre director Ewen Silvester, an aquatic biogeochemist at La Trobe University's Wodonga campus, said the nomination was an opportunity to recognise Maisie's achievements as a woman and a scientist.



Ewen Silvester says Maisie's fenced plot was like "a rectangular island in a very bare landscape" before grazing was banned. (ABC Goulburn Murray: Alice Walker)

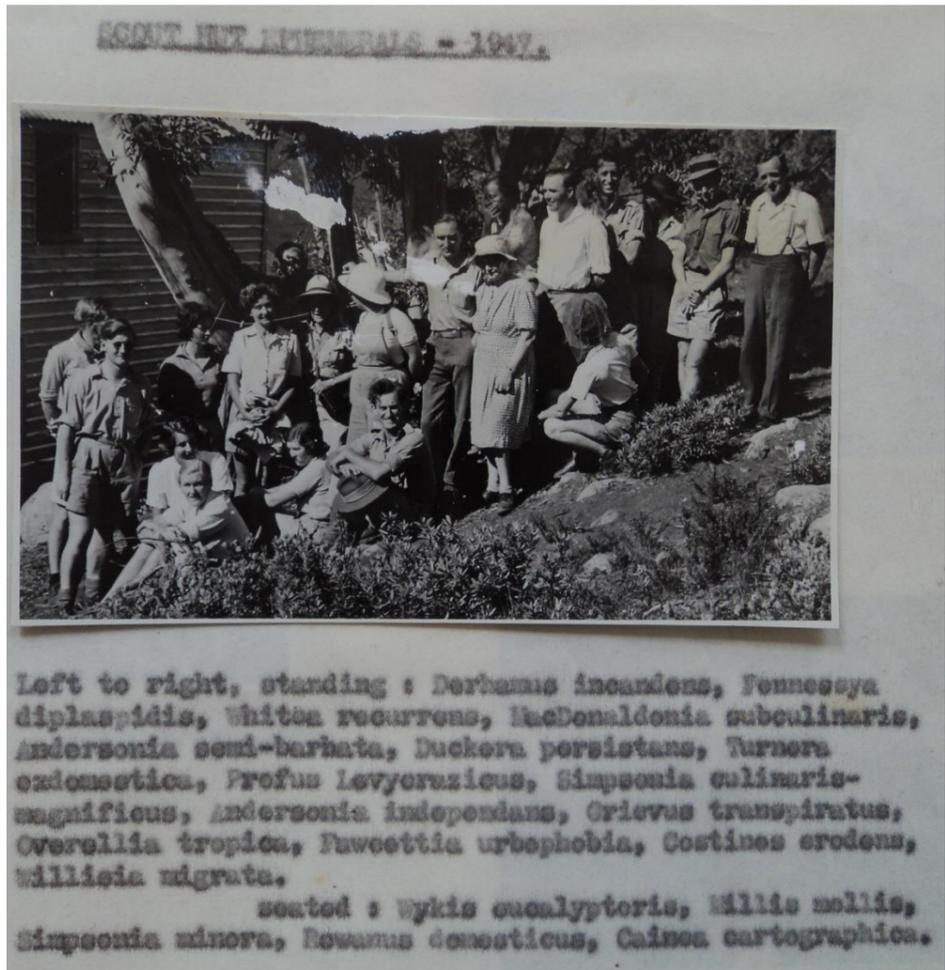
"[Maisie's Plots are] nationally recognised as a very important long-term ecological monitoring site," he said.

"The fact it involved a woman in science early on is quite significant to show that women have been making a contribution to science for a very long time and not always recognised the way that these things should be."

Heritage Victoria has invited nominations in 2022-23 connected to the history of women in Victoria, and particularly in the areas of "architects, designers, builders, and makers".



(Supplied: Marion Manifold)



Maisie's story is significant to the state's history of women in universities and STEM disciplines.

A Heritage Victoria spokesperson said Maisie's Plots were added to the register after being deemed significant against multiple criteria.

"[That includes] ... the site's significant connection to Victoria's scientific history as one of the longest continual ecological monitoring experiments in Australia."

"Generations of students and researchers have been educated at Maisie's Plots and the place is highly valued by botanists and ecological scientists in Victoria and around the world."

Maisie Carr handed over the monitoring of her plots to the next generation of scientists in the late 1970s. She died in 1988. There are scholarships in her name at both Melbourne and Monash Universities.

Some of the ecologists who took over from Maisie will join future scientists — that is, students — in January for the first survey of Maisie's Plots since 2013.

They'll be using metal pins, just as Maisie would have.