Australian National University

Sustainable Farms

Annual Report 2021

SUSTAINABLE FARMS

We acknowledge the Traditional Owners and Elders past, present and emerging of all the lands on which The Australian National University operates.

Further information about *Sustainable Farms*

www.sustainablefarms.org.au

Annual Report available online at

www.anu.edu.au/about/strategic-planning/sustainable-farms

Published by

Sustainable Farms

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CONTENTS

SUSTAINABLE FARMS 2021

When natural assets are well managed they deliver dividends in multiple ways. *Sustainable Farms* is working to improve the condition of natural assets on farms to produce resilient farming systems and better conserve the unique temperate woodland ecosystems of south-eastern Australia.

Our long-term ecology research on farms, supplemented by investigations into economics, continues to demonstrate how protecting and restoring natural assets not only promotes primary production but also creates hotspots for native biodiversity. Healthy natural assets support biodiversity and landscape function, which in turn underpin agricultural production. From small, quick projects such as fencing a rocky outcrop, to longer-term investments such as planting a native shelterbelt, the *Sustainable Farms* natural asset framework has something to offer for all farms and farming systems.

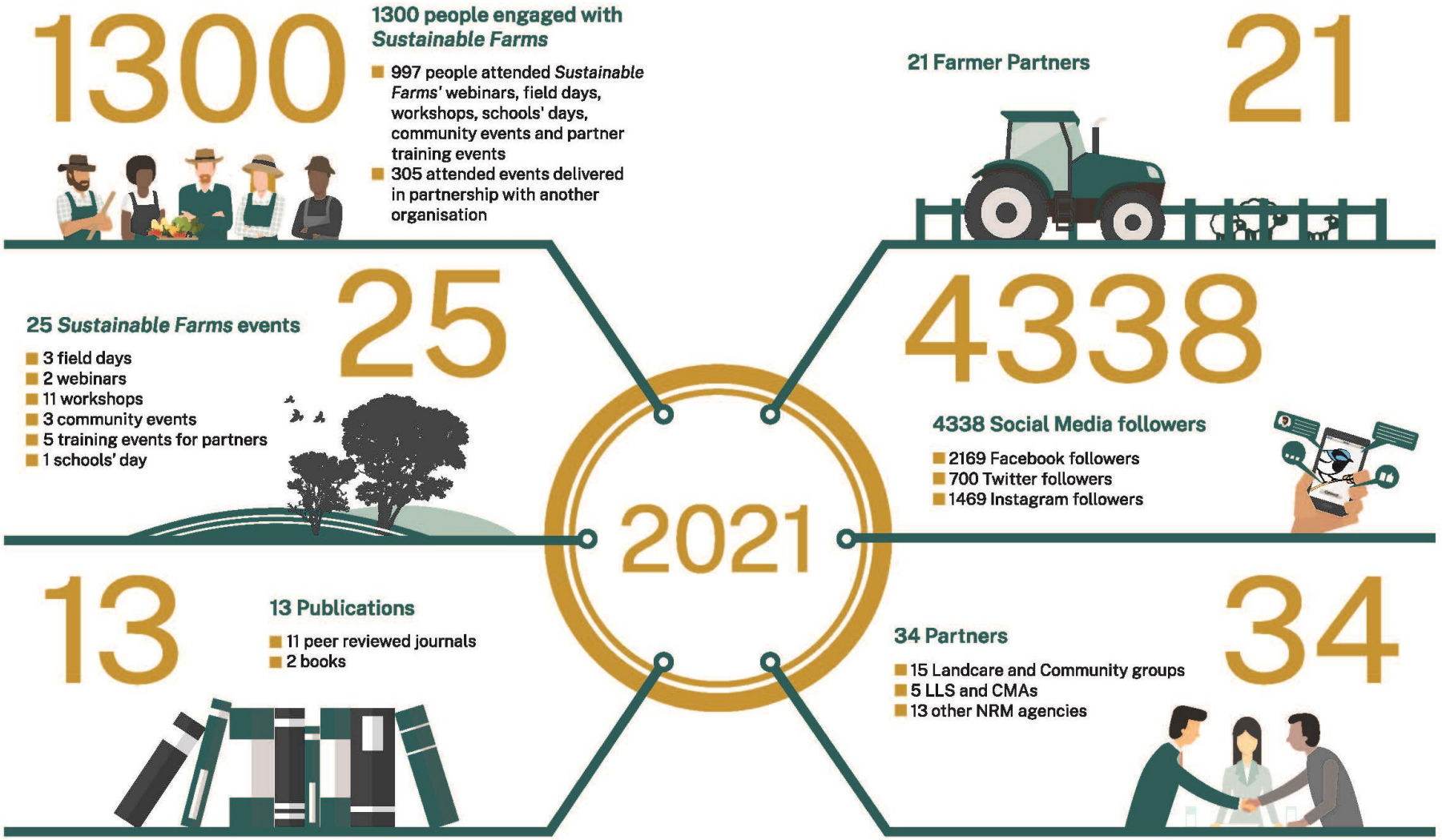
Vitally, our work is also investigating where and how the various tools of public policy, incentives and outreach can support farmers to protect and enhance these natural assets. Our long-term ecological data sets are unique in Australia and the world, enabling assessments of how best to target investment and supporting decision making at both a farm and landscape level. Our team of regionally-embedded field ecologists continue collecting this data from more than 180 farms, while also talking with farmers, Landcare practitioners and many others about what this data demonstrates and how natural asset management can help create sustainable farms.

Despite the limitations imposed by COVID-19, in 2021 our team engaged with 1300 farmers and regional natural resource management professionals. This included numerous on-farm events and three regional results workshops attended by regional Landcare, and NRM bodies. It is increasingly clear from our network of NRM practitioners that there is a continuing need for our research results.

In 2021, we continued to develop the key resources that farmers need, and undertook capacity building work across the sector. The natural asset management framework we use to present our results is clear, straightforward and uncontroversial, and can be picked up and utilized by anyone with an interest in better land management, sustainable farming, or supporting biodiversity.

The launch of **BirdCast**, a new webtool to support farmer decision making regarding native vegetation on farms, was a huge milestone for the project. This webtool was developed with support from Meat and Livestock Australia, and draws on decades of ecological monitoring on farms across the sheep-wheat belt. It allows farmers to predict what birds might utilise woodland areas on their farm, supporting them to understand how the bird species present might change under a range of scenarios. The tool is freely accessible to farmers and provides a unique and valuable insight into how management changes can have a real-world impact on biodiversity in agricultural areas.

2021 SNAPSHOT



SUSTAINABLE FARMS EXECUTIVE

Professor David Lindenmayer AO

Research Director, Ecology, and Lead Scientist

Professor David Lindenmayer is an Australian scientist and academic. He is a world recognised expert in landscape ecology, conservation and biodiversity. His areas of expertise also include environmental management, forest management and environments, terrestrial ecology, wildlife and habitat management, environmental monitoring, forest fire management, natural resource management, zoology and forest sciences, with a particular focus on the endangered Leadbeater's possum. He currently runs six large-scale, long-term research programs in south-eastern Australia, primarily associated with developing ways to conserve biodiversity in reserves, national parks, wood production forests, plantations, and on farm land.

As Professor of Ecology and Conservation Biology at The Australian National University's Fenner School of Environment & Society, Professor Lindenmayer has published more than 1350 scientific articles, including over 760 peer-reviewed scientific papers and 48 books on a wide range of topics associated with forests, woodlands, wildlife and biodiversity conservation and ecologically sustainable natural resource management.

His work on wildlife conservation and biodiversity has, for many decades, led world research in this area. Professor Lindenmayer's conservation and biodiversity research has been recognised through numerous awards, including the Eureka Science Prize (twice), the Whitley Award (ten times), the Serventy Medal for Ornithology, the Australian Natural History Medallion and the Whittaker Medal from the Ecological Society of America. He is an Australian Research Council Laureate (2013-2018), a Fellow of the Australian Academy of Science and of the Ecological Society of America. Professor Lindenmayer was appointed an Officer of the Order of Australia "for distinguished service to conservation and the environment in the field of landscape ecology, to tertiary education, and to professional organisations".

Professor Philip Batterham

Research Director, Mental Health

Phil Batterham is a Professor at the Centre for Mental Health Research within the Research School of Population Health at The Australian National University. He currently holds a Career Development Fellowship from the National Health and Medical Research Council (NHMRC).

He has published more than 200 peer-reviewed articles and has received more than $35 million in research funding as an investigator. His research interests include developing and disseminating online programs to prevent mental disorders, developing tailored screening measures to identify mental health problems in the community, reducing suicide risk, and challenging the stigma of mental illness.

Professor Batterham leads the mental health theme of *Sustainable Farms*, and is keen to evaluate the effects of ecological and economic initiatives on mental health outcomes. By identifying the gaps in the quality and distribution of mental health services in rural communities, Professor Batterham hopes to identify solutions that will support farmers to remain healthy and to reduce the prevalence of suicide and mental health problems in rural Australia**.**

Professor Frank Jotzo

Research Director, Economics

Frank Jotzo is an academic economist working on climate change, energy transition and sustainable economic systems. He is a professor at the ANU Crawford School of Public Policy, and Head of Energy at the ANU Institute for Climate Energy and Disaster Solutions.

His research and research project leadership includes: developing policy instruments for emissions reductions and broader sustainability objectives; economics of decarbonisation; opportunities in the transition to net zero emissions systems; and international dimensions of climate change policy. For *Sustainable Farms*, Frank draws on his expertise in environmental economics and experience with analysis of policy instruments to support environmental outcomes.

Frank Jotzo is a lead author with the Intergovernmental Panel on Climate Change. He frequently contributes to synthesis reports and the public debate, and has advised national and state governments. He is joint editor-in-chief of the academic journal Climate Policy.

Michelle Young

Director, *Sustainable Farms*

Michelle Young began managing the *Sustainable Farms* project in June 2018. She brings to the position a unique blend of experience across a range of different policy areas, including research positions in public health within NSW, assessing the effectiveness of health promotion interventions, including drug and alcohol programs and undertaking formative research for new programs in early childhood and maternity.

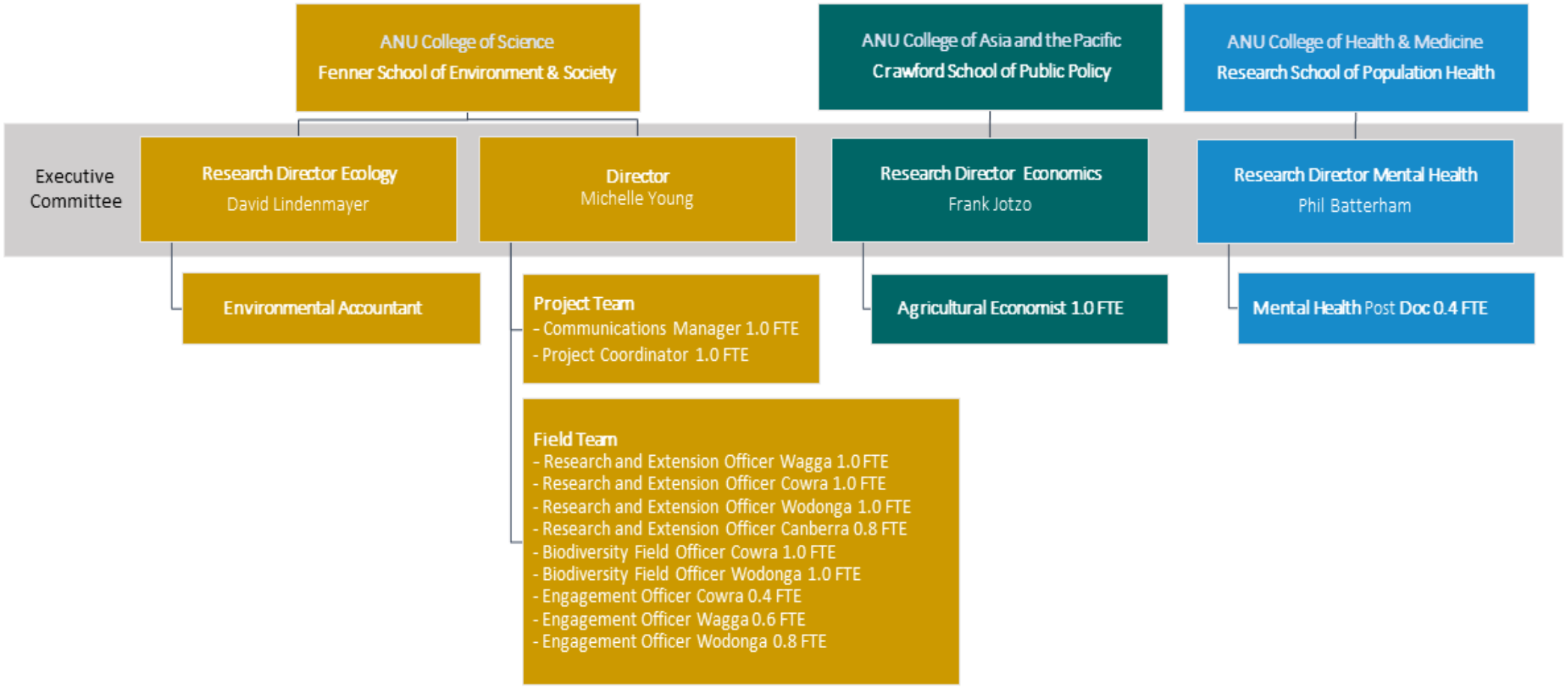
In 2011-2012 she was Deputy Director of the National Institute of Rural and Regional Australia at The Australian National University, where she undertook a comprehensive review of how Federal Government policy settings shaped rural economies and the quality of life for people living in rural areas.

She has also worked in the Australian Public Service as a social scientist with the Bureau of Rural Sciences, and at the Murray Darling Basin Authority as a senior member of the team leading the evaluation of the Basin Plan. She has extensive experience working with farmers on research relating to grain storage, policy reform in the sugar industry, kangaroo harvesting, water purchases and environmental flows.

SUSTAINABLE FARMS PROJECT MAP

SUSTAINABLE FARMS ORGANISATION STRUCTURE

As at January 2022



SUSTAINABLE FARMS ADVISORY COMMITTEE MEMBERSHIP 2021

Chair: Dr Douglas Robertson
Director of Research Services, The Australian National University

ANU

Professor Philip Batterham
Research Director Mental Health, *Sustainable Farms*, The Australian National University

Professor Saul Cunningham
Director, Fenner School of Environment & Society, The Australian National University

Professor Frank Jotzo
Research Director Economics, *Sustainable Farms*, The Australian National University

Professor David Lindenmayer
Lead Scientist: Research Integration and Partnerships & Research Director Ecology, *Sustainable Farms*, The Australian National University

Ms Michelle Young
Director, *Sustainable Farms*, The Australian National University

External

Ms Louise Arkles
Senior Program Manager, The Ian Potter Foundation

Mr David Galeano
Farm Performance and Forestry Branch, Australian Bureau of Agricultural and Resource Economics, ABARES

Mr Tim Lester
Executive Officer, Council of Rural RDCs

Mr Shane Norrish
Farming and Major Projects Director, Landcare Australia

Mr Warwick Ragg
General Manager, Natural Resource Management, National Farmers Federation

FINANCIAL REPORT 2021

Table 1: Sources of Income 2021

Income Funds	2017 - 2018	2019	2020	2021	Total to end of 2021
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	$2,020,000.00
George Alexander Foundation				$505,000.00	$505,000.00
William Buckland Foundation		$126,840.00	$128,737.00	$133,549.00	$389,126.00
Vincent Fairfax Family Foundation (VFFF)	$300,000.00				$300,000.00
Ross Trust				$100,000	$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	$150,000.00
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	$229,123.90
Murray Local Land Services		$13,500.00	$1,500.00		$15,000.00
Wheen 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	$2,370.45
Interest Earned	$3,577.81	$1,597.85	-$6,081.70	$1,315.44	$409.40
Income Total	**$1,412,709.55**	**$2,833,712.12**	**$2,752,243.50**	**$3,172,854.96**	**$10,171,520.13**

Table 2: Operating Expenses by Business Area

Business Area	2017 – 2018	2019	2020	2021	Total to end of 2021
Farmer Network	$441,647.61	$563,317.94	$555,042.77	$684,172.84	$2,244,181.16
Research	$165,237.30	$202,635.42	$314,824.74	$404,060.68	$1,086,758.14
Communications and Engagement	$72,598.02	$207,878.11	$383,180.38	$347,793.28	$1,011,449.79
Project Management and Evaluation	$309,018.23	$430,419.21	$286,667.11	$294,128.66	$1,320,233.21
Indirect costs	$55,371.00	$218,391.13	$394,816.00	$364,574.00	$1,033,152.00
Expense Total	**$1,043,872.16**	**$1,622,641.81**	**$1,934,531.00**	**$2,094,729.46**	**$6,695,774.43**

Table 3: Operating Result

	2017 – 2018	2019	2020	2021	Total to end of 2021
Total Income	$1,412,709.55	$2,833,712.12	$2,752,243.50	$3,222,854.96	$10,221,520.13
Total Expenditure	$1,043,872.16	$1,622,641.81	$1,934,531.00	$2,094,729.46	$6,695,774.43
Operating Result	**$368,837.39**	**$1,211,070.31**	**$817,712.50**	**$1,128,125.50**	**$3,525,745.70**

SUMMARY OF KEY PERFORMANCE INDICATORS

KPI*		Progress
Goal 1: Farmer Network, Extension and Outreach		
1.	Brand recognition	Partially achieved and ongoing
2.	Awareness of benefits of natural assets	Partially achieved and ongoing
3.	Adoption of projects and practices	Partially achieved and ongoing
4.	Reach of *Sustainable Farms* extension services	Actively working towards
5.	Quality of *Sustainable Farms* extension services	Actively working towards
Goal 2: Establish Partnerships		
6.	Investments by Natural Resource Management partners in projects promoted by *Sustainable Farms*	No progress
7.	Partnerships with Natural Resource Management agencies and stakeholder groups	No progress
8.	Partnership outputs	Actively working towards
9.	Capacity building	Partially achieved and ongoing
Goal 3: Multidisciplinary Research Projects		
10.	Research outputs	Partially achieved and ongoing
11.	Data collection	Partially achieved and ongoing
12.	Initiation of sustainability science	No progress
Goal 4: Communications, Knowledge Translation and Engagement		
13.	Media, website and social media effectiveness	Partially achieved and ongoing
14.	Level of policy engagement	Partially achieved and ongoing
15.	Research translation (policy proposals)	Partially achieved and ongoing
16.	Industry partnerships (joint projects)	No progress
Goal 5: Program Management, Evaluation and Reporting		
17.	Work team performance	Partially achieved and ongoing
18.	Revenue growth	Partially achieved and ongoing
19.	Standard of evaluation	Partially achieved and ongoing

Performance Rating
No progress: no progress has been made to meet performance requirements
Actively working towards: progress being made but currently behind performance requirements
Partially achieved and ongoing: progress is meeting or exceeding requirements with ongoing action required to maintain performance rating
Achieved: performance requirements have been achieved with no further action required to maintain performance rating

*Source: *Sustainable Farms* Monitoring and Evaluation Framework 2018–2023, *Sustainable Farms* Indicator Bank KPI 1, pp. 15-18

KPIs 1 – 5: FARMER NETWORK SURVEYS AND OUTREACH

GOAL 1:

Create an influential and engaging farms-based outreach and extension program to increase the engagement, awareness and adoption of enhanced natural asset management based on long-term ecological monitoring.

Progress Summary: We continued to deliver our extension program on farms, at times moving online to respond to COVID-19 restrictions. The dramatic change in seasonal conditions during the year, starting with mouse plagues and the rain triggering weed explosions and flooding events, meant it was always going to be a challenging time to capture the attention of landholders.

Despite this we delivered 25 events and supported partners to deliver another 16, with a combined reach of 1300 attendees. On several cases our events were over-subscribed, pointing to the continued demand from farmers for our content and approach. We also distributed large numbers of the *Ten ways to improve natural assets on a farm* booklet. The Natural Asset Management framework presented in the booklet is proving to be a highly popular approach for Landcare facilitators seeking to engage landholders in planning a broad range of restoration projects on farms.

PERFORMANCE CRITERION

1. Brand recognition

Metric: Percentage of the farmers in the project area who are aware of the *Sustainable Farms* initiative.

Result: Not measured in 2021.

The Regional Wellbeing Survey (RWS) is managed by the University of Canberra and collects data annually in rural and regional Australia on a range of topics including wellbeing, farming and natural resource management. In 2018, the survey included a number of measures specifically designed to support the evaluation of the *Sustainable Farms* program. These results were collated into a *Sustainable Farms* Project Baseline Evaluation Report in 2019.

390 farmers in the *Sustainable Farms* project area completed the RWS in 2018. Within this group of farmers, 27% were aware of *Sustainable Farms*. Over the coming years, *Sustainable Farms* aims to increase project reach to 33%. A retest of this baseline is scheduled for the 2022 RWS.

PERFORMANCE CRITERION

2. Awareness of benefits of natural assets

Metric: Percentage of the farmers in the local government areas where demonstration farms are based, who score positively against an index designed to measure knowledge of the benefits of natural asset management.

Result: Not measured in 2021.

Results from the Regional Wellbeing Survey in 2018 showed that amongst the 390 farmers surveyed from the *Sustainable Farms* project area:

- There was a high level of awareness of the overall benefits of improving natural assets on farming land, particularly for activities that aim to increase trees and shrubs (82.3%) and improve groundcover (83.8%).
- Awareness of the benefits of restricting stock access to waterways and dams was lower, with 62.7% of those surveyed in the project area indicating their awareness of this strategy.

For further results, see the ANU *Sustainable Farms* Project Baseline Evaluation Report available at www.sustainablefarms.org.au/resources.

PERFORMANCE CRITERION

3. Adoption of projects and practices

Field Day evaluation information is collected through three online surveys:

- **An Initial Survey:** completed on arrival at the field day, on a tablet or paper form provided to attendees. At evaluated webinars, attendees are encouraged to complete the survey prior to the webinar. This survey collects demographic information and current and past natural asset management practices
- **A Post-Event Survey:** emailed to attendees 7-10 days after the event. This survey collects event feedback and asks if attendees intend to apply natural asset management on their properties in the future.
- **Annual Review Survey:** emailed to attendees annually for a period of 5 years following the field day. These surveys ask the attendee if they have completed any natural asset projects over the previous 12 months, and whether they have spoken with other farmers about natural asset management.

To date, *Sustainable Farms* field days and webinars have recorded 660 responses to our initial survey. Post-event evaluation surveys were sent to 513 attendees and were completed by 174, which is a response rate of 34%.

In September 2020 *Sustainable Farms* introduced incentives for completion of surveys in an effort to increase response rates, however in 2021 response rates were unchanged.

Metric: Percentage of farmers attending field days who indicate an intention to adopt a natural asset management practice promoted by *Sustainable Farms*.

Result: The post-event evaluation found that 88% of attendees responding to the survey intended to adopt at least one natural asset management practice on their property after attending the event. This 88% indication was consistent across surveys taken in 2019, 2020 and 2021.

While the results from the feedback surveys are encouraging, greater response rates are required to boost the total proportion of attendees at field days, and meet the target of >50% of attendees at field days indicating intention to adopt natural asset management practices.

Metric: Percentage of farmers attending field days who subsequently invest in natural asset management.

Result: Follow up surveys commenced in 2020 to ascertain the number of field day attendees who have implemented natural asset management practices in the years following attendance at a *Sustainable Farms* event. In 2020 and 2021, 400 attendees were invited

to complete annual review surveys. Of these, 87 completed the survey, a response rate of 22%. The annual review surveys found that 97% of respondents had completed one or more natural asset management practice in the previous 12 months.

Metric: Increase in the number of farmers indicating they have invested in natural asset management.

Result: Not measured in 2021. A re-test of the baseline is scheduled for the 2022 Regional Wellbeing Survey.

PERFORMANCE CRITERION

4. Reach of *Sustainable Farms* extension services

The challenges of delivering extension during 2020 carried though to 2021, with COVID-19 restrictions impacting the number and size of events and activities across the region. As a result, our field ecologists and engagement officers continued to adapt the outreach program to deliver online events, but were also able to hold some on-farm events when restrictions allowed. In 2021 there was a marked increase in the variety of events Sustainable Farm led, collaborated on, and supported. This variation demonstrates adaption of the project to meet the needs of partners and farmers.

Metric: Number of demonstration farms established and operating.

Result: Despite the challenges of COVID-19, in 2021 we added 3 landowners to our farmer partner network bringing the network total to 21. Growth in the network increases project reach, the diversity of concepts for demonstration and *Sustainable Farms*' overall capacity to support extension and outreach.

Metric: Number of field days and other community events (e.g. workshops, biodiversity events and agricultural shows).

Result: In 2021, *Sustainable Farms* delivered the following field days and community events:

- 3 field days
- 2 webinars
- 11 workshops
- 3 community events
- 5 training events for partners
- 1 school-based event

To date, *Sustainable Farms* has delivered:

- 24 field days
- 8 webinars
- 12 workshops
- 12 community events such as Breakfast with the Birds and Spotlighting
- 7 training events for partners
- 1 school-based event

Metric: Number of farmers in the local government areas where demonstration farms are based, participating in field days and other events.

Result: In 2021, more than 1300 people attended field days and other events either led or supported by *Sustainable Farms*.

- 997 people attended *Sustainable Farms* led webinars, field days, workshops, schools' days, community events, and partner training events
- 305 people attended events where *Sustainable Farms* delivered in partnership with another organisation

To date, 3295 people have participated in field days and other events led or supported by *Sustainable Farms*.

- 2470 attended *Sustainable Farms* led webinars, field days, workshops, schools' days, community events, and partner training events
- 825 attended events where *Sustainable Farms* delivered in partnership with another organisation

Metric: Number of farmers in the project area who receive face-to-face advice.

Result: At least 160 farmers received personalised information from field staff in 2021. This advice included specific questions about their property and situation (particularly in relation to farm dams), where to start on NRM projects, and available sources of funding.

Some of the topics *Sustainable Farms* provided advice on included:

- seeking information about catchment management
- seeking information and practical advice on squirrel gliders and fencing
- specific, practical recommendations to enhance farm dams (e.g. how far a fence should be from the dam, where to plant around the dam, what actions to prioritise when enhancing a dam)
- specific advice regarding survey results on the farm
- advice on water birds and farm dam biodiversity
- advice of bird and reptile identification

PERFORMANCE CRITERION

5. Quality of *Sustainable Farms* extension services

Despite the challenges of running events in 2021, the *Sustainable Farms* team continued to prioritise the quality of their activities, by adapting delivery models and rescheduling events to when restrictions eased. This effort was rewarded by a continuation of high satisfaction ratings from partners and attendees of events.

Metric: Field days achieve objectives in alignment with benchmarks described in Demonstration Farm Report and Tool Kit.

Result: Of 8 evaluated field days held alone or in partnership in 2021, 95% of benchmarks were achieved.

Metric: Peer review of field days and supporting resources including report of strengths, weaknesses, lessons learned and program growth.

Result: For the 8 evaluated field days held in 2021, peer review was conducted and notes recorded.

Metric: Satisfaction of participants (%) at field days.

Result: 2021 post event surveys indicated:

- 100% of respondents reported that they were either satisfied or very satisfied with the quality of the field day
- 95% of respondents reported that they were likely to recommend the field day to a friend or colleague.

To date, post event surveys indicated:

- 98% of respondents reported that they were either satisfied or very satisfied with the quality of the field day
- 95% of respondents reported that they were likely to recommend the field day to a friend or colleague.

Metric: Recognition of field extension and outreach program through publication in extension literature.

Result: Not evaluated in 2021.

Metric: Number of farmers who report sharing ideas from the project with other farmers.

Result: Annual review surveys received a response rate of 22%, and indicated that:

- 78% of respondents had shared ideas with other farmers
- 57% of respondents reported they had influenced one or more farmer.

CASE STUDY: BirdCast

Sustainable Farms *has developed a new webtool drawing on decades of university research that enables farmers and NRM practitioners to find out which bird species may live in woodland areas on farms, providing a unique and valuable insight into biodiversity in agricultural areas, and enabling comparison between different scenarios.*

The tool has been created by researchers from *Sustainable Farms* with support from Meat and Livestock Australia.

"The BirdCast tool enables farmers to predict what birds might utilise woodland areas on their farm, and to understand how the bird species present might change under a range of scenarios," *Sustainable Farms* Biodiversity Field Officer Angelina Siegrist said.

"This is really valuable, because with many species of native wildlife under threat and biodiversity declining worldwide, farmers have an opportunity to help turn this trend around by looking after woodland areas on farms."

"The BirdCast tool gives land managers a solid indication of how their own changes in management might have a real-world impact on biodiversity," Ms Siegrist said.

For more than two decades, researchers from *Sustainable Farms* have been studying birds on farms in northern Victoria and the South West Slopes region of NSW. BirdCast is unique because it enables this research to be accessed in an interactive way by farmers and NRM practitioners, to help inform on-farm decision making around remnant management and revegetation.

It can sometimes be challenging for the people who are the stewards of our amazing landscapes to access real science to inform their decisions. It's absolutely vital that wildlife is monitored over timescales of decades, not just years, so that we can understand the impact that land management changes, climate and other factors have on our wildlife. This tool is a direct output of *Sustainable Farms* research, with real-world impacts for farmers making decisions about their land.

It is anticipated that BirdCast will be a particularly useful tool for NRM organisations and Landcare groups who are working alongside farmers to improve woodlands on farms. BirdCast also provides the option for users to export reports based on the information they input into the app.

Biodiversity Field Officer, Angelina Siegrist and Professor David Lindenmayer with the new Birdcast tool (photo by Suzannah Macbeth)

KPIs 6 – 9: FARMER NETWORK PARTNERSHIPS

GOAL 2:

Build the capacity of the NRM sector to support farmers to better manage their natural assets through formalised partnerships and informed by the latest research.

Progress Summary: In 2021 *Sustainable Farms* ran a varied program of training workshops, research forums and direct advisory services to the NRM sector across the project area. These events use our research findings to inform investment strategies and practices to deliver environmental outcomes. We also directly supported the planning and implementation of a number of new initiatives for farm dams, and riparian areas; and collaborated with partners on supported conservation efforts for the greater glider, the pink tailed worm lizard and threatened woodland birds.

The spatial modelling developed to support BirdCast is also facilitating assessments with several of our key partners about how we can evaluate the impact of investments by NRM bodies in restoration on vegetation and biodiversity responses.

PERFORMANCE CRITERION

6. Investments by Natural Resource Management partners in projects promoted by *Sustainable Farms*

Metric: Number of grants for on-farm works (for shelter, farm dam enhancement, and riparian restoration) awarded to farms participating in the *Sustainable Farms* network.

Result: None in 2021.

PERFORMANCE CRITERION

7. Partnerships with Natural Resource Management agencies and stakeholder groups

Metric: Number of agencies with whom *Sustainable Farms* has:

- Engaged in planning or review of research outputs
- A contract for delivery of services

Result: In 2021 *Sustainable Farms* showcased our research in three Research Results Workshops, held in Wagga Wagga, Orange and Wangaratta. The workshops bring *Sustainable Farms* researchers from ecology, mental health and economics to the project region to share their research results with our NRM partners and landholders. The aim of these workshops is to help build the capacity of Landcare networks and NRM agencies to support practice change on farms. The evidence we delivered through these workshops informs investment decisions and program planning to support improvements in farm productivity and drought resilience

In 2021 *Sustainable Farms* engaged with 34 agencies and organisations to plan or review research outputs. These included 15 Landcare and community groups, 5 Local Land Services and Catchment Management Authorities and 13 other NRM organisations. These relationships have helped to extend the reach of *Sustainable Farms* activities across the project region.

As an example, our field ecologists supported the design and delivery of an incentives program, *Improving Farm Water for Livestock and Biodiversity*, being implemented by Murray Local Land Services, with funding from the Future Drought Fund.

In 2021, *Sustainable Farms* completed 1 contract for delivery of services to a NRM agency, the contract was for a small wildlife monitoring and capacity training project.

PERFORMANCE CRITERION

8. Partnership outputs

Metric: Number of community engagements in which *Sustainable Farms* supported partner organisations.

Result: In 2021 *Sustainable Farms* supported partners to deliver 16 events, including:

- 6 field days on topics such as farm dams, shelterbelts, native vegetation management and the Box Gum Grassy Woodlands
- 5 community events on topics such as remnant enhancement, bird identification and platypus
- 1 webinar on farm productivity and sustainability
- 4 workshops and training events on shelterbelts

Metric: Number of joint funding applications submitted for farm regeneration.

Result: *Sustainable Farms* supported 3 Landcare organisations with environmental grant applications in 2021, and provided support to the Riverina Local Land Services and the North East Catchment Management Authority with applications for funding from the Future Drought Fund. This support varied amongst partners from letters of support and advice on strategy, to actively developing the proposal content. To date, one of these applications has received $54,536 (Indigo Creek Landcare Group, through the Murray Darling River Healthy Rivers Program).

Metric: Funding acquired for joint projects

Result: In 2021, an application was made to the Australian Research Council for a linkage project in partnership with three Local Land Services (Murray, Riverina and Central Tablelands), with a total request of $1,002,179. This project expects to generate new knowledge on the influence of grazing, burning, and their interaction on the condition of travelling stock reserves with different prior management regimes.

PERFORMANCE CRITERION

9. Capacity building

Metric: Number of training sessions and workshops *Sustainable Farms* has delivered to NRM agencies and staff.

Result: In 2021, *Sustainable Farms* delivered 10 capacity building events to NRM agencies and staff:

- 5 workshops on arboreal marsupial detection.
- 5 consultation sessions with NRM Agencies to test and train on our newly complete BirdCast tool: sustainablefarms.org.au/birdcast

CASE STUDY: Research Results Workshops

Research Results Workshops are held every two years in regional locations, and are a key platform for Sustainable Farms' capacity building.

The workshops bring *Sustainable Farms* researchers from ecology, mental health and economics to the project region to share their results with our NRM partners and landholders. The aim of these workshops is to help build the capacity of Landcare networks and NRM agencies to support practice change on farms. In May, we held two Research Results Workshops, in Wagga Wagga and Orange. In December, we ran a third workshop for our Victorian colleagues in Wangaratta. The evidence we delivered through these workshops is designed to inform investment decisions and program planning by these organisations to support improvements in farm productivity, drought resilience and carbon management. This year's workshops included the following presentations:

- Valuing natural assets including biodiversity in the box gum grassy woodlands (see case study on page 27)
- Mental health and wellbeing and farmer world views, including research findings from our research on the intersections between mental health and natural resource management, and presentations from rural finance services
- Farm dam research, including findings on water quality, carbon emissions and biodiversity (vegetation, frogs and birds, including breeding success)
- Woodlands and plantings
- Discussion of how *Sustainable Farms* can collaborate regional partners to accelerate practice change?

Dr Nicki Munro (*Trust for Nature), Dr* Martino Malerbo *(Blue Carbon lab, Deakin University*), David Smith (*Sustainable Farms*) and Paul Sinclair (Farm Manager, Mansfield) (photo by Suzannah Macbeth)

KPIs 10 – 12: RESEARCH

GOAL 3:

In partnership with industry and government develop a multidisciplinary research program to understand relationships within and between landscape function, mental health and wellbeing and financial success.

Progress Summary: *Sustainable Farms* is built on the long-term ecological monitoring of biodiversity on farms in the temperate woodlands of south-eastern Australia. The long-term monitoring studies continue to lead the *Sustainable Farms* research program.

In 2021, these data sets were used to develop spatial models to predict bird biodiversity in woodland patches across the 8.3 million hectares covered by the *Sustainable Farms* project. These models have opened up new opportunities to explore the relationship between biodiversity and farm profitability. One example of this stream of research is the hedonic modelling ANU is working on in partnership with the Australian Bureau of Agricultural and Economic Research and Sciences.

Sustainable Farms has made major advances in the past 2 years through connecting ecological, economic and accounting approaches. The major progress on farm dams is one of many outstanding examples. The work highlights the critical gains that can be made when working across disciplines and with key partners in the unique ways that characterize 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 methane emissions. This partnership has been an outstanding success with early results showing that not only does improving farm dams have a biodiversity, economic and farm productivity benefit, but Greenhouse Gas emissions from better managed farm dams can be cut by 56% - a huge reduction give the large number of dams across agricultural landscapes Australia-wide.

Quantitative research projects exploring the relationship between the management of natural assets and the outcomes for mental health and wellbeing were finalised in 2021, with data analysis completed and key publications submitted for peer review.

Active research projects in 2021 included:

Mental health: Analysis of findings from the University of Canberra's Regional Wellbeing Survey relating to natural asset Management and wellbeing

Project summary:	The Regional Wellbeing Survey (RWS) is a large survey of 13,000 Australians, conducted every year since 2013. The survey, conducted by the University of Canberra, is unique in that it focuses on the experiences of people living in regional, rural and remote areas of Australia. In 2018 the RWS survey included a series of questions relevant to *Sustainable Farms* project. Approximately 1,566 farmers participated in the 2018 RWS across Australia. Farmers were asked about their participation in natural asset management on their farm including dam enhancement, shelterbelts and improving groundcover. This data, along with various other wellbeing, financial, environmental and social indicators will be used to examine the relationships between farmer participation in natural asset management on private land and farmer mental health and wellbeing.
Project progress:	On track. The first paper was submitted in 2021 and is in the final round of minor revisions; a second paper is being drafted.

Mental health: Systematic review: mental health and wellbeing impacts of the natural environment in rural and farming communities

Project summary: The aim of this project is to bring together the existing research on the relationship between the natural environment and mental health and wellbeing of people living in rural settings. This will be done through a systematic review of the literature on the relationship between mental health and wellbeing of people living or working in rural areas (including farmers and other landholders) and a range of environmental factors, including: 1) chronic natural disasters (drought); 2) natural resource management (e.g. conservation); and 3) other related factors such as land degradation, environmental/climate change, and nature connectedness.

Project progress: Completed. Paper accepted for publication in January 2022.

Mental health: FarmWell Survey: The effects of natural resource management, vegetation cover and financial status on the mental health and wellbeing of farmers

Project summary: The primary aim of this study is to identify relationships between mental health and wellbeing status with farming practice and biodiversity. The secondary aim of the study is to assess relationships between financial status and mental health and wellbeing. This project linked data from a mental health survey to ecological data from long-term monitoring.

Project progress: Complete. Paper accepted for publication in February 2022.

Ecology: Monitoring water and biodiversity in farm dams

Project summary: This project seeks to understand the role that enhanced, fenced farm dams play in improving water quality for livestock and biodiversity. The study will do this by investigating the effects on faunal biodiversity, water quality and vegetation structure when creeks and dams of different sizes are fenced, and comparing them to unfenced dams. Specifically, the following questions will be investigated: 1) what biodiversity benefits do farm dams provide, and how are these affected by their size? And 2) what effect does fencing have on water quality, vegetation structure, and biodiversity?

Project progress: On track. Study design and monitoring protocols are in place and were further refined in 2021. Data from the pilot study completed in 2019 was analysed and prepared for publication. Paper submitted for review in 2021.

Ecology: Systematic review of farm dams

Project summary: The aim of this study is to highlight the major gaps in the farm dam literature, 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.

Project progress: Complete, paper submitted for review in 2021.

Ecology: Frogs in Farm Dams Project

Project summary: The objective of this study is to examine the relative influence of potential drivers of frog and tadpole distribution throughout highly modified agricultural landscapes. It focusses on the South West Slopes of NSW.

Project progress: After two years of monitoring (2020 and 2021), this project found 10 species of frog and a slight increase across the two years. This project will be developed as part of a PhD dissertation due in 2024, which will include up to 5 research papers.

Ecology: Long term monitoring studies of shelterbelts and other plantings in temperate woodlands

Project summary: In 2021, monitoring of biodiversity in woodland remnants and plantings continued. Long-term monitoring at these sites continues to build our knowledge about changes in biodiversity in response to different vegetation management practices over time.

Project progress: Results from the monitoring in 2021 have been included in new work on long-term trends in woodland bird and mammal biodiversity. In particular, the work has been demonstrating the different population trajectories of the same species in different vegetation types over time (plantings are proving to be critical drought refugia), with even the same species responding differently in different sub-regions of the Grass Box-Gum Woodland belt. The results of the work (and other ongoing analyses) will be published in leading scientific journals and presented in a number of fora to help guide on-ground management practices.

Ecology: Systematic review of literature on shelterbelts

Project summary: Shelterbelts, vegetated strip features utilised globally to enhance biodiversity, increase farming outputs and reduce erosion and pollution. The shelterbelts systematic review aims 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. The review focuses on the types of interventions that are suited to an Australian context.

Project progress: The shelterbelts systematic review is complete and the resulting paper was submitted for publication in 2021, and is currently in review.

Ecology & Spatial Statistics: Linking data to predict bird biodiversity

Project summary: The project (jointly funded by *Sustainable Farms* and Meat and Livestock Australia) combines remote sensing and climatological data with data from long-term ecological monitoring to build estimates of bird biodiversity in farmland ecosystems. The project aims for these estimates to be reliable, cost-effective to calculate, and reflect changes in biodiversity.

Project progress: Complete, paper submitted for publication in 2021 and is currently in review. A model for predicting the occurrence of birds in remnant woodlands was developed and a model for birds in both remnant and planted woodlands is complete. Bird cast, a web-based visualisation tool of the model estimates, was refined through consultation workshops and launched in 2021.

Economics: Environmental economic accounts for the Box Gum Grassy Woodlands

Project summary: The aim of the project is to study conservation of box gum grassy woodlands. The research objective is to develop the environmental economic accounts including land, carbon, water, biodiversity and agriculture. These accounts are being prepared in collaboration with the National Environmental Science Program and span the years

2000 to 2018 and have been linked to information on agricultural production, including irrigated crops and pasture, and carbon sequestration. The work will serve as a base for further accounting work in the region, including the valuation of ecosystem services.

Project progress: This work was completed in 2021. The first paper from this work, on the distribution and extent of the box gum grassy woodlands, carbon sequestration, its relations to agricultural production and differences in biodiversity at selected sites was published in 2021.

Social Science: Knowledge for Sustainable Farming: A Social Study of Practitioners and Landholders in the south west slopes NSW.

Project summary: The project is a study of a rural sustainability knowledge network centring on the research and educational practices of ANU *Sustainable Farms.*
The study is investigating 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.

Project progress: Ethics approval granted and interviewing commenced in Murray and Riverina in November 2021.

Social science: Scenario planning: the future of farming and biodiversity in agricultural landscapes: the Muttama Creek Catchment area

Project summary: This scenario planning project is a collaboration between researchers from Leuphana University (in Germany) and the ANU *Sustainable Farms* project, with the Muttama Creek Landcare Group and Murrumbidgee Landcare as local partners. Managing and enhancing biodiversity in farming landscapes continues to be a key challenge. This project explores areas of conflict and consensus between perspectives in the community about the management of biodiversity on farms, with a view to considering future community-based projects.

Project progress: Complete, a paper was submitted for publication in 2021 and is currently in review.

Finance: Collaboration with ABARES to model farm loan options

Project summary: In order to strengthen the finance team's research on revenue contingent loans and other financial options for farmers, access to a comprehensive database of farm financial records is required to enable extensive modelling of loan proposals. This project seeks to work with ABARES to gain access to areas of their database in order to achieve this.

Project progress: Collaboration with ABARES on this project is continuing.

Economics: Modelling the benefits and costs of investments in farm dam enhancements

Project summary: The aim of this project is to estimate the extent of any production gains and the cost of investing in appropriate natural asset enhancement on and around farm dams and planting shelterbelts. The cost-benefit analysis will also include, as far as practicable, any relevant social costs and social benefits such as the promotion of biodiversity.

Project progress: Complete, paper published in 2021.

Economics: Evaluation and predicting farmer uptake of nature-based farm dam enhancements

Project summary: This research will seek to evaluate the drivers and constraints for farmer adoption of 'nature-based' dam management practices. The research aims to build understanding of the level of feasible uptake of nature-based dam management practices across the *Sustainable Farms* study region.

Project progress: On track, workshops held with farmers and key stakeholders in 2021, and research will continue in 2022.

PERFORMANCE CRITERION

10. Research outputs

Metric: Number of publications (books, working papers, journal publications).

Result: As an initiative of The Australian National University, world leading research is a key value-add that *Sustainable Farms* can offer NRM partners in the project region. In 2021, the team was highly productive in the publication sphere, with a total of 13 publications: 11 peer reviewed journal articles and 2 books.

Books:

- Mitchell, J., Chapman, B., and Lindenmayer, D.B. (2022). Saving the Family Farm. CSIRO Publishing, Melbourne. (in press).
- Lindenmayer, D.B., Macbeth, S., Smith, D., and Young, M. (2021). Natural Asset Farming. CSIRO Publishing, Melbourne. (in press). https://www.publish.csiro.au/book/8020/.

Peer-reviewed journal articles:

- Batterham PJ, Brown K, Trias A, Poyser C, Kazan D, Calear AL. (In press). Systematic review of quantitative studies assessing the relationship between environment and mental health in rural areas. Australian Journal of Rural Health (2022)
- Beggs, R., Tulloch, A.I.T., Pierson, J., Blanchard, W., Crane, M. and Lindenmayer, D.B. Native to Nemesis: a cultural history of the Noisy Miner. (Australian Zoologist) (in press).
- Belder D.J. Pierson J.C. Rudder A.C. Ikin K. and Lindenmayer D.B. (2021). Ongoing declines of woodland birds: are restoration plantings making a difference? Ecological Applications e2268. https://doi.org/10.1002/eap.2268.
- Dobes, L., Higgins, T., Crane, M, van Dijk, A., and Lindenmayer, D.B. (2021) A cost-benefit analysis of improved farm dam water quality for livestock weight gain. PLOS One 16(8): e0256089. https://doi.org/10.1371/journal.pone.0256089.
- Hartley, R., Scheele, B.C., Blanchard, W., Schroder, M,. Lindenmayer, D.B. (2021). Multi-species study reveals exotic herbivores dominate Australian high-elevation grasslands. Conservation in Practice http://doi.org/10.1111/csp2.601.
- Sato, C.F., Florance, D., and Lindenmayer, D.B. (2021). State-and-transition models are not an appropriate tool for evaluating management effectiveness. Conservation Science in Practice e519 http://doi.org/10.1111/csp2.519.
- Scheele, B.C., Grogan, L.F., Lindenmayer, D.B., Hollanders, M., and Hoffman, E.P (2021). Conservation translocations for amphibian species threatened by chytrid fungus: A review, conceptual model, and recommendations. Conservation Science and Practice 3 e524 https://doi.org/10.1111/csp2.524

- Sweaney N. Lindenmayer D.B. and Driscoll D.A. (2021). Plantations are a barrier to dispersal of a woodland butterfly but farmland is not. Landscape Ecology https://doi.org/10.1007/s10980-021-01340-5.
- Westgate, M., Crane, M., Florance, D., and Lindenmayer, D.B. (2021). Synergistic impacts of aggressive species on small birds in a fragmented landscape. Journal of Applied Ecology, 58(4), https://doi.org/10.1111/1365-2664.13838
- Westgate M. et al. and Lindenmayer D.B. (2021). Fencing farm dams increases vegetation cover, water quality and macroinvertebrate biodiversity. (Ecology and Evolution) (in press).
- Vardon, M., Keith, H., Burnett, P. and Lindenmayer, D.B (2021). From natural capital accounting to natural capital banking. Nature Sustainability https://doi.org/10.1038/s41893-021-00747-x.

PERFORMANCE CRITERION

11. Data collection

Metric: Collection of mental health data to inform empirical research activities (number of survey waves and response rates).

Result: In 2021, the mental health research team completed data collection of the following survey.

The Australian National COVID-19 Mental Health, Behaviour and Risk Communication Survey: This study aims to improve understanding of the mental health and behavioural impacts of COVID-19 on the Australian community. The study includes investigation of regional differences in the effects of COVID-19 on mental health and the financial impacts of COVID-19 on mental health. The study is a longitudinal study that included a representative sample of 1,296 Australian adults, comprising an initial 20-30 minute survey (late March 2020), with six 15-20 minute follow-up surveys at two-week intervals (until mid-June 2020), plus a follow-up in February 2021. Overall, our aim is to discover what puts our community at risk during pandemics, what protects them, and what can be done to foster community mental health. See https://psychology.anu.edu.au/research/projects/australian-national-covid-19-mental-health-behaviour-and-risk-communication-survey for more details.

Metric: Collection of finance or economic data to inform empirical research activities (number and type of data collection activities).

Result: There are several economic studies:

(i) modelling the farm level economics of reduced evaporation in enhanced farm dams.
- Built a representative farm grazing enterprise calibrated for the project region to support the model.
- Identified the farm production model to employ to estimate the economic outcomes under various destocking scenarios.
- Established a spatial temporal numeric model for evaporation sensitivity to wind change.

(ii) Evaluating the drivers and constraints to investing in farm dam enhancements across different farmer cohorts.
- Several adoption case studies were conducted in 2021 using the ADOPT framework, supporting collection of economic data to support results on

predicted farm dam enhancement practice change for a defined cohort of farmers in the *Sustainable Farms* study area:

- Holbrook Landcare ADOPT case study – farmer workshop
- Goulburn Broken CMA ADOPT case study – extension workshop
- Riverina LLS ADOPT case study – extension workshop

(iii) Estimating the relationship between farm land values and habitat.

In 2021, a collaboration with ABARES has provided us access to economic data on agricultural land values. The integration of these land value data with *Sustainable Farms* spatial data on extent of box-gum grassy woodland and predicted bird biodiversity on farms will support statistical analysis in 2022 on the relationship between habitat and biodiversity and agricultural land value.

Metric: Number of biodiversity surveys completed in long-term ecological monitoring studies.

Result: In 2021 biodiversity monitoring was conducted on over 150 properties, with 3299 biodiversity surveys completed. All scheduled field surveys on long-term ecological monitoring sites were undertaken, except for one field camp, due to COVID-19 restrictions and where site access was an issue (change of landholder, lambing etc).

The biodiversity survey effort in 2021 included:

- Farm dams surveys collected across 35 properties, 2189 surveys in total. Surveys included:
  - Winter vegetation (143 surveys)
  - Winter birds (315 surveys)
  - Winter water quality (143 surveys)
  - Winter water quality for lab (43 surveys)
  - Winter spotlighting (35 surveys)
  - Spring birds (318 surveys)
  - Spring frogs (182 surveys)
  - Spring vegetation (159 surveys)
  - Spring water quality (159 surveys)
  - Spring water quality for lab (46 surveys)
  - Summer vegetation (147 surveys)
  - Summer water quality (159 surveys)
  - Summer water quality for lab (46 surveys)
  - Autumn vegetation (124 surveys)
  - Autumn water quality (124 surveys)
  - Autumn water quality for lab (46 surveys)
- Shelterbelts surveys collected across more than 121 properties. The 979 surveys included:
  - South West Slopes winter spotlighting (204 surveys)
  - South West Slopes spring birds (272 surveys)
  - North East Victoria winter birds (157 surveys)
  - North East Victoria spring birds (69 surveys)
  - Nanangroe summer vegetation (146 surveys)
  - Nanangroe winter spotlighting (131 surveys)

- Grazing surveys were collected across 15 properties, 104 spring bird surveys were collected in total.
- Surveys were also collected on forb sites, 9 properties in total, with 27 surveys completed.
- The ongoing cleaning and consolidation of data systems management and extraction. This included the complete migration of data onto a single database, ongoing extraction of data sets for analysis and the development and ongoing use of tablet-based electronic forms to allow onsite data entry.

PERFORMANCE CRITERION

12. Initiation of sustainability science

Metric: Research income from competitive grants for transdisciplinary enquiry.

Result: With the project funded until the end of 2022 through investment from the Federal Government, transdisciplinary fundraising was not a priority of *Sustainable Farms* in 2021.

CASE STUDY: Accounting for the critically endangered box-gum grassy woodlands

More than 95% of box-gum grassy woodlands have been cleared for agriculture and development and what remains is highly degraded by grazing, or severely fragmented across the landscape. Some box-gum grassy woodland ecological communities are listed as Endangered or Critically Endangered under the EPBC Act *1999 Sustainable Farms researchers have developed ecosystem accounts for this threatened ecological community, to demonstrate the benefits of the ecosystem to the economy, productivity of the land and human wellbeing by attributing values for ecosystem services*.

The accounts indicate that the listing of box-gum grassy woodland ecological communities under the *EPBC Act 1999* has had minimal impact on the conservation of these ecosystems. The total extent of box-gum grassy woodlands in 2017 was 3.536 million ha, with around 11% of this total in protected areas. Most woodland was in small patches on agricultural land. The accounts found that since 2001, the extent of these woodlands has declined in New South Wales but has seen some gains in Victoria.

Much of the remaining woodlands are not within the National Reserve System but are actively used for productive activities like agriculture. Understanding the value of these industries and their reliance on ecosystem services, in addition to non-market benefits of the ecosystem (like the provision of habitat for endangered species), is essential for good management of these woodlands. Our study is a significant contribution towards this understanding. We were also able to identify the natural resource management regions that had the greatest decline in woodland extent, which provides vital information for future prioritisation of maintenance and restoration.

The Australian Government recently published the *National Strategy for Environmental Economic Accounting*, which was endorsed by the Meeting of Environment Ministers in April 2018. Development of case studies such as our account of the box-gum grassy woodlands, are a priority to build a national framework that can underpin environmental decisions.

Remnant woodlands on a farm in Walla Walla (photo by Suzannah Macbeth)

KPIs 13 – 16: STRATEGIC ENGAGEMENT AND COMMUNICATIONS

GOAL 4:

Lead a program of research translation and communication to influence programs and policies of key government institutions, industry groups and philanthropic foundations to support sustainable farming.

Progress Summary: In 2021 we refreshed the *Sustainable Farms* website with new content and layout, providing additional functionality and supporting new tools and resources including our BirdCast webtool (see case study on page 15). Digital communication channels, including e-newsletters and social media channels, continued to be a popular and effective form of engagement for the *Sustainable Farms* network.

At a number of levels our policy engagement activities were more restricted due to the lack of face to face opportunities to meet and share ideas with key individuals and organisations. Despite this we made links into different industry and government agencies and were invited to develop new policy and research proposals which we will continue to progress in 2022.

PERFORMANCE CRITERION

13. Media, website and social media effectiveness

Metric: Numbers of website users (new users, repeat users and number of page views).

Result: The rate of increase in users of the *Sustainable Farms* website began to plateau in 2021, with an increase in users from 15,000 in 2020 to 18,000 in 2021. The easing of growth is not unexpected, since 2020 saw a significant jump in traffic from 2019 in part due to the pivot towards digital engagement precipitated by the COVID-19 pandemic. The bounce rate, which increased from 59% to 67% between 2019 and 2020, reduced in 2021 to 61.5%. The combination of a steadying of usage numbers and declining bounce rates may suggest better user targeting.

Our updated website launched on 18 October 2021, and we look forward to utilising the revised site to its full extent during 2022. The revised site already attracts more visitors on an average monthly basis than did the previous version of the site.

In 2021 we were able to measure direct downloads of resources, in comparison to previous years where we were limited to measuring views on the pages where resources were downloaded. Figures for downloads have increased markedly: our 2020 downloads totaled 1876 while 2021 saw 3117 downloads of resources from the website. This includes, in 2021, 1594 downloads of the *Enhancing farm dams: what to plant in and around your dams* brochure. Note that our flagship resource*, Ten ways to improve natural assets on a farm* is not readily available for download due to its size, but is available for viewing and for postage/collection in hard copy.

Distribution numbers of resources in 2021:
Ten ways to improve natural asserts on a farm – 2100 booklets
Powerful Pollinators – 1400 brochures
Enhancing farm dams (planting guide) – 1750 brochures

Metric: Engagement with social media (Facebook); number of social media mentions on social media channels.

Result: The *Sustainable Farms* Facebook page continued to increase in follower numbers (from 1,700 to 2,100), but total reach for the year did decline in 2021, reflecting ongoing changes to algorithms which have negatively affected smaller pages such as ours. We experimented with some small-scale, targeted advertising to reverse this trend, and saw modest results which we will expand on in 2022. We did however see a marked increase in Instagram engagement, with our posts reaching 2.5 times as many people in 2021 compared to 2020.

Metric: Number and type of engagement with Press, Radio and TV.

Result: Press – newspapers – 8

- 8 articles in local regional newspapers

Press – online – 19

- 11 articles in agricultural online news (including The Land)
- 1 article in ABC News online
- 3 articles in online local news
- 2 articles in overseas/international online news
- 2 articles in other online news forums

Radio – 15

- Includes segments on Country Hour, local ABC news breakfast programs, and local FM radio programs

PERFORMANCE CRITERION

14. Level of policy engagement

Metric: Number and type of presentations and meetings with relevant actors in the government, industry and finance sector.

Result: *Sustainable Farms* staff participated in a range of activities to engage in policy. These included:

- Presentations:
  - A keynote presentation at the National Landcare Conference
  - Two presentations to the Fifth Policy Forum on Natural Capital Accounting for Better Decision Making.

A bespoke webinar for the Australian Veterinary Association Sustainability Group, on the biodiversity and productivity benefits from enhanced Farm Dams.

Meetings:

- 13 meetings with Minister and Departments of the Federal Government
- 2 meetings with foreign governments
- 3 meetings with industry
- 8 meetings with senior representatives in the NRM sector
- 4 meeting with National Environmental NGOs (Birdlife Australia, Trust for Nature and Climate Works)
- 1 meeting with a State Government Minister (NSW Environment).
- 1 meeting with Australian Pork Limited Technical Panel

Workshops & Advice

- Letter of support, advice and evidence provided to Professor Peter Macreadie of the Blue Carbon Lab, Deakin University for a proposal to the Emissions Reduction Fund
- Attendance at a policy workshop that produced a 5-page brief to contribute to the Australian Conservation Foundation's Renew Australia campaign under the Save Our Big Backyard policy ask, along with other outputs

Metric: Quantity and profile of government, industry and finance representatives who attend presentations and meetings.

Result: A high calibre and quantity of government representatives attended meetings and presentations with *Sustainable Farms* in 2021. Activity with industry and the finance sector continued to remain modest in 2021, as COVID-19 continued to impact investment opportunities for corporations.

PERFORMANCE CRITERION

15. Research translation (policy proposals)

Metric: Number of tools, resources and guidelines generated from the research findings with policy relevance.

Result: BirdCast, provided a tool for MLA to use with farmers in woodland areas A similar project in other ecosystems may require bird surveys across at least 230km North-South, and with more than one farm per 2500km^2.

Metric: Policy proposals that align with concept and findings from *Sustainable Farms.*

Result: Continued support for the design and implementation for the Australian Government's Agricultural Stewardship Program (Vegetation Pilot)

Adoption by the NSW LLS of an evaluation protocol for measuring the impact of outreach services delivered by Local Land Services (with Pilot commencing in 11 regions).

Submitted a funding application to AIA. The proposal aims to further develop the bird occupancy models and associated predictive frameworks to develop and deliver the tools for a national approach to the creation of biodiversity indicators for use across industry sectors and bioregions

Developed of a proposal to the Department of Agriculture, Water and Environment to identify cost-effective ways to facilitate investment in the Paper Road network and support Landcare groups and other agencies to actively improve the condition of Paper Roads.

PERFORMANCE CRITERION

16. Industry partnerships (joint projects)

Metric: Dollar value of funding received through industry partnerships.

Result: *Sustainable Farms* received $23,295 in 2021 through industry partnerships. While this is below target, there was no further scope for additional activities during the year.

Metric: Number of projects currently being undertaken jointly by *Sustainable Farms* and industry.

Result: In 2021, *Sustainable Farms* had one active partnership with industry. This was the completion of a three-year, $256,000 partnership with Meat and Livestock Australia (MLA) to work on developing environmental indicators to strengthen on-farm reporting.

CASE STUDY: Carbon + Biodiversity Pilot

In 2020 Sustainable Farms *worked to support the establishment of an allied project at the ANU to provide advice on a farm biodiversity and carbon stewardship scheme. This scheme will provide payments to farmers to manage their land to better support biodiversity.*

The Carbon + Biodiversity Pilot began in 2021 after the Federal Government awarded the project a $3.4 million grant. The project is a collaboration between the College of Law and the Fenner School of Environment & Society.

Researchers in the Carbon + Biodiversity Pilot are developing a monitoring, reporting, and measuring framework for the Agriculture Biodiversity Stewardship Pilot Program. Much of the approach is based on insights from *Sustainable Farms*, especially key findings from the long-term ecological monitoring data.

Farmers manage over half of Australia's native vegetation and are critical for efforts to conserve biodiversity and reduce greenhouse gas emissions. Unlike past stewardship programs, the program will seek to develop a sustainable finance model that can provide payments to farmers in perpetuity and in doing so provide a source of income for farmers that can continue through droughts and bushfires.

Payments for biodiversity projects will help farmers diversify their businesses and take advantage of new revenue streams. Projects such as maintaining or enhancing remnant forest, regeneration of gullies or waterways, or mixed species native plantings are examples of applicable initiatives.

Planting shelterbelts provides habitats for native plants and animals, reduces wind speeds, limits soil moisture loss, helps to retain topsoil, and provides shade and frost protection. Well planned and established shelterbelts also provide a better production environment for livestock—cattle and sheep put on more weight when they have access to good shelter and mortality rates among newborn lambs is lower. Shelterbelts are also habitat for native wildlife, especially when farmers and Landcare groups implement planting protocols based on the rigorous science from the *Sustainable Farms* project.

Shelterbelt planting on a farm near Yass (photo by Suzannah Macbeth)

KPIs 17 – 19: PROGRAM MANAGEMENT AND EVALUATION

GOAL 5:

Make informed management decisions by monitoring and evaluating the project and adjusting resource allocation to progress and evolve the project.

Progress Summary: In 2021 staff remained engaged with business planning and team building activities either online or in person when COVID-19 restrictions allowed. We continued to roll out activities to meet objectives of the project's Strategic Plan 2018-2022. Leadership was shared across the team and our work practices continued to improve.

In the later 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. A further $300,000 in funding for outreach activities in Victoria was obtained from the Ross Trust.

PERFORMANCE CRITERION

17. Work team performance

Metric: Percentage of staff achieving objectives in line with accountability frameworks.

Result: Performance development processes have continued for staff, with the team achieving above the target of 85% stated objectives in their Performance Development Reviews in 2021. Other activities undertaken to improve performance across the project in 2021 included:

- Governance structures continued in online mode in 2021, with Executive and Advisory Committee meetings held over Zoom, and with reports provided on request.
- Online and in person meetings of regional and Canberra-based staff.
- Oversight of the contractual relationships between partners continued in 2021, with all reporting obligations met.

In 2021, *Sustainable Farms* continued to improve and refine project registers, business records and protocol documentation for the project.

PERFORMANCE CRITERION

18. Revenue growth

Metric: Increase in revenue.

Result: Towards the end of 2021, $300,000 from the Ross Trust was secured to contribute towards continuation of *Sustainable Farms*. In 2022 several proposals will be presented to other funders and the ANU to finance the rest of this continuation of project activities until the end of 2024.

PERFORMANCE CRITERION

19. Standard of evaluation

Metric: Percentage of evaluation standards met by *Sustainable Farms*.

Result: The *Sustainable Farms* Monitoring and Evaluation Framework (MEF) was developed in 2018.

The reference document for the standard of evaluation conducted by *Sustainable Farms*, identified by the MEF is the Evaluation Standards for Aotearoa New Zealand available at anzea.org.nz/evaluation-standards

During 2021 both the MEF and the evaluation standards were used to guide the ongoing collection of field day evaluation and project reporting.

The *Sustainable Farms* team (photo by Amber Croft)