

Cottoning onto the Murrumbidgee River – river and riparian field days, 18-19 February 2017



Abstract

In February 2017, CottonInfo, Murrumbidgee Landcare Incorporated (MLI), Murrumbidgee Irrigation (MI), Riverina Local Land Services (RLLS) and the Australia Government ran two field days in the Murrumbidgee valley. The aim of the field days was to extend the latest cotton industry riparian vegetation research outcomes, increase participants awareness of the value of riparian vegetation on farms and educate them on the latest best management practices for riparian areas on cotton farms. 71 people participated in the field days.

As part of the development and delivery of the field days a biodiversity booklet showcasing local River Red Gum Communities was produced and distributed to participants. A key outcome for the field day was the collaboration between CottonInfo, MLI, MI and RLLS, as part of the newly formed Landcare Irrigation Area Collective (LIAC), to deliver the field day. This collaboration established new local networks between cotton growers and local natural resource management advisors.

Stacey Vogel

National Cotton Natural Resources Technical Specialist, CottonInfo
March 2017

Acknowledgements

The “Cottoning onto the Murrumbidgee River” river and riparian field days was undertaken by CottonInfo with support from Murrumbidgee Landcare Incorporated, Murrumbidgee Irrigation, Riverina Local Land Services and the Australian Government.

Thanks goes to:

- The organising committee of Kerri Keely (Murrumbidgee Landcare Incorporated), Annabel Lugsdin (Murrumbidgee Landcare Incorporated), Bindi Vanzella (Riverina Landcare), and Cathy Semmler (Murrumbidgee Irrigation)
- Local helpers Stacey Lugsdin and Sally Ware (RLLS)
- Technical presenter, ecologist Dr Rhiannon Smith (University New England) and Michelle Durkan (Taronga Zoomobile)
- Ecologist Phil Spark (North West Ecological) for provision of photos for use in biodiversity booklet, and
- Out and About Adventure kayak instructors, Peter Vaughan and Andy Fraser.

Photo overleaf: Hay cotton farmers Jenny Cleton and Paul Cleton with Doug Cleton, Hugh Cleton, Lucy Cleton, Maya Cashmere and Michelle Durkan from Taronga Zoomobile.



Murrumbidgee
Irrigation

This activity is part of the Local Landcare Coordinators Initiative



Local Land
Services

The Local Landcare Coordinators Initiative is funded by the NSW Government, and is supported through the partnership of Local Land Services and Landcare NSW.



Australian Government

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Field Day Information

Background

The 2016-17 National Cotton NRM campaign identified a need to continually improve the extension of the cotton industries riparian ecosystem services research outcomes and increase growers knowledge of riparian BMP's.

To help achieve this, CottonInfo formed a partnership with Murrumbidgee Landcare Incorporated, Murrumbidgee Irrigation, Riverina Local Land Services (RLLS) and the Australia Government to:

- Extend the latest cotton industry riparian vegetation research outcomes within the Murrumbidgee valley
- Increase awareness of the value of riparian vegetation on farms within the Murrumbidgee valley and
- Extend best management practices for riparian areas on cotton farms.

Following on from the success of the “Gwydir Cottoning onto the great outdoors” field day series, a similar field day structure and program, which targeted farming families, was developed for the “Cottoning onto the Murrumbidgee River” field days. The program was developed based on the delivery of fun family based activities that engaged both decision makers (husband and wife) in the family farming business.

In May 2016 CottonInfo was invited by Murrumbidgee Irrigation to join the new Landcare Irrigation Area Collective, a group of various private and government organisations within the Murrumbidgee and Murray Irrigation areas actively improving and managing natural resources of the Riverina irrigation areas. From these initial meetings the “Cottoning onto the Murrumbidgee River” program was developed to deliver a series of riparian awareness and management field days.

The three day program which included a session kayaking on the river was developed originally for early November 2016 at Gogeldrie Weir Park (2 events- friday and saturday) and Maude Weir at Hay on the Sunday. Unfortunately due to widespread flooding the events had to be postponed with a new date set for the 17th, 18th & 19th February 2017. Owing to poor RSVP's the Friday event was cancelled. Initially the program included a fisheries technical expert from NSW DPI but unfortunately they withdrew from the event at late notice. A copy of the final agendas for all 3 field days can be found in Appendix 1.

At the 2 field days held the following topics were covered:

- Landscape principles for healthy rivers, why value riparian areas – Cathy Semmler (Murrumbidgee irrigation)
- Ecosystem services of native vegetation on cotton farms – Dr Rhiannon Smith (UNE – CRDC funded research)
- BMP's for rivers and riparian areas –Stacey Vogel (CottonInfo)
- What are the indicators of river health? - Kerri Keely/Annabel Lugsdin (Murrumbidge Irrigation Incorporated)

- What fauna is found here, food & habitat requirements – Michell Durkan (Taronga zoomobile)

The field days were promoted heavily through the CottonInfo extension network and local media. A booklet showcasing River Red gum communities, some of the local fauna that lived within them and BMP's for their management was also created and handed out to all participants of the field day.

Participants Responses

A comprehensive evaluation was conducted to provide evidence of changes in KASA (Knowledge, aspirations, skills and attitudes) as a result of attending the field days. Participants completed an anonymous feedback sheet at the end of each workshop. The evaluation template is provided in Appendix 3. A total of 29 evaluations were received over the two field days, where 71 people attended – a 41% percent response rate. Predominantly attendees were families. Approximately 57 of the attendees were adults with the remainder predominantly primary age children.

The results of the evaluations are summarised in this section.

Demographics

There were a total of 71 participants at the field day. Of respondents 21% were growers or farm mangers, 45% identified themselves as a mixture of agronomists, teachers, consultants, contractors, students and environmental enthusiasts. The remaining respondents did not specify an occupation.

Field day delivery

Most participants agreed that the field days had met their aims and expectations and information was presented at a level they could understand. All participants felt that the instruction received was at a high standard and the topics covered were useful. One participant made the comment that some of the younger kids found some of the information a little technical.

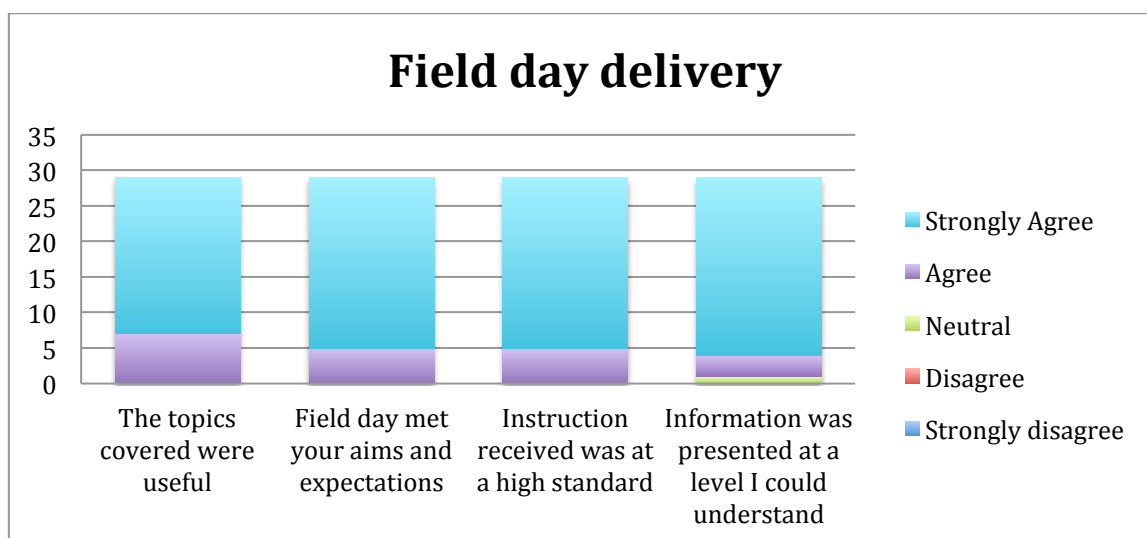


Figure 1 Participants evaluations of field day delivery (Griffith and Hay combined)

Changes in KASA (Knowledge, awareness, skills and aspirations)

Gains in Understanding

A summary of KASA changes from both field days (Figure 2 & 3) indicated an overall increase in the level of understanding of the three key areas, indicators of river health, habitat requirements of local biodiversity and ecosystem services of native vegetation (carbon sequestration).

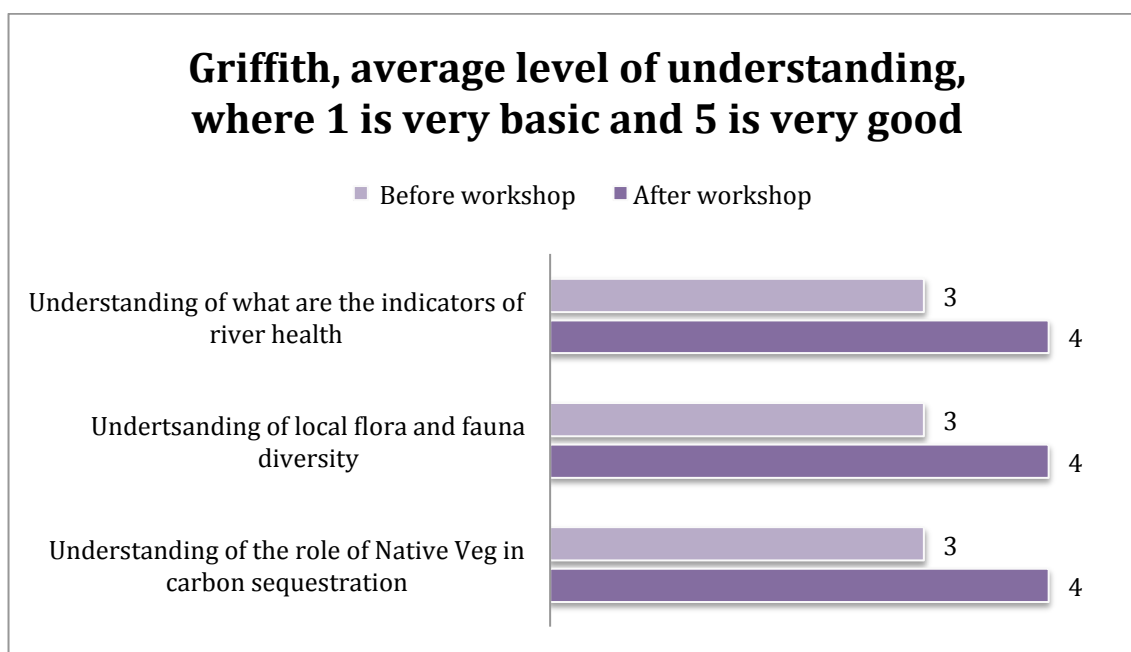


Figure 2 Average level of understanding of the 3 key areas before and after the field day, where 1 is very basic and 5 is very good.

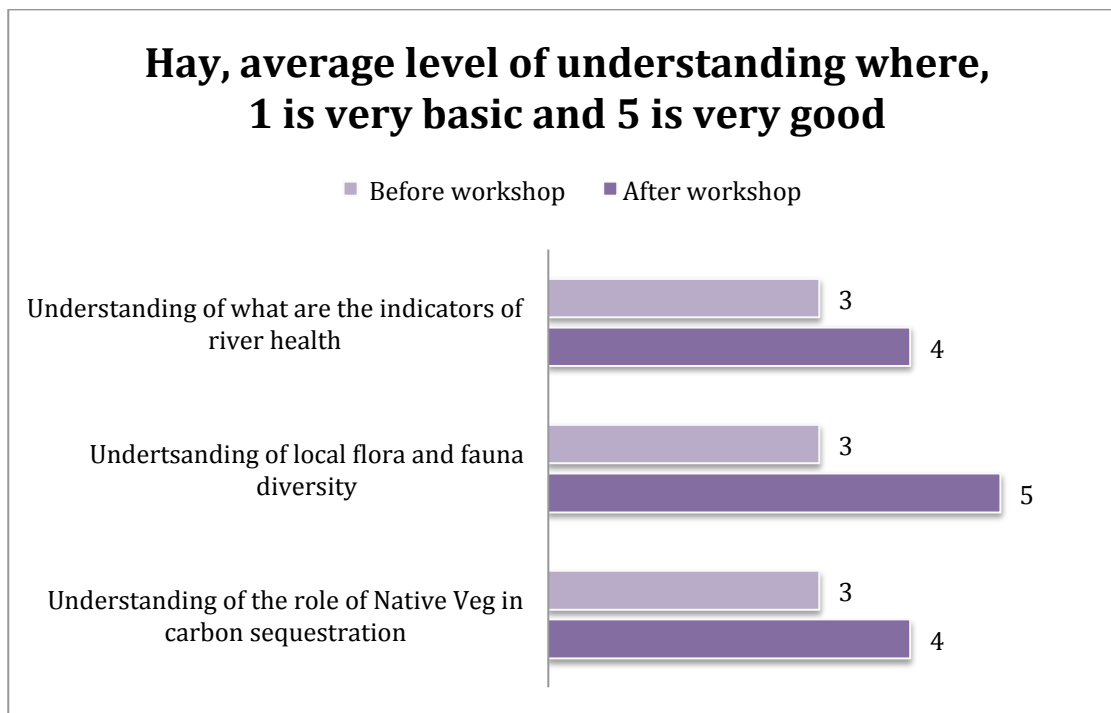


Figure 3 Average level of understanding of the 3 key areas before and after the field day, where 1 is very basic and 5 is very good.

Participants also recorded an overall increase in their level of confidence to implement what they had learned at the workshop.

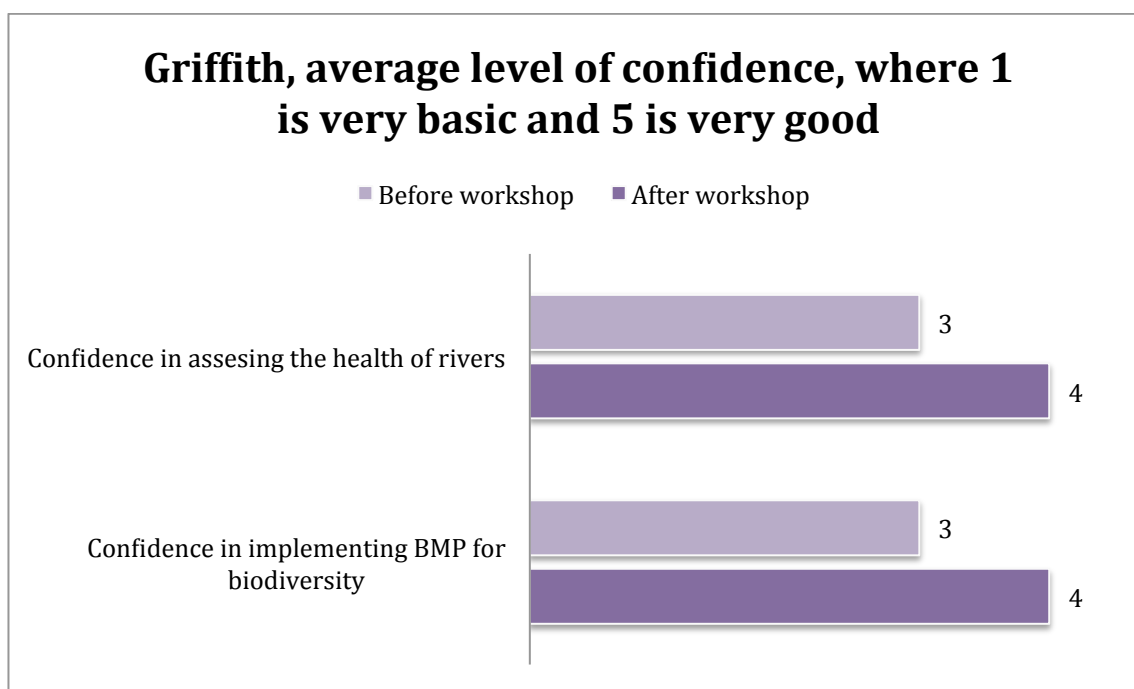


Figure 4 Average level of confidence to implement practices in the 3 key areas before and after the field days, where 1 is very basic and 5 is very good.

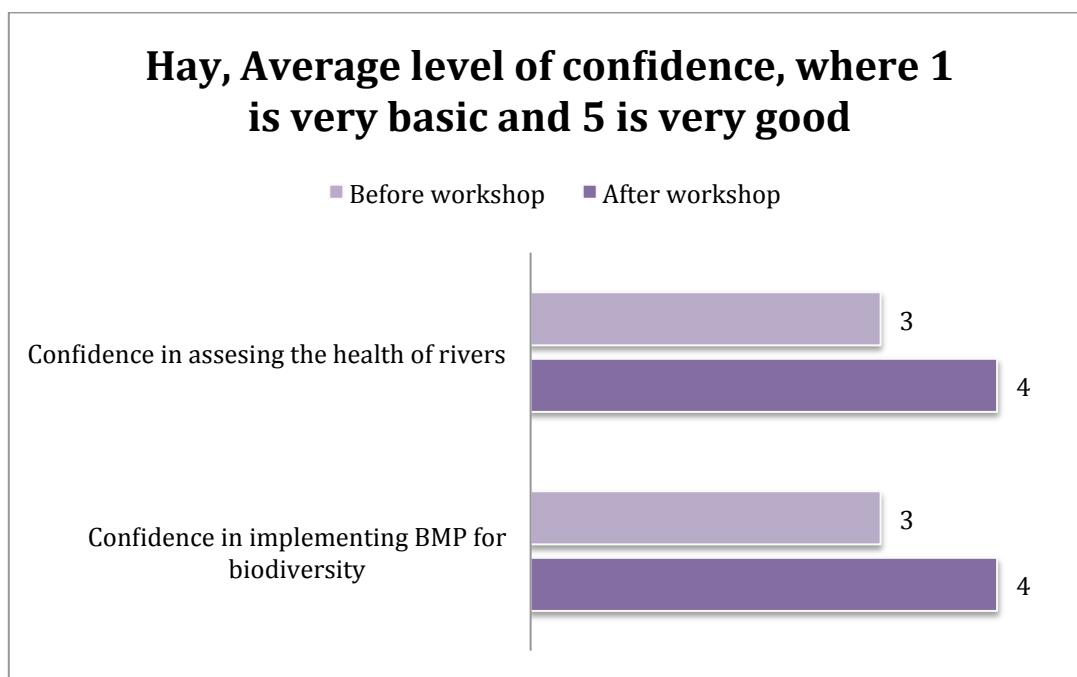


Figure 5 Average level of confidence to implement practices in the 3 key areas before and after the field days, where 1 is very basic and 5 is very good.

Forty eight percent of respondents were more likely to adopt riparian BMP's on their farm as a result of attending the field days, 17% they were already adopting best practice, 10% said they would not and the remainder did not answer the question.

Feedback responses from participants:

- Show more animals
 - It was excellent couldn't be better
 - BBQ lunch, simpler sandwiches for kids (Griffith)
 - Go for longer with more information
 - More animals
 - More animals, maybe an echidna some fish and a baby kookaburra
 - Good to see the child friendly level of info and their enthusiasm to participate
 - Fantastic event would love to have involved the scouts but they operate during school term.
- Advertising over holidays reduced RSVP's



Photo: Presenters left to right, Annabel Iugsdin (M. Landacre), Dr Rhiannon (UNE) Smith and Michelle Durkan (Taronga), Hay 2017



Photo: Participants Gogelderie weir, Feb 2017

Communications

Field day fauna Booklet

A field day booklet was developed as a follow-up educational tool, Appendix 4. The booklet contained information about River Red Gum Woodlands, local biodiversity occurring within the Riverina area and what management actions readers could do to preserve their habitat. Extra copies of the booklet were printed for use by Murrumbidgee Landcare Incorporated and other members of the LIAC in future relevant extension events.

Event promotion

- Distribution of field day flyer through committee networks and local newsletters, newspapers and social media such as:
 - CottonInfo and MI website
 - Email to schools-Griffith High, Leeton High, St Francis in Leeton, Binya Public, Darlington Point Public, Whitton Public, Wamoon Public, Darlington Point Public, Coleambally Central School, Leeton Primary, Parkview Primary
 - Advertising in Murrumbidgee Field Naturalists newsletter
 - Email-Irrigation Area Collective
 - Distribute posters
 - Meeting with Kate O'Callagan from Southern Cotton re promoting the event
 - Posters at Southern Cotton, Whitton Shop, Pool and Post Office, Darlington Point Shop, Pool and Post Office, Griffith Supermarket,
 - Radio interviews-Triple M in Riverina, 2MIA FM (twice) , , Anne Delaney ABC radio
 - Bindi-ABC radio advertising (twice)
 - Riverina Local Land Services e newsletter
 - MLI website, facebook and twitter accounts

Social Media

During the events we used Twitter to publicise and promote the events. These tweets were re-tweeted or liked by CottonInfo, Murrumbidgee Landcare Incorporated, Murrumbidgee Irrigation, CEO Cotton Research Development Corporation, CEO for Murray Darling Wetlands Working group Ltd and field day participants

<https://twitter.com/vogelstacey>

Post media

An article on the field day was published in the local Hay newspaper.

Conclusion

The 2017 “Cottoning onto the Murrumbidgee River” riparian and river awareness and management field days were a successful capacity building activity. Ecologists, researchers and natural resource management technical staff provided 71 people from the Riverina area with the latest riparian management information.

Importantly, the evaluation material collected during the events found that field day participants increased their awareness and understanding of riparian management. The evaluations also indicated that 48% of respondents were more likely to adopt riparian BMP’s on their farm as a result of attending the field days, 17% they were already adopting best practice, 10% said they would not and the remainder did not answer.

The field days were an example of how riparian management research outcomes can be successfully delivered to cotton communities in a fun and interactive way. The success of the field days was also a positive start to CottonInfo’s inclusion in the Landcare Irrigation Area Collective.

Appendices

Appendix 1 Field day program

AGENDA Friday 17th Feb 2017 – Gogeldrie Weir	
9:30am start	Participants arrive at starting point Welcome & Introduction/Event facilitation–Stacey Vogel (CottonInfo) (5mins) - Jimmy Ingram (5mins) - welcome to country Erin Lenon (Commonwealth officer of water) – environmental flows (10mins) Sky Wassen (CSU) –Wetland and riverine function, why value it what services providing farming community (10mins) Facilitator Hand over to Guides for induction
9:55am	Kayaking Induction by kayak guides (Out & About Adventures) - Workplace Health & Safety outlined to group and Job Safety Assessment sheet handed around for signature
10:15 – 11:30 Paddle	Participants on river paddling by 10:15am (2hrs (6-8km) paddling +1/2 morning tea) Technical experts to point out things of interest as paddle and answer questions. Short talk on bank about what we can see as move kayaks around structure Sky Wassens (CSU) Kerri Anne (MILandcare) – facilitate discussion as paddle
11:30-12:00 Morning tea	Morning tea stop (simple morning tea can be packed by Guides).
12:00 – 1:15 Paddle	Technical experts point things of interest and answering questions
1:15 – 2:00pm	Lunch

2:00 – 2:40	Cathy Semmler (MI) Why are healthy riparian areas important? (10mins) Dr Rhiannon Smith (UNE/CRDC) Ecosystem services of NV –Cotton research outcomes (15mins)
2:40 – 2:50	Management – what can I do? /, funding incentives etc TBC speaker Riverina LLS – 10mins
2:50 – 3:00	Wrap-up, Collection of workshop evaluation sheets Workshop Close – (5mins)

Weekend Saturday 18th Feb 2017

Gogeldrie Weir -9:30– 2:30pm

Concurrent sessions

9:30am Start	Participants arrive at starting point Welcome & Introduction –Facilitator / Stacey Vogel (CottonInfo) (5mins) Landscape principles for healthy rivers (use satellite image) – Cathy Semmler environment officer Murrumbidgee Irrigation (10mins) The value of River Red Gums- Dr Rhiannon Smith UNE/CRDC (5mins)
10:00am	Sessions begin. Group split into 2 concurrent sessions.
Session 1 1hr & 45mins 10:00am – 11:45am	Activity 1 – Kayaking Kayaking Induction by kayak guides/grab some fruit/muslei bar (10mins) 1 ½ hr Paddling with NRM Technical experts , Dr Rhiannon Smith UNE, Cathy Semmler Murrumbidgee Irrigation) Activity 2 – Riverbank activities (can start morning tea early so ready to take off Morning tea – 15minutes Waterwatch Activity –Kerri Keely Murrumbidgee Landcare /Annabel Lugsdin (45mins) <u>Fauna show & Tell- Taronga Zoo (45min) – 11:00am</u>
Session 2 1hr & 45mins 11:45am – 1:30pm	Activity 1 – Kayaking 1 1/2 Kayaking Induction by kayak guides (10mins) 1 ½ hr Paddling with NRM Technical experts Dr Rhiannon Smith UNE, Annabel Lugsdin) Activity 2– Riverbank activities (can start morning tea early so ready to take off Morning Tea – 15minutes



CottonInfo Information when you need it

	Fauna show & Tell- Toorongra Zoo (45mins) Waterwatch Activity – Kerri/Cathy(45mins)
1:30pm – 2:00pm	Lunch (wrap-up and close while people are grabbing something to eat. Evaluation sheets
2:00pm Lunch/close	Wrap-up and Collection of workshop evaluation sheets – Stacey Vogel CottonInfo (5mins)





CottonInfo Information when you need it

Weekend Sun 19th Feb 2017

Hay -9:30– 2:30pm

Concurrent sessions

9:30am Start	Participants arrive at starting point Welcome & Introduction –Facilitator / Stacey Vogel (CottonInfo) (5mins) The value of River Red Gums and landscape principles for healthy riparian areas- Dr Rhiannon Smith UNE/CRDC (15mins)
10:00am	Sessions begin. Group split into 2 concurrent sessions.
Session 1 1hr & 45mins 10:00am – 11:45am	Activity 1 – Kayaking Kayaking Induction by kayak guides/grab some fruit/museli bar (10mins) 1 ½ hr Paddling with NRM Technical experts , Dr Rhiannon Smith UNE, Stacey Vogel ? Activity 2 – Riverbank activities (can start morning tea early so ready to take off Morning tea – 15minutes Waterwatch Activity –Annabel /Stacey Vogel (45mins) <u>Fauna show & Tell- Taronga Zoo (45min) – 11:00am</u>
Session 2 1hr & 45mins 11:45am – 1:30pm	Activity 1 – Kayaking 1 1/2 Kayaking Induction by kayak guides (10mins) 1 ½ hr Paddling with NRM Technical experts Dr Rhiannon Smith UNE, Activity 2– Riverbank activities (can start morning tea early so ready to take off Morning Tea – 15minutes Fauna show & Tell- Tooronga Zoo (45mins) Waterwatch Activity – Annabel/Stacey(45mins)



1:30pm – 2:00pm	Lunch (wrap-up and close while people are grabbing something to eat.
2:00pm Lunch/close	Wrap-up and Collection of workshop evaluation sheets – Stacey Vogel CottonInfo (10mins)



Appendix 2 - Field day Flyer



cottoning on to the **Murrumbidgee River**

You are invited to three great events: free kayak trips and wildlife discovery adventures on the Murrumbidgee River!

Join flora and fauna experts for these fun events at any of our great locations over three days!

Gogeldrie Weir: Friday 17 Feb 2017

9:30am-3:00pm

Join us for a relaxing morning cruising down the river on a free kayak trip while learning about your local river. **Over 18s only.** Kayaks and PFDs provided, along with a free morning tea and BBQ lunch.

Gogeldrie Weir: Saturday 18 Feb 2017

9:30am-2:30pm

Join us for a fun family day kayaking and exploring the local river and its wildlife. Come and see what special guests Taronga Zoo have brought for us to have a look at! Kayaks and PFDs provided, along with a free morning tea and BBQ lunch.

Hay Weir: Sunday 19 Feb 2017

9:30am-2:30pm

Join us for a fun family day kayaking and exploring the local river and its wildlife. Come and see what special guests Taronga Zoo have brought for us to have a look at! Kayaks and PFDs provided, along with a free morning tea and BBQ lunch.

Please RSVP for all events by Friday 3 Feb.

Contact Kerri Keely: 0428 396 826,
kkeely@mli.org.au. Spaces are limited so get in quickly!



This project is supported by funding from the Australian Government.



Appendix 3 – Evaluation Form



Evaluation form: Cottoning onto the Murrumbidgee Feb 2017

Thank you for attending today's event. We value your time and would appreciate your feedback.

- | | Disagree | | | | Agree |
|---|-------------------------------------|--------------------------------------|-----------------------------------|----------------------------|----------------------------|
| 1. The event met your aims & expectations: | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| 2. The instruction received was of a high standard: | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| 3. The event was presented at a level you could understand: | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| 4. The topics covered were useful: | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| 5. The pace of delivery of information was: | ☐ Too slow | ☐ About right | ☐ Too fast | | |
| 6. The amount of information was: | ☐ Not enough | ☐ About right | ☐ Too much | | |
| 7. How could we have improved the event to be more useful for you? | <hr/> | | | | |
| <hr/> | | | | | |
| 8. With regard to the river health please rate your: | | | | | |
| a. level of understanding of what the indicators are for river and riparian health (where 1 is very basic & 5 very good) | | | | | |
| Before today's event: | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| After today's event: | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| b. level of confidence in being able to assess how healthy your local river is (where 1 is very basic & 5 very good) | | | | | |
| Before today's event: | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| After today's event: | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| 9. With regard to biodiversity please rate your: | | | | | |
| a. level of understanding of the diversity of native flora and fauna that live in your local landscape and what their habitat and food requirements are (where 1 is very basic & 5 very good) | | | | | |
| Before today's event: | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| After today's event: | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| b. level of confidence in managing native flora and fauna on your farm or in your local landscape (where 1 is very basic & 5 very good) | | | | | |
| Before today's event: | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| After today's event: | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |



10. As a result of this event, are you (more) likely to adopt Best Management Practices for river and riparian areas or biodiversity on your farm or in your catchment; or if you are already adopting it, to do it more effectively?

☐ Yes ☐ No ☐ Already adopted/using effectively

11. What would prevent you from adopting these BMP's and/or what else do you need to assist you in adopting them? _____

12. As a result of this event, please rate your level of understanding of the role native vegetation such as River Red gums play in sequestering carbon (where 1 is very basic & 5 very good)

Before today's event: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

After today's event: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

14. How do you classify yourself?

☐ Grower/farm manager ☐ Farm staff ☐ Consultant/advisor ☐ Retailer

☐ Agency ☐ Other. Please specify: _____

15. Do you have a riparian area on your farm?

Yes No

16. Any further feedback? _____

Thank you.



**Murrumbidgee
Irrigation**



**MURRUMBIDGEE
Landcare
INCORPORATED**



CottonInfo and its partners Murrumbidgee Irrigation, Murrumbidgee Landcare Incorporated, NSW Landcare, the Riverina Local Land Services and the Australian Government are running a series of free, fun and informative kayak trips on the Murrumbidgee River in February 2017.

This booklet contains information about some of the amazing flora and fauna we hope to see while paddling on the river and how this natural workforce is providing benefits to our farms and rural communities.

One such 'natural worker' is Australia's iconic River Red Gum. River Red Gum communities, which are common along our rivers and creeks, provide habitat and food for a diversity of species such as microbats and sugar gliders, as well as a range of free environmental services such as habitat for crop pest predators, carbon sequestration and erosion control.

Join us to see and learn more about our natural workforce and what you can do to help protect them.

For more information visit www.cottoninfo.com.au.

This project is supported by funding from the Australian Government.



STACEY VOGEL



MICHAEL SINEDIC



Murrumbidgee
Irrigation



This activity is part of the Local Landcare Coordinators Initiative



Local Land
Services

The Local Landcare Coordinator
Initiative is funded by the NSW
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through the partnership of Local
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River Red Gums

Eucalyptus camaldelensis

River Red Gums are a common tree along watercourses across Australia. They have adapted to survive periodic flooding (a necessity for their survival) and drought. They are fast growing, reaching heights of up to 45m and diameters of between 1-3m. They can reach ages of between 500-1000 years old.

They use water from three sources: rainfall, groundwater and flooding. They have an extensive root system consisting of many vertical and lateral roots. Their roots have a unique ability to move water at night from layers of wetter deeper soil to drier upper layers where it is stored for use during the day by roots near the surface.

Hollows form at around 120-180 years of age providing habitat for much of our natural workforce such as birds, microbats, snakes and mammals such as sugar gliders.

As part of our natural workforce they provide a range of services for us such as salinity mitigation, habitat for natural pest control, erosion control and carbon sequestration and storage.

They also contribute to healthy waterways by regulating water



MELANIE JENSON

temperature through shading, contribute nutrients through leaf and insect fall for aquatic animals, and provide snags as habitat and nurseries for species such as Murray Cod.

Fast fact: They store on average 200 tonnes of carbon per hectare, with totals found as high as 400 tonnes of carbon per hectare - the same amount of carbon as 290 Holden commodores emit in one year!



Common rush

Juncus usitatus

Common rush is a perennial semi aquatic plant species that grows upto 1.2m tall. It is native to eastern Australia and is commonly found along streams, riverbanks, irrigation supply channels and other periodically wet areas including wetlands. It is found along water edges or in shallow water often with other sedges, rushes and grasses.

Common rush is excellent habitat for frogs, fish, crustaceans and small birds. Yabbies' also eat the tender young stems. It can also be a good colonizing species in bank rehabilitation works and can out compete less desirable 'weedy' species. In addition it is also acts as a filter helping to up-take nutrients and filter suspended solids.

Fast fact: Common rush is a useful plant for controlling erosion along watercourses and around dams as its fibrous roots help bind the soil together and it is adapted to periodic wetting and drying.



STACEY VOGEL



STACEY VOGEL



Striated pardalote

Pardalotus striatus

The Striated pardalote is a very small short-tailed woodland bird species, which forages noisily for small insects in the tops of trees.

There is considerable variation in the plumage markings across the species but generally they are a grey bird with a black cap and have wide eyebrows that shade from yellow to white with a yellow spot in front of the eye.

Their wing edges are patterned in black and white and they have a distinctive rich yellow throat.

They feed singly, in pairs or small parties and move constantly. Pairs nest in a burrow in riverbanks, earth-mounds, road cuttings or similar spots.

Its presence is often first noticed by its call, you can listen to its call on the free Birds on Cotton Farm app (available from: www.cottoninfo.com.au/birds-cotton-farms-app).

Fast fact: Striated pardalotes are small insect eating birds and can contribute to natural pest control.



MICHAEL SNEDIC



Sugar glider

Petaurus breviceps

Sugar gliders are a common, small marsupial gliding possum found in woodlands such as riparian areas.

They have a skin membrane from their fifth finger to the ankle, which they use to glide from tree to tree using their tail for balance and steering.

They are nocturnal, sleeping by day in nests made of leaves in tree hollows. Groups of adults and their young may share a nest.

Sugar gliders eat crickets, Christmas beetles, mealworms, nectar, some fruit and sap.

They have grey body fur with a pale yellow/grey coloured belly. They have a dark stripe running from between their eyes and extending down the middle of their back towards the tail.

They look similar to squirrel gliders but are smaller, often with a white tip on their tail and a have more rounded face with a protruding nose. Their call is like a small dog “yip” “yip”.

Fast fact: A single sugar glider can eat upto 3.25kg of insects in a year. They play an important role in controlling Christmas beetles, which defoliate trees.



PHIL SPARK



Yellow-bellied Sheathtail-bat

Saccolaimus flaviventris

The Yellow-bellied Sheathtail-bat is an insectivorous microbat that can be found across most of Australia however its numbers are declining and has a vulnerable status in NSW.

It is one of the largest microbats growing up to 87mm long. It has a very distinctive appearance with long narrow wings a glossy jet-black back and a white to yellow belly.

It gets its name from its naked tail, which is enclosed in a sheath flying membrane stretching between its legs.

They roost in tree hollows and are believed to migrate in winter to warmer northern areas.

Fast fact: It flies high above the tree canopy and can often be seen foraging for insects above rivers and water storages catching large insects. It eats up to half its body weight each night, including many agricultural pests.



PHIL SPARK

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Ladybird beetles

Coccinellinae family

The Coccinellidae family is made of small beetles ranging from 0.8 to 18mm in length. They are commonly yellow, orange or red with black spots or stripes on their wing covers, they have black legs, heads and antennae.

Adults and larvae of ladybird beetles are important predatory insects in most crops with at least 9 species found in cotton landscapes that contribute to natural pest control.

According to legend crops in Europe during the Middle Ages were plagued by pests, farmers began praying to the Blessed Lady, the Virgin Mary. Soon

they started seeing ladybirds in their fields and the crops were saved so they called the beetles 'Lady beetles' after the Virgin Mary.

More information on ladybird beetles can be found in the guide: Pests and Beneficials in Australia Cotton Landscapes (available at www.cottoninfo.com.au/publications).

Fast fact: They are voracious predators of aphids and under most conditions (along with lacewings and hover flies), stop aphid populations from increasingly explosively.



D. MCCLENNAGHAN

8



Christmas spider

Austracantha minax

The Christmas spider, also called the jewel spider, is a harmless and relatively small spider growing upto 8mm in length.

They are predominately black with a bright yellow and white pattern on their abdomen. The abdomen has six distinctive spines, which combined with their bright coloring make them easily identifiable.

Christmas spiders are usually found in groups building overlapping communal webs with other Christmas spiders.

They feed on the small flying insects that get entangled in their webs.

More information on beneficial spiders can be found in the guide: Pests and Beneficials in Australia Cotton Landscapes (available at www.cottoninfo.com.au/publications).

Fast fact: Christmas spiders are common in cotton landscapes and contribute to natural pest control by building their webs between the cotton rows and amongst the plant leaves.



STACEY VOGEL

9



Murray-Darling carpet python

Morelia spilota metcalfei

The carpet python is a large non-venomous snake that can grow up to 4m long. While common in NSW it is endangered in Victoria and vulnerable in South Australia.

They vary in colour from dark brown to grey with a series of light and dark bands along their back. They have a large elongated head and slender neck.

They live in diverse habitats but are often found in areas with large hollow eucalypts along permanent and ephemeral watercourses.

They are night active and can be seen

during daylight hours basking in the sun.

They kill their prey by constricting it with coils of their body so that the prey animal can no longer breathe. They do not crush their food because the resulting broken bones could cause injury when ingested.

Fast fact: They feed mostly on small mammals, bats, dunnarts, birds and eggs. They contribute to rodent control by also eating mice and rats and can often be seen in farm sheds helping keep rodent numbers down.



STACEY VOGEL



Freshwater mussels

Hyriidae family

There are thought to be around 21 species of freshwater mussels in Australia, five of which have been found along the Murrumbidgee River.

Mussels generally live between 10-40 years, one species, *Velesunio*, are thought to live up to 60 years.

Mussels live along stream beds using their muscular foot to drag their shell and burrow into the fine streambed sediments such as sand and mud. Adult shells vary in size from around 50-200mm. The shell colour ranges from brown to black and sometimes green in young shells.

Their unique reproductive cycle extends throughout most of the year. When mussel larva “glochidium” is released by the female they must attach themselves to the gills or fins of fish hosts such as gudgeons and smelt to complete its development.

Females produce large numbers but only a few find a host and even fewer survive to maturity.

Fast fact: Freshwater mussels are natural water filters, cleaning the water by removing pollutants, algae and zoo-plankton. They also promote nutrient cycling.



PHIL SPARK



What can you do?

Riparian woodlands of River Red Gums help keep our rivers healthy and provide habitat and food for many native animals. They also provide services such as habitat for beneficials (natural pest control), carbon storage and sequestration, erosion control and salinity mitigation.

What can you do to protect these great species?

- Improve riparian corridor connectivity and extend widths to at least 30m.
- Protect dead and living trees with hollows.
- Control invasive weeds and pests.
- Leave fallen logs, if you need to 'tidy' up consider putting them into piles and don't burn them.
- Manage grazing to maintain good groundcover (50-70 per cent) and allow natural regeneration of shrubs and trees.
- Avoid agricultural chemical spray drift onto these areas.
- Leave logs and 'snags' along riverbanks and riverbeds to provide bank stability, aquatic habitat and roughage to flow.



MILLY HOBSON



MILLY HOBSON

For further information, please visit:

- The myBMP natural assets module: www.mybmp.com.au
- The CottonInfo NRM page: www.cottoninfo.com.au/natural-resource-management
- Murrumbidgee Irrigation: www.mirrigration.com.au
- Murrumbidgee Landcare: www.mli.org.au
- Riverina Local Land Services: www.riverina.lls.nsw.gov.au
- The Australian River Restoration Centre: www.rrcc.com.au

Best Practice

Cottoning onto the Macquarie River – river and riparian field days, 4 March 2017



Abstract

In February 2017, CottonInfo and Central West Local Land Services (CWLLS) in partnership with the Australian Government ran a riparian management field day at Warren in the Macquarie valley. The aim of the field day was to; extend the latest cotton industry riparian vegetation research outcomes, increase participants awareness of the value of riparian vegetation on farms and educate them on the latest best management practices for riparian areas on cotton farms. 45 people representing 10 cotton farms and 2 cotton industry service organisations participated in the field day.

As part of the development and delivery of the field day a biodiversity booklet showcasing local River Red Gum Communities was developed. A key outcome for the field day was the collaboration between CottonInfo and the Central West Local Land Service to deliver the field day. This collaboration established new local networks between cotton growers/advisors and the local natural resource advisor for the CWLLS.

Stacey Vogel

National Cotton Natural Resources Technical Specialist, CottonInfo
20 March 2017

Acknowledgements

The Macquarie river and riparian field day was undertaken by CottonInfo with support from Central West Local Land Services and the Australian Government.

Thanks goes to:

- Local organisers Amanda Thomas and Sally Ceeney (CottonInfo)
- The technical presenter, Terrestrial ecologist Phil Spark (North West Ecological) and Land Services Officer Cameron Downing (Central West Local Land Services), and
- Out and About Adventure kayak instructors, Peter Vaughan and Andy Fraser.



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Field Day Information

Background

The 2016-17 National Cotton NRM campaign identified a need to continually improve the extension of the cotton industries riparian ecosystem services research outcomes and increase growers knowledge of riparian BMP's.

To help achieve this, CottonInfo formed a partnership with Central West and the Australian Government to

- Extend the latest cotton industry riparian vegetation research outcomes
- Increase awareness of the value of riparian vegetation on farms, and
- Extend best management practices for riparian areas on cotton farms.

Following on from the success of the “Gwydir Cottoning onto the great outdoors” field day series, a similar field day structure and program, which targeted social networks of rural women was developed for the “Cottoning onto the Macquarie River” field day at Warren. The program was developed based on the delivery of fun family based capacity building activities that while targeting women engaged both decision makers (husband and wife) in the family farming business.

The field day format included 2 concurrent sessions, Appendix 1, a session kayaking on The Macquarie river looking at riverine processes and management with Cameron Downing and a session on the riverbank looking at local terrestrial and aquatic native flora and fauna with Terrestrial ecologist Phil Spark and CottonInfo NRM Technical Specialist Stacey Vogel.

At the field day the following topics were covered:

- Landscape principles for healthy rivers, why value riparian areas – Stacey Vogel (CottonInfo)
- Ecosystem services of Native vegetation, eg Carbon Sequestration – Stacey Vogel (CottonInfo)
- BMP's for rivers and riparian areas - Stacey Vogel (CottonInfo) & Cameron Downing (CWLLS)
- What are the indicators of river health? - Stacey Vogel (CottonInfo) & Cameron Downing (CWLLS)
- What fauna is found here, food & habitat requirements - Mr Phil Spark, (North West Ecological)

The field days were promoted through the CottonInfo extension network, Appendix 3. A booklet showcasing fauna and flora species within River Red gum communities and BMP's for their management which was created for the ‘Cottoning onto the Murrumbidgee River’ field days was handed out to participants during the field day.

Participants Responses

A comprehensive evaluation was conducted to provide evidence of changes in KASA (Knowledge, aspirations, skills and attitudes) as a result of attending the field days. Participants completed an anonymous feedback sheet at the end of each workshop. The evaluation template is provided in Appendix 3. A total of 8 evaluations were received from the 45 people attending. A thunderstorm at the end of the field day during lunch impacted on people ability to complete the evaluation forms. All participating attendees were families. 17 of the attendees were adults with the remainder predominantly primary age children.

The results of the evaluations are summarised in this section. A copy of the evaluation form can be found in Appendix 2.

Demographics

There was a total of 45 participants at the field day. 17 of these were adults and the remaining 28 were children. All participants were linked to the local cotton industry, the 45 participants represented 10 local cotton farms and 2 cotton service industries (CottonInfo and Cotton Australia).

Field day delivery

Most participants agreed that the field days had met their aims and expectations and information was presented at a level they could understand. All participants felt that the instruction received was at a high standard and the topics covered were useful. One participant made the comment that some of the younger kids found some of the information a little technical.

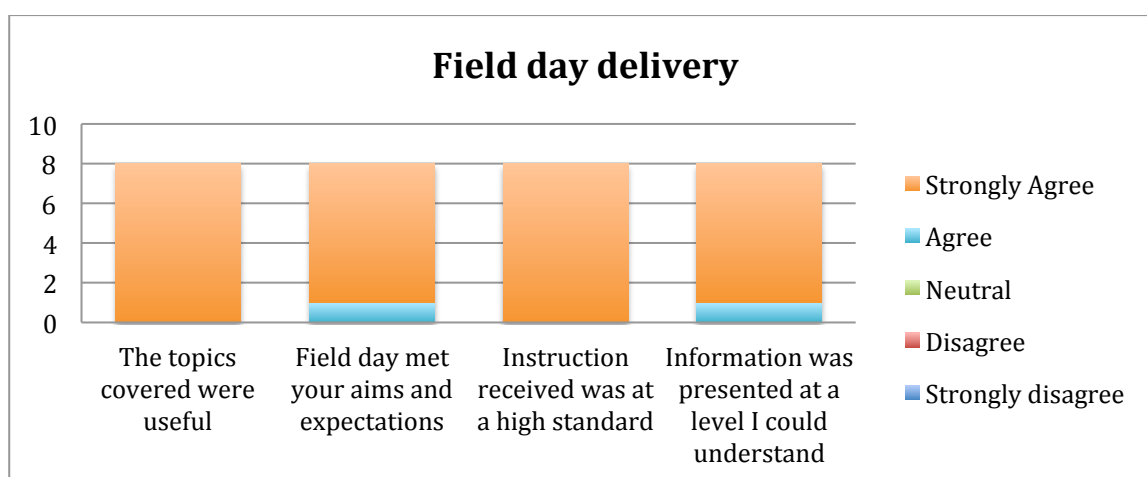


Figure 1 Participants evaluations of field day delivery

Changes in KASA (Knowledge, awareness, skills and aspirations)

Gains in Understanding

A summary of KASA changes as a result of the field day (Figure ?) indicated an overall increase in the level of understanding of the three key areas, indicators of river health, habitat requirements of local biodiversity and ecosystem services from native vegetation such as carbon sequestration.

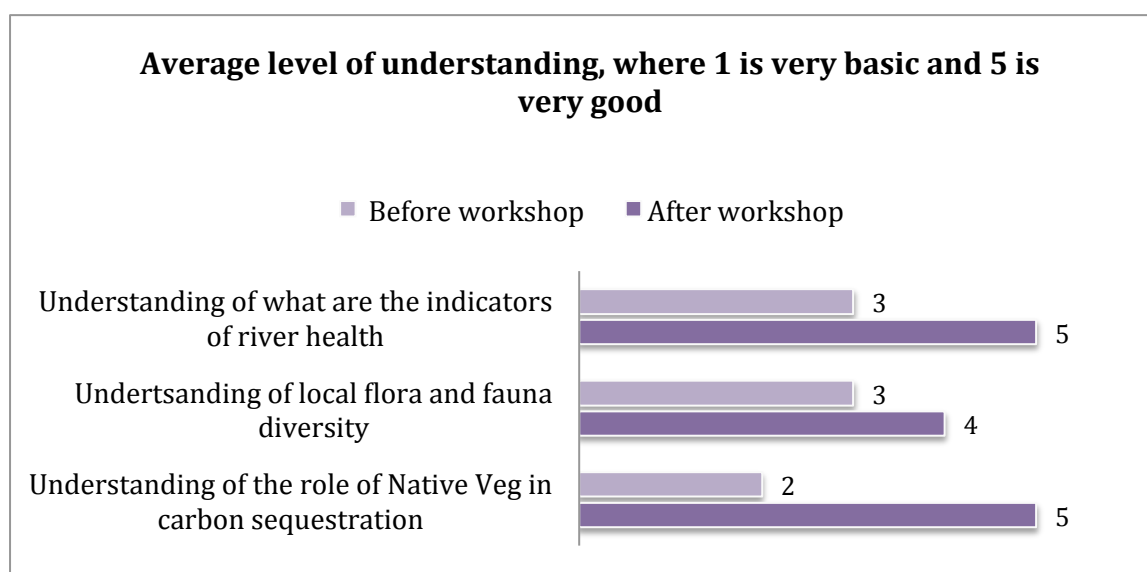


Figure 2 Average level of understanding of the 3 key areas before and after the field days, where 1 is very basic and 5 is very good.

Participants also recorded an overall increase in their level of confidence to implement what they had learned at the workshop.

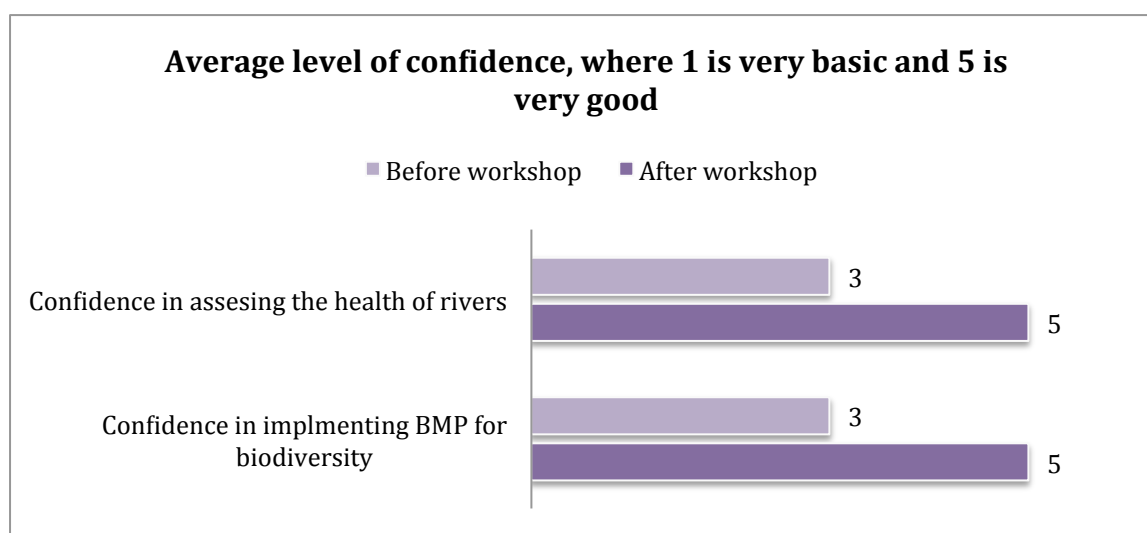


Figure 3 Average level of confidence to implement practices in 2 key areas before and after the field days, where 1 is very basic and 5 is very good.

Sixty two percent of respondents said that as a result of the field day they are more likely to adopt BMP's for biodiversity on their farm or in their local area. The remainder said they were already adopting BMP or did not answer the question. Fifty present of respondents said they had a riparian area on their farm.

Feedback responses from participants:

- Thankyou very much for such a fun day. The 2 big kids have been talking and asking questions most of the way home. They want to do it again already.
- OMG the girls had the best day!! A big thankyou, Tony said he learnt so much about the wildlife. Great job.
- Great job well organized
- Keep doing all you are doing to educate the future generation
- Excellent day great for the kids and the whole family, everyone learnt something
- Really great job!



Photo: Macquarie River Warren, March 2017



Photo: Macquarie River warren, March 2017

Communications

Event promotion

- Distribution of field day flyer through committee networks and local newsletters and social media.

Social Media

During the events Cotton research development Corporation, Murrumbidgee Landcare, Murrumbidgee Irrigation and participants of the events

<https://twitter.com/vogelstacey>

Post media

A follow-up article was prepared by CottonInfo REO Amanda Thomas and submitted into the Warren Weekly newspaper, see Appendix 4.

Conclusion

The 2017 “Cottoning onto the Macquarie River” riparian awareness and management field day was a successful capacity building activity. Terrestrial and aquatic researchers and natural resource management technical staff provided 45 people from the Macquarie valley with the latest riparian management information. Developing a fun and interactive extension activity that targeted farming families was very successful in gaining a high level of attendance at the field days.

Importantly, the evaluation material collected during the events found that field day participants increased their awareness and understanding of riparian management. The evaluations also indicated that 62% of respondents were more likely to adopt riparian BMP’s on their farm as a result of attending the field days.

The field days were an example of how riparian management research outcomes can be successfully delivered to cotton communities in a fun and interactive way. As a result of the success of these field days CottonInfo has been approached by other cotton growers within the Macquarie Valley who would like a similar event held in there area.

Appendices

Appendix 1 - Field day Program

Weekend Saturday 4th March 2017 Warren Top Weir :8:30– 1:00pm Concurrent sessions	
8:30am Start	Participants arrive at starting point Welcome & Introduction –Facilitator / Stacey Vogel (CottonInfo) (20mins)
9:00am	Sessions begin. Group split into 2 concurrent sessions.
Session 1 1hr & 45mins 9:00am – 10:45am	Activity 1 – Kayaking Kayaking Induction by kayak guides (15mins) 1 ½ hr Paddling with CWLLS (Cameron Dowling) Activity 2 – Fauna show and tell Fauna and habitats – NW Ecological – Phil Spark (1.5hrs) Morning tea – 15minutes
Session 2 1hr & 45mins 10:45am – 12:30pm	Activity 1 – Kayaking 1 1/2 Kayaking Induction by kayak guides (15mins) 1 ½ hr Paddling with CWLLS (Cameron Dowling) Activity 2– Riverbank activities (can start morning tea early so ready to take off Morning Tea – 15minutes Fauna and habitats – NW Ecological – Phil Spark (1.5hrs)
12:30pm – 1:00pm	Lunch - Wrap-up and Collection of workshop evaluation sheets – Stacey Vogel CottonInfo (5mins) Evaluation sheets
1:00pm Lunch/close	

Appendix 2 – Evaluation Form



Evaluation form: Cottoning onto the Macquarie March 2017

Thank you for attending today's event. We value your time and would appreciate your feedback.

- | | Disagree | | | | | Agree | | | | |
|---|--|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|--|--|--|--|
| 1. The event met your aims & expectations: | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 | | | | | |
| 2. The instruction received was of a high standard: | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 | | | | | |
| 3. The event was presented at a level you could understand: | | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 | | | | |
| 4. The topics covered were useful: | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 | | | | | |
| 5. The pace of delivery of information was: | ☐ Too slow ☐ About right ☐ Too fast | | | | | | | | | |
| 6. The amount of information was: | ☐ Not enough ☐ About right ☐ Too much | | | | | | | | | |
| 7. How could we have improved the event to be more useful for you? | _____ | | | | | | | | | |
| _____ | | | | | | | | | | |
| _____ | | | | | | | | | | |
| 8. With regard to the river health please rate your: | | | | | | | | | | |
| a. level of understanding of what the indicators are for river and riparian health (where 1 is very basic & 5 very good) | | | | | | | | | | |
| Before today's event: | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 | | | | | |
| After today's event: | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 | | | | | |
| b. level of confidence in being able to assess how healthy your local river is (where 1 is very basic & 5 very good) | | | | | | | | | | |
| Before today's event: | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 | | | | | |
| After today's event: | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 | | | | | |
| 9. With regard to biodiversity please rate your: | | | | | | | | | | |
| a. level of understanding of the diversity of native flora and fauna that live in your local landscape and what their habitat and food requirements are (where 1 is very basic & 5 very good) | | | | | | | | | | |
| Before today's event: | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 | | | | | |
| After today's event: | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 | | | | | |
| b. level of confidence in managing native flora and fauna on your farm or in your local landscape (where 1 is very basic & 5 very good) | | | | | | | | | | |
| Before today's event: | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 | | | | | |
| After today's event: | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 | | | | | |

PTO



CottonInfo Information when you need it



10. As a result of this event, are you (more) likely to adopt Best Management Practices for river and riparian areas or biodiversity on your farm or in your catchment; or if you are already adopting it, to do it more effectively?

☐ Yes ☐ No ☐ Already adopted/using effectively

11. What would prevent you from adopting these BMP's and/or what else do you need to assist you in adopting them? _____

12. As a result of this event, please rate your level of understanding of the role native vegetation such as River Red gums play in sequestering carbon (where 1 is very basic & 5 very good)

Before today's event: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

After today's event: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

14. How do you classify yourself?

☐ Grower/farm manager ☐ Farm staff ☐ Consultant/advisor ☐ Retailer
☐ Agency ☐ Other. Please specify: _____

15. Do you have a riparian area on your farm?

Yes No

16. Any further feedback? _____

Thank you.



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Appendix 3 – Event advert



cottoning on to the Macquarie River

Free family kayak adventure!

Join us for a fun family morning paddling along the Macquarie River on a free kayak trip while learning about your local river and all the creatures that call it home. A free morning tea and BBQ lunch will be provided, followed by an opportunity to see up close some of your local fauna with wildlife expert and ecologist Phil Spark.

Date: Saturday 4 March 2017.

Time: 8:30am-2:00pm.

Location: Warren Weir, further directions provided upon registration.

RSVP: Amanda Thomas,
CottonInfo, by 24 Feb:
0417 226 411.

The kayak trip is led by professional kayak guides: *Out and about Adventures*. Kayaks and personal floatation devices will be provided. Children must be accompanied by an adult.





CottonInfo Information when you need it

Appendix 4 – Post media article in Warren weekly

Page 8, WARREN WEEKLY, Wednesday, 15 March 2017

CottonInfo and LLS host Macquarie River NRM Field Day

On the first weekend in March, CottonInfo and Central West Local Land Services (LLS), in collaboration with the federal government, hosted a Natural Resource Management (NRM) field day where growers and their families had the opportunity to take a unique hands-on look at the importance of local fauna to the river environment.



* Two very cool looking characters, brother and sister duo Fred and Mabel Ceeney, took to the river with their dad Matt (not pictured).

CottonInfo Natural Resource Management Technical specialist Stacey Vogel was on hand to run the event and local growers were keen to take up the opportunity to participate, as Amanda Thomas from CottonInfo explained.

"The 40 spots available in the kayaks were snapped up by the cotton growers and their families. All I had to do was get the message out the growers who jumped at the opportunity."

Ecologist Phil Spark from North West Ecological camped out for the two nights preceding the event in order to collect a sample of local fauna and flora. He was able to gather eight species of Micro bat, including one albino, as well as many different types of frogs, lizards, fish, weeds and plants.

"Everyone, adults and children alike, was able to learn about the importance of these species in the riverine environments, as well as how useful they can be on cotton farms," said Amanda.

"For example, the micro bats are a great predator of some of the higher flying insects such as helioverpa."

"We also learned about the importance of the habitat that supports these animals and plants on our farms and in our communities. Phil even played the calls of some of the animals while we were looking at them".

"Out and About Adventures" led a guided tour in the kayaks, showing the participants tree species beneficial to the river bank, such as river red gums, explaining how carbon is stored in these trees, some of which live to

be a thousand years old.

"Cameron Downing from CWLLS provided info as we were paddling along."

"The children we fully engaged and asked questions throughout the wild life talks and paddle. They were able to hold many of the reptiles, of which a few were Phil's, and they learnt about invasive species such as the European carp."

"Given the grower participation and the great feedback we got from those who participated, we would like to run another one of these days in the Narramine or Trangie end of the Valley. I invite growers to get in touch with me if they have an ideal location in mind, so that we can get the ball rolling," she finished.



* Young Tom Wise looked very pleased to meet this particular lizard.



* Airlie Thomas and Polyanna Wass admiring a very handsome lizard.



* Tom Williams was another 'Bubbles' fan.



* Angela Ramsay showed no fear when she gave 'Bubbles' the snake a cuddle.

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20th May, 2017

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