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SUSTAINABLE
FARMS

SUSTAINABLE FARMS

Annual Report 2022

We acknowledge and celebrate the First Australians on whose lands the Australian National University operates, and pay our respects to their Elders past, present and emerging.

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Date: March 2023

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Overview of 2022

2022 was a busy year for our team (Appendix 1), continuing to build on two decades of ecological monitoring on farms, exciting new research findings on farm dams, connecting with farmers and stakeholders through our field days and forums, and demonstrating our capacity to contribute to market-based biodiversity schemes. It is an exciting time for Sustainable Farms. The demand for what we do has never been greater.

A highlight of the year was the recognition of our work through winning two prestigious awards: the Australian Museum Eureka Prize for Applied Environmental Research and the Banksia Foundation Biodiversity Award at the NSW Sustainability Awards. We also received a Highly Commended in the National Trust Heritage Awards.

These awards were specifically for the development of our innovative web-based tool, BirdCast, and the research translation our initiative has delivered over the last 5 years. BirdCast supports farmers to predict how different management actions are likely to influence the diversity of birds on their properties. This tool is an example of how our high-quality data from long-term biodiversity monitoring can be used to developing the indicators for biodiversity that underpin genuine, measurable conservation outcomes on farms.

Sustainable Farms has the data and expertise and is ready to support governments in this space, having already participated in several briefing meetings with state and federal government Ministers and their advisors.

In March we released our latest book, Natural Asset Farming, co-authored by four members of the Sustainable Farms team – Lead Scientist David Lindenmayer, Project Director Michelle Young, Ecologist Dave Smith and Communications Manager Suzannah Macbeth. The book provides practical guidance on enhancing seven natural assets on farms, bringing together the stories and experiences of farmers with the results of extensive on-farm research undertaken by Sustainable Farms. Book launch events were held in Canberra, Wagga Wagga, Boorowa and Wangaratta.

With the easing of Covid-19 restrictions we were able to deliver a full program of farm field days and other community events in partnership with regional Landcare and NRM organisations. Feedback from our field days is extremely positive, with 98% of attendees reporting that they intend to adopt new management practices and 79% reporting they had shared ideas from field days with other farmers.

In response to the increasing number of requests we are receiving for our staff to present at field days and forums beyond the Sustainable Farms project area, we have begun developing 'train-the-trainer' capacity-building workshops for NRM professionals. The aim is to support wide-spread dissemination of the foundational science of natural asset management, sharing the expertise and tools needed to empower Landcare and NRM organisations to design farmer-focused programs that support uptake of improved natural asset management on farms. Importantly, this will leave a legacy that supports practice change into the future.

We also held two Research Results Forums to share our research and key learnings with key industry stakeholder and policy-makers in Canberra and Melbourne. These events were well-attended and generated valuable discussions and connections.

Our collaborative research with Deakin University's Blue Carbon Lab continued in 2022, resulting in a remarkable finding that fencing farm dams can halve greenhouse gas emissions from the dams. The research findings, published in a number of scientific journals (Appendix 2), are significant in demonstrating how enhancing farm dams can be a solution to lower the carbon footprint of Australian agriculture. In the future, carbon credits for farm dam management could also deliver a financial dividend to farmers.

In 2022 we also produced a new Strategic Plan for Sustainable Farms and raised over \$2 million for research, outreach, capacity-building and advocacy activities.

None of this work would be possible without the support of those farmers who enabled our team to monitor biodiversity on their properties for the last two decades and we thank them most sincerely for allowing us to conduct our research on their properties. We would also like to thank supporters who made financial contributions to the project. We are extremely grateful for all the support we receive.

We look forward to another productive and successful year of research and engagement with our partners in 2023.

Michelle Young
Director, Sustainable Farms



Prof. David Lindenmayer
Research Director (Ecology) & Lead Scientist



2022 Snapshot

1850

1850 people engaged with Sustainable Farms

- 725 people attended Sustainable Farms' webinars, field days, workshops, schools' days, community events and partner training events
- 1125 attended events delivered in partnership with another organisation



37

37 Farmer Partners



32

32 Sustainable Farms events

- 20 field days
- 1 workshop
- 7 community events
- 3 training events for partners
- 1 schools' day



5008

5008 Social Media Followers

- 2500 Facebook followers
- 1718 Twitter followers
- 790 Instagram followers



2022

8

8 Publications

- 6 publications
- 2 books



37

37 Partners

- 21 Landcare and Community groups
- 7 LLS and CMAs
- 9 other NRM agencies



Progress towards our Strategic Goals

OUR VISION

Healthy farmers, healthy farms, healthy profits

OUR MISSION

To support the improvement of natural asset management on farms in the temperate woodlands, to enhance biodiversity, increase farm profitability and improve farmer wellbeing.

GOAL 1: Biodiversity on farms is appropriately conserved and biodiversity outcomes are improving

Our ongoing, long-term ecological research is helping to generate a scientific basis for the improved management of natural assets on farms, giving farmers and NRM practitioners confidence that their activities and programs are guided by the best evidence available. We share the learnings from our research through our outreach events, educational resources and training activities alongside NRM and industry organisations.

Our “natural asset farming” framework highlights the multiple benefits of improving the condition of natural assets such as remnant vegetation, shelterbelts, farm dams, rocky outcrops and native pastures.

While production benefits such shade and shelter for livestock, improved water quality or reduced insect pests may be the key motivation for many farmers, ultimately there are also numerous benefits for many species of native plants and animals, including conservation of threatened species, as well as improved ecosystem function.

Farmer Extension and Community Outreach

With the easing of COVID-19 restrictions, 2022 saw the increased delivery in in-person engagement activities. Sustainable Farms delivered and presented at 32 events across our project area, including farm field days, training workshops, forums, book launches, a school event and agricultural shows. These events saw a combined reach of 1,850 people.

Website, Social Media and Traditional Media Outlet Coverage

The rate of increase in users of our website increased significantly in 2022. This growth is not unexpected with our targeted marketing campaign, a suite of new resources being added and our events page reflecting the capacity for us to once more host in-person events.

The Sustainable Farms’ Facebook page continued to increase in follower numbers (from 2,100 to 2,500), a trend reflected in our Instagram engagement, which increased in followers from 1469 in 2021, to 1718 last year.

Monthly newsletters with our news and events are emailed to our mailing list of over 3600 people. In print media, Sustainable Farms featured in 18 newspaper articles, 5 ABC News online posts, 6 articles in online local news, plus 6 other international press and other online news forums. Our staff spoke on radio segments for ABC Country Hour and local ABC news programs.

Capacity Building

Our team continues to prioritise the quality and reach of our activities by adapting our delivery models. In order to leverage the reach of our research and engagement, we have begun developing ‘train-the-trainer’ workshops for NRM professionals, with the initial module focussed on farm dams. Enhancing farm dams is the topic most frequently requested for field days and presentations, as this is a relatively innovative farm management intervention with benefits for production, biodiversity and reduction of carbon emissions.

The next topic for train-the-trainer module development will be native vegetation on farms. Each module will be accompanied by a “Good Practice Guide” covering in-depth scientific research, recommended management practices and engagement methodologies to support NRM professionals to effectively empower landholders.

In addition to outreach events, the Sustainable Farms field staff provided personalised advice to at least 140 landholders this year, which is typically provided during farm visits for ecological surveys. Topics include fauna and flora identification, technical advice for natural asset management, survey results and support in seeking funding for on-farm projects.



Enhancing farm dams field day, Merrijig, Victoria (Photo: Amber Croft)

Partner engagement and collaboration

Sustainable Farms continued to strengthen our relationship with Landcare networks, Local Land Services, Catchment Management Authorities and other organisations. Examples of our partnerships in 2022 include:

- Collaboration with Deakin University's Blue Carbon Lab in undertaking research on greenhouse gas emissions from farm dams and in the delivery of the Research Results Forum in Melbourne.
- Collaborative grant applications with Landcare Victoria Inc., Landcare NSW and Riverina Local Land Services, in addition to strategic advice and letters of support for grant applications by other community organisations.
- Supported Holbrook Landcare Network to evaluate the impact of investments on vegetation and biodiversity responses titled: *Preliminary model-based estimates of bird biodiversity dividend for some restoration projects in the Holbrook Area*.
- Collaboration on a scenario planning project with Leuphana University (Germany) and Murrumbidgee Landcare to explore areas of conflict and consensus between perspectives in the community about the management of biodiversity on farms.
- Collaboration with Murray Local Land Services including:
 - Support in implementing their program *Improving Farm Water for Livestock and Biodiversity* through technical expertise and co-deliverance of field days in October
 - Co-development of a Farm Dams Technical Manual (with contributions from AgVic)



Revegetation around a farm dam, Mansfield, Victoria (Photo: Amber Croft)

New Resources on Natural Asset Farming

In 2022 we continued to share our research and learnings through multiple channels including our management guides, our annual calendar, videos, social media, our website and local media. The publication of the book [Natural Asset Farming](#), was a huge achievement, as it brings together the stories and experiences of our farmer network. The 'natural asset farming' framework aims to highlight the benefits of improving natural assets for productivity, biodiversity and farmer wellbeing. In addition, we extended our suite of educational [resources](#) for landholders with the release of our management guides: Scattered Paddock Trees and Shelterbelts. We also produced videos sharing our research stories, plus our staff featured in two videos produced by other organisations.

Research Outputs: Social Science

Our mental health research continued into 2022, with our focus on improvement of natural assets on farm and farmer wellbeing. This research centered around two main areas: firstly, that improving natural assets provides farmers with opportunities for social connection (e.g., at Sustainable Farms field days) to get out into the natural environment, undertake physical exercise and connect with others in their position. The second area examines the relationship between farmer mental health and wellbeing, and the adoption of sustainable farming practices.

Further social science research is being conducted by Sustainable Farms' affiliated social scientist to undertake a study of knowledge production and networks across the agricultural landscape to explore how knowledge is produced and circulated around nature-based solutions on farms. Throughout 2022, this involved multiple qualitative interviews conducted with NRM practitioners and farmers in the NSW Central West and South West Slopes. This research, together with data from the Regional Wellbeing Survey, will inform the whole of project evaluation in 2023.



Sustainable Farms Field Day, Devenish, Victoria (Photo: Alice Marzano)

HIGHLIGHT: *Natural Asset Farming* book

Sustainable Farms published *Natural Asset Farming* in March 2022. The book provides practical guidance on enhancing seven natural assets on farms, bringing together the stories and experiences of farmers with the results of extensive on-farm research undertaken by Sustainable Farms.

Published by CSIRO Publishing, *Natural Asset Farming: Creating Productive and Biodiverse Farms* is authored by four members of the Sustainable Farms team – Lead Scientist David Lindenmayer, Project Director Michelle Young, Ecologist Dave Smith and Communications Manager Suzannah Macbeth.

The book emerges from the work of the Sustainable Farms project at The Australian National University, bringing together the experience of farmers, expertise from the Landcare movement, and the results of 20 years of detailed ecological studies undertaken on farms in Australia's south-eastern wheat-sheep belt.

There are many approaches to sustainable agriculture, but *Natural Asset Farming* has something to offer for everyone managing farming land in Australia. Whether it's a relatively small project like fencing a paddock tree, or a larger project such as enhancing a farm dam.

Members of agricultural communities were invited to attend book launches in Wagga Wagga, Wangaratta and Boorowa in March and April.

Each event afforded us the opportunity to celebrate and elevate the outstanding contribution of landholders, Landcare and NRM practitioners and continue to engage in dialogue with those located throughout our regional project area.



Authors of *Natural Asset Farming* (L-R): Suzannah Macbeth, David Smith, Michelle Young and David Lindenmayer.

GOAL 2: Biodiversity is valued as a key pillar of sustainable agricultural management, as the driver of key ecosystem services that support primary production

Research Outputs: Economics

In 2022, Sustainable Farms continued work quantifying the economic case for public and private investment into natural assets in farming landscapes and the application of agricultural economics extension models to support productive and biodiverse farms. A primary focus of our economics program is evaluating private benefits associated with natural assets on farms. One of our key projects involves a collaboration with economists in the Australian Bureau of Agricultural and Resource Economics (ABARES).

We have worked together to integrate the Sustainable Farms spatial data on extent of box-gum grassy woodland and predicted bird biodiversity on farms into the ABARES agricultural land value hedonic model. This work has addressed important gaps in knowledge about the nature and extent of private benefits associated with these natural assets on farms across the Sustainable Farms study region.

With these new components provided by the Sustainable Farms research, the ABARES model can now estimate the relationship between agricultural land values and woodland habitat and biodiversity. Findings will be submitted for publication in the first half of 2023.

The overall aim of our economics extension work has been to build understanding of the drivers and constraints of farmer adoption of natural asset management and evaluate what this means for NRM programs and broader policy responses to support drought resilience and biodiversity conservation across the Sustainable Farms region.

For this purpose, we have explored the drivers and barriers to adoption using the Adoption Diffusion Outcome Prediction Tool (ADOPT). This tool was developed by some of Australia's leading agricultural adoption experts and is now widely used by hundreds of end-users to evaluate and predict adoption of a range of agricultural innovations.

Our use of the ADOPT tool to evaluate how natural assets can support farming priorities and drought resilience, represents a novel application of the method and promises to deliver a range of interesting insights. This program of work has been developed in collaboration with Landcare groups and Local Land Services in NSW to employ ADOPT.

In partnership with Riverina Local Land Services, we also designed a survey to apply the ADOPT framework to a broader farmer cohort. The survey provides scope to support a journal publication and contribute to new knowledge about farmer adoption of natural asset management for improving the drought resilience of farmers. Findings will be available in mid-2023.

Advocacy and Policy Outputs

In 2022, Sustainable Farms engaged extensively with farmer groups, peak industry groups, regional NRM organisations and agencies on a variety of topics and issues.

These engagements included conference presentations at the Fenner Conference on Environment, Making Australian Agriculture Sustainable and the AARES Symposium on Natural Capital Symposium in Sydney.

Over the year, we have steadily raised awareness of issues, through several briefing meetings with state and federal Government ministers and their advisors, and at the same time increased our understanding of opposition in the sector to addressing some of these issues. Our advocacy activities, including development and submission of proposals for Government, will continue into 2023 to reflect these learnings.

Tools and Technical Methods: Development of Biodiversity Indicators

There has been considerable discussion in Australia about market-based initiatives with the potential to bring effective incentives and greater investment for farmers and other land managers to promote biodiversity conservation. These initiatives and platforms include biodiversity trading markets stewardship schemes, certification programs, sustainability frameworks, and natural capital accounting.

These platforms assemble information on environmental performance to show stakeholders, customers and potential investors how management is being improved against sustainability criteria (including biodiversity conservation). From this, it is clear that there is a need for well-designed and independent biodiversity monitoring with robust and transparent governance structures to support these platforms.



Mixed species shelterbelt on the property of Derek and Murk Schoen, Corowa, NSW
(Photo: Suzannah Macbeth)

HIGHLIGHT: ADOPT Workshop – Corowa District Landcare

Sustainable Farms is working with farmers and NRM agencies in the NSW Riverina and Murray regions to learn about the barriers and opportunities for the adoption of practices to enhance farm dams. This was undertaken by delivering ADOPT workshops to landholders and practitioners. ADOPT (Adoption and Diffusion Outcome Prediction Tool) was developed by the CSIRO and is a well-developed and accepted way to structure decision-making and build understanding around the adoptability of farm practices.

A common challenge in Natural Resource Management (NRM) is that many practices that are promoted on-farm have lower than anticipated levels of adoption leading to frustration amongst landholders, extension staff and funders.

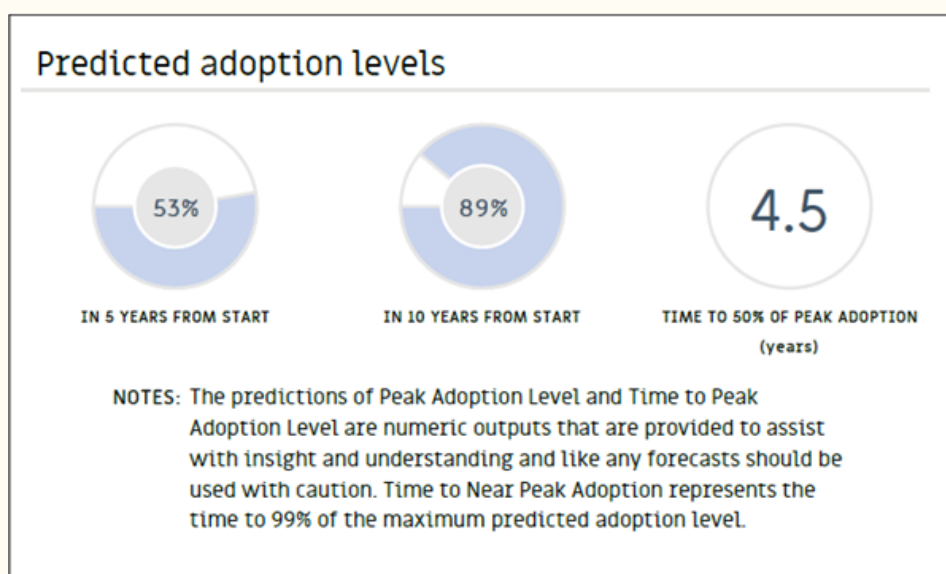
In increasing understanding about these factors that influence adoptability, the results from ADOPT can help inform the design and implementation of NRM programs.

ADOPT is centred around two elements: the trialability of a practice and its relative advantage. Sustainable Farms ran an ADOPT workshop in collaboration with Corowa District Landcare the Murray region, in September 2022. The workshop’s purpose was to use local knowledge to predict the adoption of farm dam enhancement in the Corowa Landcare area.

Firstly, an innovation was assigned to the cohort (stock exclusion and revegetation of 1-2 priority dams), secondly, the population was defined (commercially-viable farmers with mixed cropping and grazing operations).

Participants were taken through a set of 22 questions which generated two important insights: (a) the peak adoption level, and (b) time taken to reach the near peak.

Findings showed that parameters such as profit, care for the natural environment and risk aversion were all influential in determining the likelihood of the cohort’s adoption of enhancing farm dams. Further workshops are planned for 2023.



Predicted adoption of farm dam enhancement of the cohort of farmers from the Corowa region.

GOAL 3: Farm landscapes are being effectively monitored to demonstrate positive conservation outcomes as a result of sustainable agricultural management practices.

In 2022 we continued our long-term ecological monitoring on farms, including monitoring biodiversity, vegetation and water quality. 2706 biodiversity surveys were completed on 167 properties. Our research findings are published in leading academic journals (Appendix 2).



Bird survey in remnant on-farm vegetation (Photo: Tamara Harris)

Farm dams research

The major progress on farm dams is one of many outstanding examples of our research programme. This project seeks to understand the role of enhanced dams, through the following questions:

- What biodiversity benefits do farm dams provide, and how are these affected by their size?
- What effect does fencing have on water quality, vegetation structure, and biodiversity?

As expected in such a complex social-ecological system, preliminary data analysis indicates high variability across farms and regions but marked differences in water quality between fenced and unfenced dams were nonetheless apparent.

The work highlights the critical gains that can be made when working across disciplines and with key partners in the unique ways that characterise the Sustainable Farms initiative. One of our key collaborators is the Deakin University's Blue Carbon Lab who are working on our farm dam sites to examine the relationship between water quality and greenhouse gas emissions.

This partnership has been an outstanding success with early results showing that not only does improving farm dams have biodiversity, economic and farm-productivity benefits, but methane emissions from fenced farm dams are reduced by 56% on average - a huge reduction given the large number of dams across agricultural landscapes Australia-wide.

In order to understand the major gaps in the farm dam literature, our research and extension offers have undertaken a systematic review of farm dams. The aim of this study is to discuss some of the reasons as to why farm dams are so underrepresented in ecological literature, and provide insight into how dams act as wildlife habitat in an agricultural landscape. This study will also detail the features most important for establishing and improving biodiversity in farm dams as found in the literature. The paper is currently in review, with approval anticipated for 2023.

To supplement the farm dams' project, Sustainable Farms is supporting PhD research into frogs in farm dams. The objective of this study is to examine the relative influence of the potential drivers of frog and tadpole distribution throughout highly modified agricultural landscapes.

This study specifically focuses on how dam management interventions influence amphibian populations and found that they were more likely to occur in dams that been fenced to limit livestock and had been revegetated or allowed vegetation to naturally regenerate.



Collecting aquatic macroinvertebrates from an enhanced farm dam (Photo: Amber Croft)

Shelterbelt research

Shelterbelts, vegetated strip features utilised globally to enhance biodiversity, increase farming outputs and reduce erosion and pollution. Sustainable Farms has conducted a systematic review of the literature on shelterbelts to build on and update a previous global systematic map of the shelterbelt literature. The review will provide a synthesised knowledge base of the types of evidence available regarding the implementation of vegetated strips on farms.

Long term monitoring studies of shelterbelts and other plantings in temperate woodlands continues to build our knowledge about changes in biodiversity in response to different vegetation management practices over time. Results from the monitoring have been included in new work on long-term trends in woodland bird and mammal biodiversity.

Birds on farms research

Our [BirdCast](#) tool, which earned Sustainable Farms several awards in 2022, combines remote sensing and climatological data with data from long-term ecological monitoring to build estimates of bird biodiversity in farmland ecosystems. We are now using this bird biodiversity estimator to explore hedonic pricing of farmland and bird biodiversity dividends from restoration projects.

A complementary project seeks to estimate the landscape-scale bird biodiversity dividend of Holbrook Landcare Network and Murray Local Land Services projects. Through analysis of projects that included dense plantings, model-based estimates of the woodland-bird biodiversity dividend are being prepared and will be presented to the Department of Agriculture, Forestry and Fisheries as a case study, by the Holbrook Landcare Network in 2023.



Scarlet Robin (Photo: David Smith)

HIGHLIGHT: Ecological research

Monitoring woodland birds on farms for two decades has placed Sustainable Farms in a unique position to make evidence-based observations about the state of woodland bird conservation. In 2022, Professor David Lindenmayer published a paper summarising the outcomes of our work in this field to date (Appendix 2 – Lindenmayer (2022) Birds on farms: a review of factors influencing their occurrence and dynamics based on long-term work in the temperate woodlands of south-eastern Australia).

Some of the key learnings were:

- Bird occurrence is associated with the amount of tree and shrub cover at site, farm and landscape scales. Highest bird diversity occurs where there are enough trees and shrubs to create a complex habitat, but also where there is a relatively high cover of trees and shrubs across the entire farm. Diversity is higher again when neighbouring farms also have high vegetation cover.
- Planting to increase woodland cover has greater relative positive effects on birds than grazing control. However, the greatest gains can be made when management actions are combined (e.g., planting *and* grazing control).
- Old growth woodlands, regrowth woodlands and replantings each supports different groups of birds.
- Landscape context matters, and it follows that the highest bird biodiversity occurs on farms which support all three woodland structural types listed in 3, as well as other natural assets like paddock trees.
- Long-term data show that while some woodland species are increasing (largely due to replanting efforts), twice as many species are declining.

Many species are continuing to decline; however, this research provides important evidence of the specific management practices that can help contribute to the conservation and recovery of many species.



Grey Butcherbird (Photo: David Smith)

GOAL 4: The strategic objectives of the Sustainable Farms initiative (and the proposed Centre for Woodland Biodiversity of Farms) are supported by effective management and implementation

2022 represented a shift in the project from a cross-college initiative at the Australian National University, towards a Fenner School-centered initiative, replicated in the publication of our new Strategic Plan for 2022-2025. This plan outlines our Vision, Mission and Strategic goals that the initiative will work towards from 2022 to 2025. Importantly, it draws on successes and learnings from our previous Strategic Plan, communicates the strategic intent of Sustainable Farms.

Project management

Performance development processes have continued for staff this year, with the team achieving above the target of their stated objectives in their Performance Development Reviews in 2022. Oversight of the contractual relationships between partners and project managers continued for this year, with all reporting obligations met. We continued to improve and refine project registers, business records and protocol and process documentation for the project. Our master data sets for our field day evaluation were refined and prepared for whole of project evaluation, on track to be conducted in mid-2023. During the latter half of the year planning began to consider funding requirements for delivering future work and ensuring that the current work program, and our new findings, will have maximum impact on the ground.

Whole of project evaluation

In preparation for our whole of project evaluation in 2023 (2018-2023), we supported one of our colleagues in the Fenner School, Dr. Rebecca Pearse, to undertake a series of interviews with NRM professionals. The project is a study of a rural sustainability knowledge network centring on the research and educational practices of Sustainable Farms. This qualitative research, *Knowledge for Sustainable Farming: A Social Study of Practitioners and Landholders in the south west slopes NSW*, investigates the practices of knowledge creation and exchange conducted by scientists, NRM professionals and landholders to understand how this network creates and uses knowledge. In particular, it explores how applied ecology and related fields of landscape ecology and conservation science are circulated. These learnings will be synthesized into our project evaluation in 2023.

Revenue growth

In 2002, *Sustainable Farms* raised more than \$2 million dollars towards funding for research outreach and extension, capacity building and advocacy activities. Towards the end of 2021, \$300,000 from the Ross Trust was secured to contribute towards continuation of Sustainable Farms for 2022. Throughout the year, several proposals were presented to other funders and the ANU to finance the rest of this continuation of project activities until the end of 2024. This included an application to the Australian Government's Extension and Adoption of Drought Resilience Farming Practices Grants Program, in partnership with three peak bodies of Landcare (New South Wales, Victoria and Tasmania). Our application *Accelerating the adoption of farm dam enhancements for drought resilience* has been co-designed to build the capacity of regional Landcare and NRM groups to deliver science-based farm extension.

In 2022, we received \$400,000 from the Ian Potter Foundation, \$122,000 from William Buckland Foundation, \$86,000 from Riverina Local Land Services (early 2023), \$10,000 from the Finkel Foundation and \$10,000 in Eureka prize earnings. We would especially like to thank supporters who made personal contributions to the project – we are extremely grateful for all the support we receive.

HIGHLIGHT: National and State Awards

The Sustainable Farms team from The Australian National University was the recipient of three prestigious accolades in 2022 for BirdCast, a web-based tool that helps farmers predict how different management actions on their farms could impact different bird species.

BirdCast was developed by members of our team and has now been awarded the Eureka Prize for Applied Environmental Research, the NSW Banksia Sustainability Prize and has received a highly commended from the National Trust.

Director of Sustainable Farms, Michelle Young, said recognition comes after decades of working closely with farmers to gather data. “None of this work would be possible without the support of those farmers who enabled our team to monitor biodiversity on their properties for the last two decades,” she said.

BirdCast uses a statistical model to create predictions based on extensive data collected by the Sustainable Farms field team over the past two decades.

Sustainable Farms’ Lead Scientist Professor David Lindenmayer said tools like BirdCast could play a crucial role in the future of schemes that allow farmers to be rewarded for protecting wildlife and vegetation.

“BirdCast represents a huge opportunity in this space. Satellite imagery is often used to assess vegetation cover as a proxy for biodiversity, but this is an extremely coarse measure,” Professor Lindenmayer said. “We need to have boots on the ground and real data, we need to work with farmers. Tools like BirdCast based on real science are critical.

BirdCast is now a Finalist in the 2023 National Banksia Biodiversity Award, announced in March 2023.



2022 Eureka Prize ceremony (L-R): The Hon. James Henry Griffin, Prof. David Lindenmayer, Michelle Young and Dr Martin Westgate.

Financial report

Table 1: Sources of Income 2022

Income source	2017 - 2018	2019	2020	2021	2022	TOTAL to end of 2022
Commonwealth Department of Agriculture and Water Resources		\$1,796,969.69	\$1,796,969.70	\$1,796,969.70		\$5,390,909.09
Ian Potter Foundation	\$520,000.00	\$500,000.00	\$500,000.00	\$500,000.00	\$400,000.00	\$2,420,000.00
George Alexander Foundation				\$505,000.00		\$505,000.00
William Buckland Foundation		\$126,840.00	\$128,737.00	\$133,549.00	\$122,670.90	\$511,796.90
Vincent Fairfax Family Foundation (VFFF)	\$300,000.00					\$300,000.00
Ross Trust				\$100,000.00		\$100,000.00
Meat and Livestock Australia	\$102,130.04	\$125,986.86	\$96,719.30	\$20,925.17		\$345,761.37
Kering SA		\$56,460.72	\$62,859.20			\$119,319.92
Riverina Local Land Services		\$55,000.00				\$55,000.00
ANU Central	\$100,000.00	\$50,000.00	\$50,000.00			\$200,000.00
ANU College of Science	\$100,000.00			\$50,000.00	\$50,000.00	\$200,000.00
ANU Fenner School of Environment & Society		\$50,000.00	\$50,000.00			\$100,000.00
Anonymous Foundation	\$120,000.00		\$40,000.00	\$40,000.00		\$200,000.00
Private Donors	\$140,001.70	\$43,857.00	\$22,540.00	\$22,725.20	\$7,321.62	\$235,722.80
Murray Local Land Services		\$13,500.00	\$1,500.00			\$15,000.00

When Bee Foundation		\$12,000.00	\$9,000.00			\$21,000.00
Central Tablelands Local Land Services	\$27,000.00	\$1,500.00				\$28,500.00
Contract for surveys				\$2,370.45	\$1,564.50	\$2,370.45
Interest Earned	\$3,577.81	\$1,597.85	-\$6,081.70	\$1,315.44		\$1,973.90
Eureka Prize					\$10,000.00	\$10,000.00
Finkel					\$10,000.00	\$10,000.00
TOTAL INCOME	\$1,412,709.55	\$2,833,712.12	\$2,752,243.50	\$3,172,854.96	\$601,557.02	\$10,773,077.15

Table 2: Operating expenses by business area

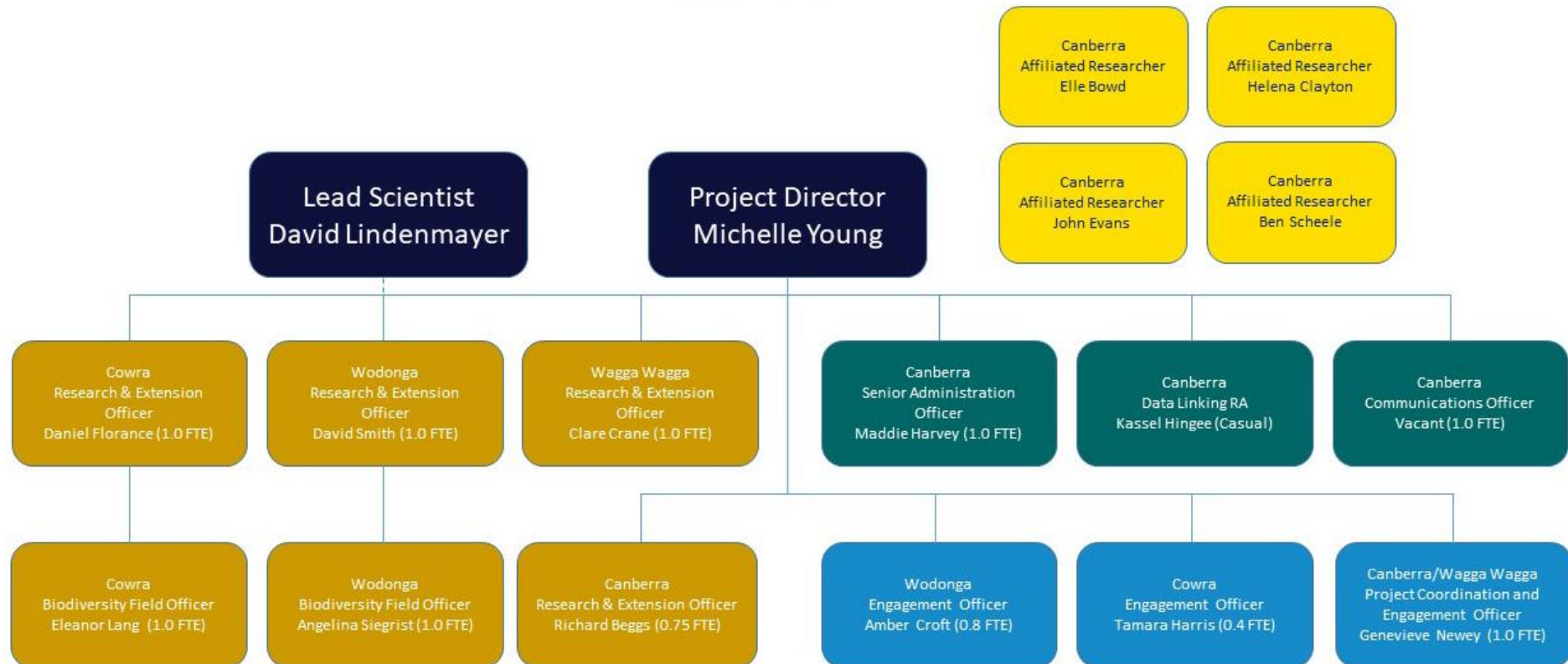
Business Area	2017 – 2018	2019	2020	2021	2022	TOTAL to end of 2022
Farmer Network	\$441,647.61	\$563,317.94	\$555,042.77	\$684,172.84	\$838,311.23	\$3,082,492.39
Research	\$165,237.30	\$202,635.42	\$314,824.74	\$404,060.68	\$286,712.16	\$1,373,470.30
Communications and Engagement	\$72,598.02	\$207,878.11	\$383,180.38	\$347,793.28	\$403,749.08	\$1,415,198.87
Project Management and Evaluation	\$309,018.23	\$430,419.21	\$286,667.11	\$294,128.66	\$308,314	\$1,628,547.52
Indirect costs	\$55,371.00	\$218,391.13	\$394,816.00	\$364,574.00	\$269,279.30	\$1,302,431.13
TOTAL EXPENSES	\$1,043,872.16	\$1,622,641.81	\$1,934,531.00	\$2,094,729.46	\$2,106,366.08	\$8,802,140.21

Table 3: Operating result

	2017 – 2018	2019	2020	2021	2022	TOTAL to end of 2022
Total Income	\$1,412,709.55	\$2,833,712.12	\$2,752,243.50	\$3,172,854.96	\$601,557.02	\$10,773,077.15
Total Expenditure	\$1,043,872.16	\$1,622,641.81	\$1,934,531.00	\$2,094,729.46	\$2,106,366.08	\$8,802,140.51
Operating Result	\$368,837.39	\$1,579,907.70	\$2,397,620.20	\$3,525,745.70	\$2,020,213.92	\$1,970,936.64

Appendix 1

Sustainable Farms project team



Appendix 2

Published papers and books

Mitchell, J., Chapman, B. and Lindenmayer, D.B. (2022) *Sustainable Farm Finance*. CSIRO Publishing, Melbourne.

Lindenmayer, D.B. (2022) When forest management needs to transition to forest protection to conserve biodiversity and provide key ecosystem services: a case study from south-eastern Australia. *Human Ecology: Journal of the Commonwealth Human Ecology Council*, 32, 53-59. <https://www.checininternational.org/chec-journal-human-ecology-32-forests-published/>

Malerba, M., Lindenmayer, D.B., Scheele, B., Waryszak, P., Yilmaz, I.N., Schuster, L. and Macreadie, P.I. (2022) Fencing farm dams to exclude livestock halves methane emissions and improves water quality. *Global Change Biology* 28(15), 4701-4712. <https://doi.org/10.1111/gcb.16237>

Hingee, K.L., Lindenmayer, D.B., Florance, D. and Siegrist, A. (2022) A bird occupancy estimator for land practitioners in the NSW South Western Slopes bioregion. *Ecological Management Restoration*, 23(2), 184-193. <https://doi.org/10.1111/emr.12556>

Lindenmayer, D.B. (2022) Birds on farms: a review of factors influencing their occurrence and dynamics based on long-term work in the temperate woodlands of south-eastern Australia. *Austral Ornithology*, 122(3-4), 238-254. <https://doi.org/10.1080/01584197.2022.2106875>

Lindenmayer, D.B., Macbeth, S., Smith, D. and Young, M. (2022) *Natural Asset Farming: Creating Productive and Biodiverse Farms*. CSIRO Publishing, Melbourne.

Lindenmayer, D.B., Woinarski, J., Legge, S., Maron, M., Garnett, S.T., Lavery, T., Dielenberg, J. and Wintle, B.A. (2022) Eight things you should never do in a monitoring program. *Environmental Monitoring and Assessment*, 194(701). <https://doi.org/10.1007/s10661-022-10348-6>

Lindenmayer, D.B., Scheele, B., and Lavery, T. (2022) Why we need to invest in large-scale, long-term monitoring programs in Landscape Ecology and Conservation Biology. *Current Landscape Ecology Reports*, 7, 137-146. <https://doi.org/10.1007/s40823-022-00079-2>

Appendix 3

Links to Documents

1. [Sustainable Farms – Mental Health Report](#)
2. [Sustainable Farms – Ecological Management and Restoration Paper](#)