FARMING FOR THE FUTURE

Perth NRM | REGEN WA

Natural Capitals contribution to production: A National Research Program

LA TROBE UNIVERSITY

mla MEAT & LIVESTOCK AUSTRALIA

Chem Centre EXPERT SOLUTIONS

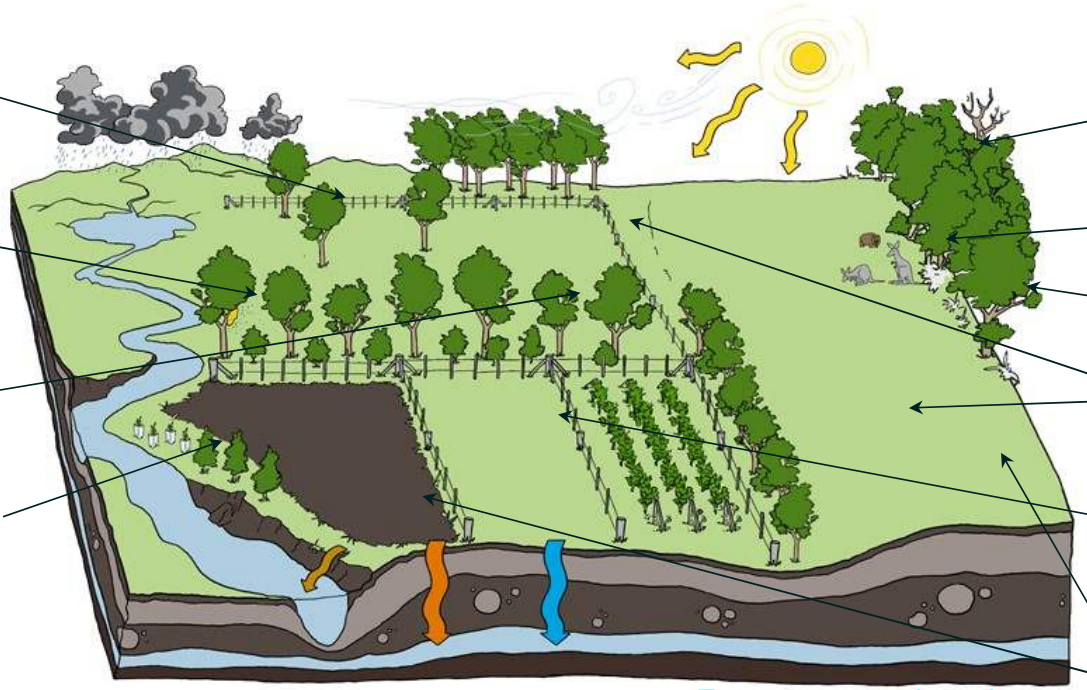
MACDOCH FOUNDATION

natural resource management program

COMMONLAND 4 RETURNS FROM LANDSCAPE RESTORATION

Integrated FUTURES

Natural Capital Generates Inflows (+ some outflows) of Economic Benefit



Shade and shelter for livestock

Habitat for beneficial insects

Storing and sequestering carbon

Protection of waterways from leaching and soil erosion

Conserving biodiversity

Habitat for wildlife

Habitat for pests

Forage for livestock, fodder for sale

Composting functions to feed the soil biology

Water and nutrients for crops

Ecosystem services that benefit production

Resources for production

Avoided expenses

Ecosystem services that benefit society

Conservation of biodiversity

Carbon sequestration & storage

Goods for private benefit ← **Joint benefits** → **Goods for public benefit**

FARMING FOR THE FUTURE

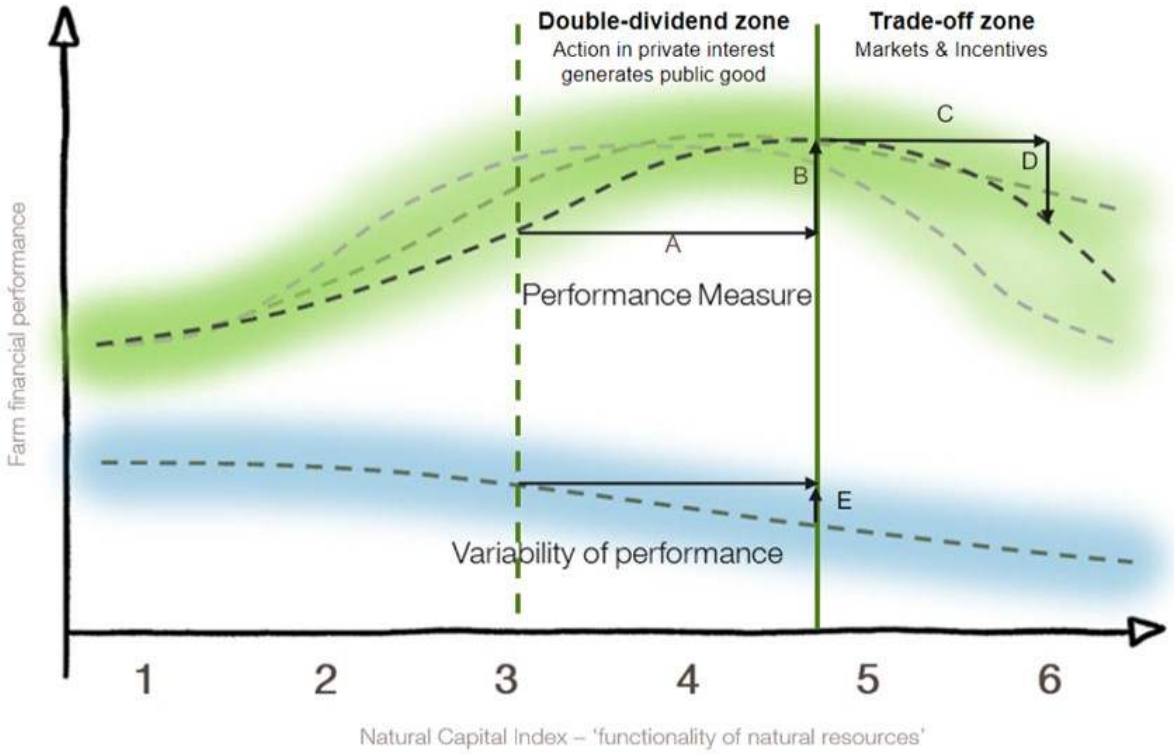
Perth NRM | REGEN WA

Landholder motivations

FARMING FOR THE FUTURE

Perth NRM | REGEN WA

Vision of a Natural Capital Farm Benefits Diagnostic Platform



Farmers will make decisions that they believe best balance their **production**, **landscapes**, **business outcomes** and **personal goals**

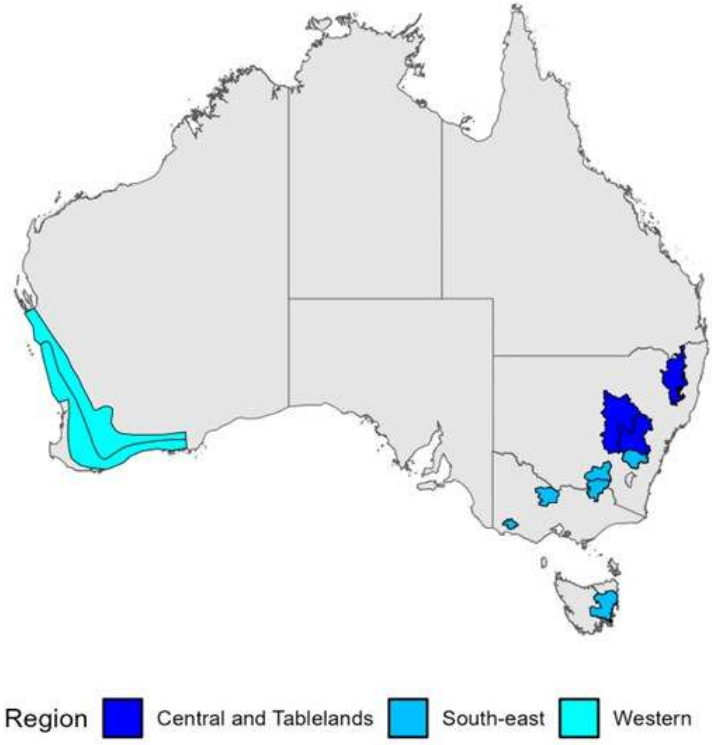
Enablers:

a. **Ability to measure** natural capital
b. **Trusted evidence** and data to support the investment case
c. Access to **financial capital**
d. Access to **advice, capability and resource (time)**
e. Supportive and enabling **community environment**

FARMING FOR THE FUTURE

Perth NRM | REGEN WA

Phase 2 Pilot Research – Natural Capital as a factor of production



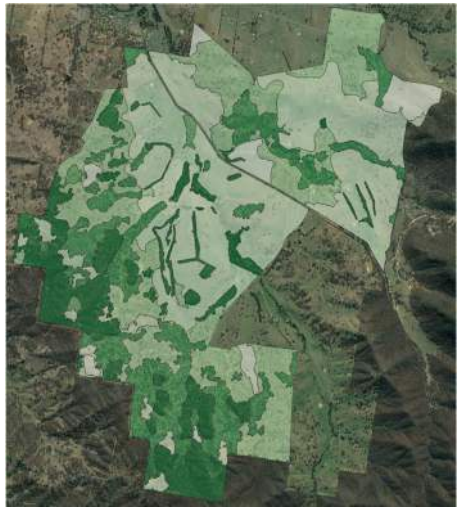
Can it be done? What do you learn by trying?

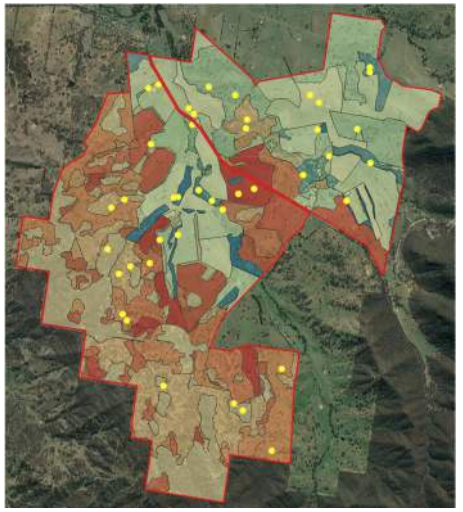
- Farmer participation – 130 farms
- Farm advisors/accountants & NRM/Landcare organisations x 20
- Natural capital measurement protocols
- Data science and systems
- Analysis techniques
- Research findings that are usable and useful to farmers and their advisors
- Farm level outputs that can support Farmer management decisions, supply chain and financial negotiations - Farm NC report & Economic Report

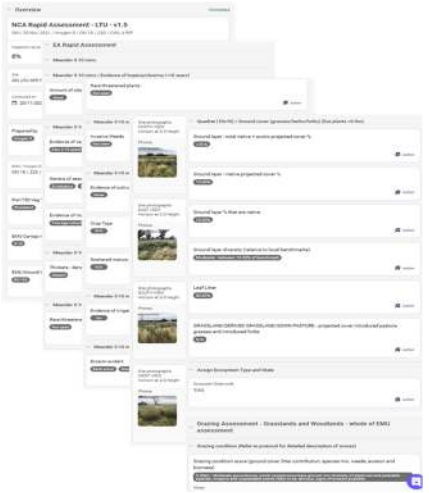
FARMING FOR THE FUTURE

Perth NRM | REGEN WA

Data collection process







Belongs to ASSET_ID	Ecosystem UNIT_ID	Ecosystem Unit Nam	Farmer Supplied Paddock Type	Area (E	Unit Canopy Cover	Unit MeanGCL	Audit ID
	20	S-Laneway-3_Asset-15	PP (Sown perennial pasture) -	0.55	0.27%	79.3778	Remote Imagery_EU20
	27	S-WP7_Asset-15	PP (Sown perennial pasture) -	7.03	0.11%	72.9221	
	49	S-Tank_Asset-15	PP (Sown perennial pasture) -	7.11	0.08%	72.638	
	52	S-WP3_Asset-15	PP (Sown perennial pasture) -	9.14	0.01%	79.1165	
	76	S-WP1_Asset-15	PP (Sown perennial pasture) -	2.57	0.00%	74.7214	
	97	S-WP5_Asset-15	PP (Sown perennial pasture) -	11.43	0.00%	69.1789	audit_fa45e627d47747459ffb9fba
16	39	S-Devons_Asset-16	PP (Sown perennial pasture) -	1.39	0.04%	75.1733	
	40	S-Pets Cnr_Asset-16	PP (Sown perennial pasture) -	31	0.30%	71.2878	audit_c4024104d1994446a90c1370
	51	S-EP3_Asset-16	PP (Sown perennial pasture) -	5.53	0.00%	74.6885	
	54	S-C3_Asset-16	PP (Sown perennial pasture) -	1.82	0.00%	77.9619	
	55	S-EP2_Asset-16	PP (Sown perennial pasture) -	2.29	0.00%	75.016	
	69	S-EP4_Asset-16	PP (Sown perennial pasture) -	11.21	0.00%	76.1559	
	75	S-Vegetation2_Asset-	PP (Sown perennial pasture) -	1.37	0.95%	76.325	Farmer Supplied Data_EU73
	82	S-C4_Asset-16	PP (Sown perennial pasture) -	1.85	0.00%	77.5524	
	88	S-EP1_Asset-16	PP (Sown perennial pasture) -	26.98	0.11%	73.4173	audit_9bd8418a2bb1431aa269308
17	8	S-Paddock-1_Asset-17	PP (Sown perennial pasture) -	0.52	0.64%	78.16	
	13	S-NR6_Asset-17	PP (Sown perennial pasture) -	2.02	0.06%	74.0571	
	19	S-NR1_Asset-17	PP (Sown perennial pasture) -	10.26	0.03%	75.4879	audit_60fcbc1c968f4070bb0d090cl
	26	S-E6_Asset-17	PP (Sown perennial pasture) -	18.77	0.04%	77.1942	
	29	S-Boundary_Asset-17	PP (Sown perennial pasture) -	38.12	0.28%	70.1291	audit_b272fdf48a4f4c8fa7b30b88
	31	S-NTH Rotation 5_Asse	PP (Sown perennial pasture) -	22.56	0.06%	77.2387	
	38	S-Paddock-2_Asset-17	PP (Sown perennial pasture) -	0.3	0.00%	74.1542	
	45	S-NP6_Asset-17	PP (Sown perennial pasture) -	2.33	0.00%	73.8	
	48	S-N8_Asset-17	PP (Sown perennial pasture) -	2.55	0.00%	76.0429	
	57	S-East Rotation 8_Asse	PP (Sown perennial pasture) -	34.47	0.35%	63.1503	audit_642b3886c6444912a250e45
	60	S-Laneway-2_Asset-17	PP (Sown perennial pasture) -	1.17	0.00%	73.0714	Remote Imagery_EU60
	61	S-NU1_Asset-17	PP (Sown perennial pasture) -	0.11	0.08%	75.2777	Remote Imagery_EU61
	68	S-NR3_Asset-17	PP (Sown perennial pasture) -	10.29	0.02%	73.0522	
	72	S-TH5_Asset-17	PP (Sown perennial pasture) -	7.84	0.63%	75.3178	
	80	S-NP4_Asset-17	PP (Sown perennial pasture) -	10.74	0.03%	72.9847	audit_7f8943673efb44f6a49fbf264
	81	S-Cottage Hill 1_Asset	NG (Natural Grazing) -	31.12	0.95%	72.8064	audit_75e9b26e12504f4f9998b5f7
	83	S-Laneway-1_Asset-17	PP (Sown perennial pasture) -	4.07	0.00%	73.9381	Remote Imagery_EU83
	85	S-NP7_Asset-17	PP (Sown perennial pasture) -	18.22	0.00%	76.1739	audit_eb0edee0a59d45e3aa92ec
	87	S-NP9_Asset-17	PP (Sown perennial pasture) -	7.8	0.00%	74.9318	
	89	S-NP5_Asset-17	PP (Sown perennial pasture) -	8.75	0.00%	71.0615	audit_70cf00d1753d49d180372f7d
	91	S-TH4_Asset-17	PP (Sown perennial pasture) -	6.92	0.02%	75.7692	audit_21be1bf54e034801b48ea5e

Mapping the farm and ecosystem types

Remote assessment Identify survey sites

On-site ecological data collection

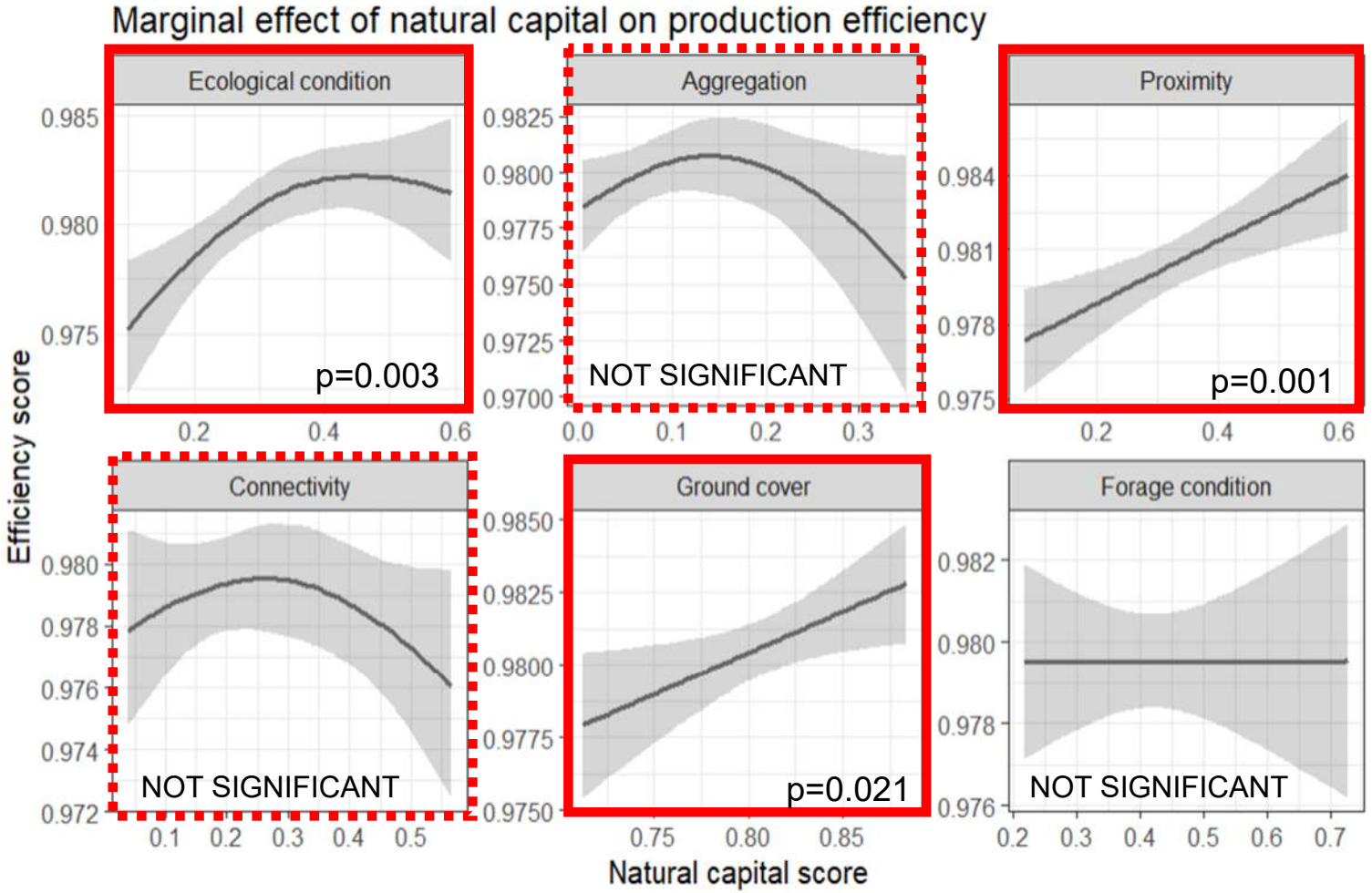
Compile natural capital asset register

Generate the natural capital accounts and indices

Results show positive relationships across most indicators

(All farms)

Results for all farms in Phase 2 of the study

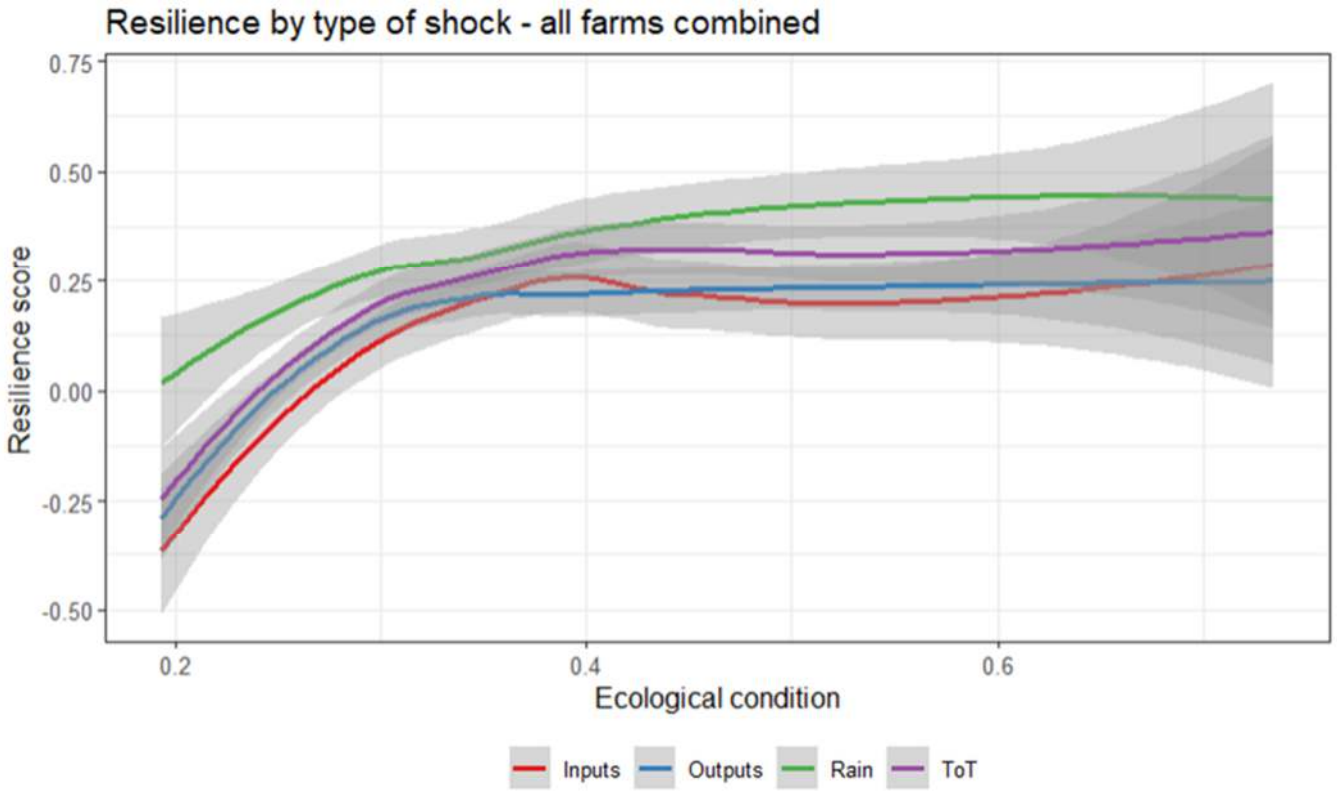


Solid red squares are statistically significant results

Dotted lines are nearly significant, or trends that we see consistently across all 4 groups

Strong evidence that NC offers significant resilience (stability of EBIT/Ha) to different types of shocks

(All Farms)



Results for all farms in phase 2 of the study

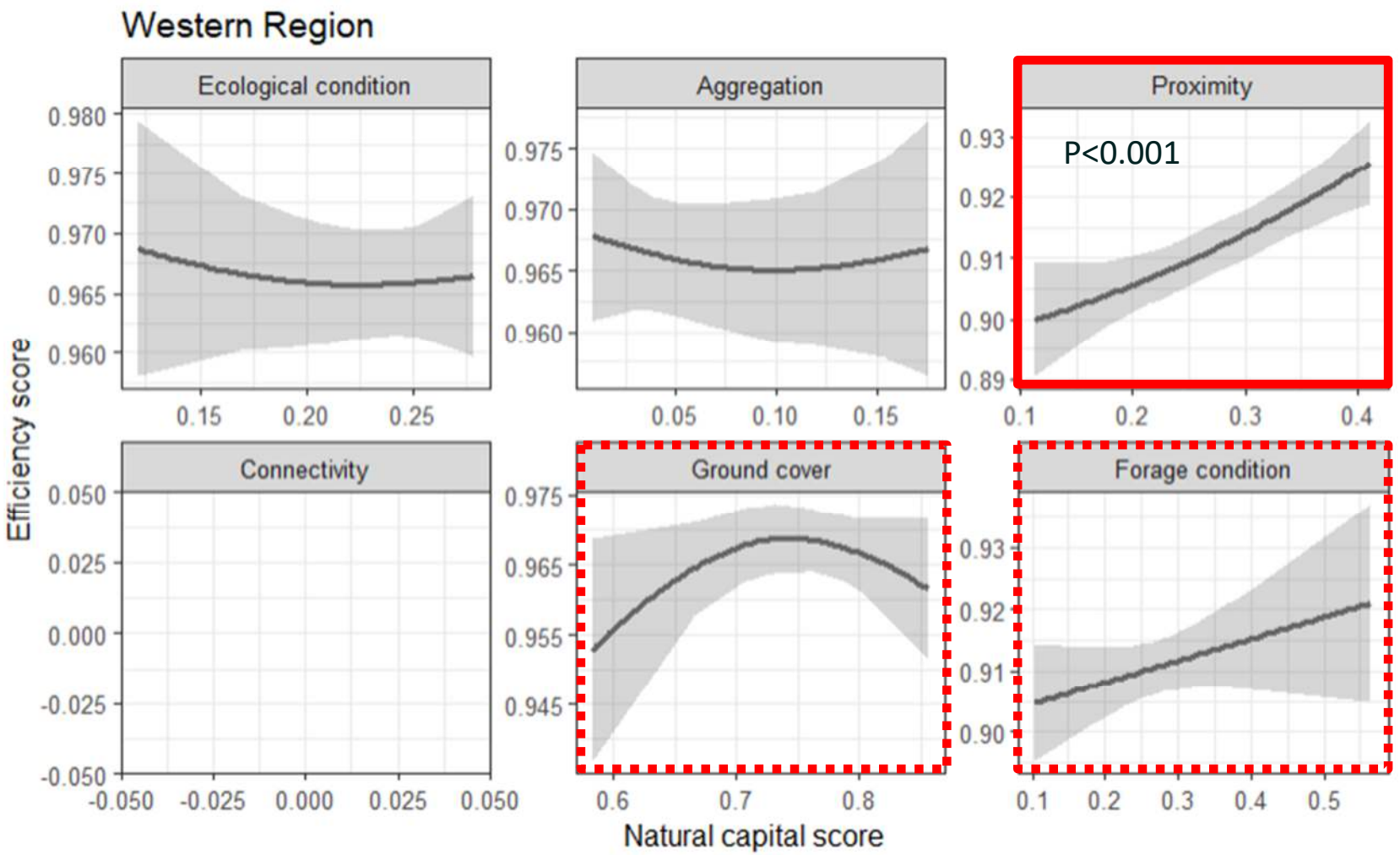
West Australian Farms

- Completed 45 farm audits over 3 phases
- Livestock, horticulture and mixed enterprise
- Crop and sown pasture enterprises with high rates of landuse rotations
- Tree cover very rare in paddocks, located in distinct areas or along paddock boundaries
- Some woodlands grazed, part of crop/pasture rotation with low native diversity and rarely tree regen
- Some woodland and shrubland areas set aside from livestock
  - Higher native plant diversity
  - Tree regeneration common

natural resource management program

COMMONLAND
4 RETURNS FROM LANDSCAPE RESTORATION

Western Australia results



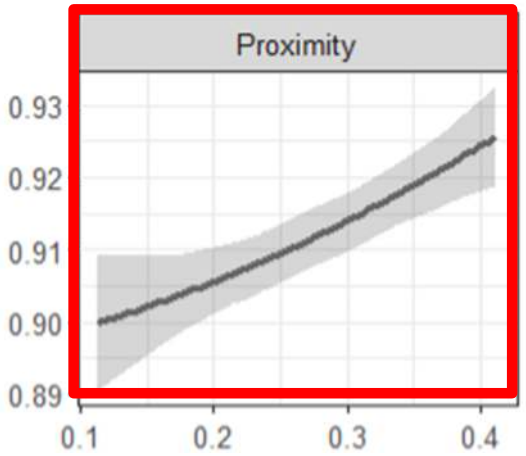
Solid red squares are statistically significant results
Dotted lines are nearly significant, or trends that we see consistently across all 4 groups

FARMING FOR THE FUTURE

Why is Proximity significant?

- WA predominantly crop/pasture enterprises
- Very little tree cover in production areas
- Woodland areas often located in separate areas of farm

= losing benefits of tree cover,
eg shade/shelter, pollinators etc

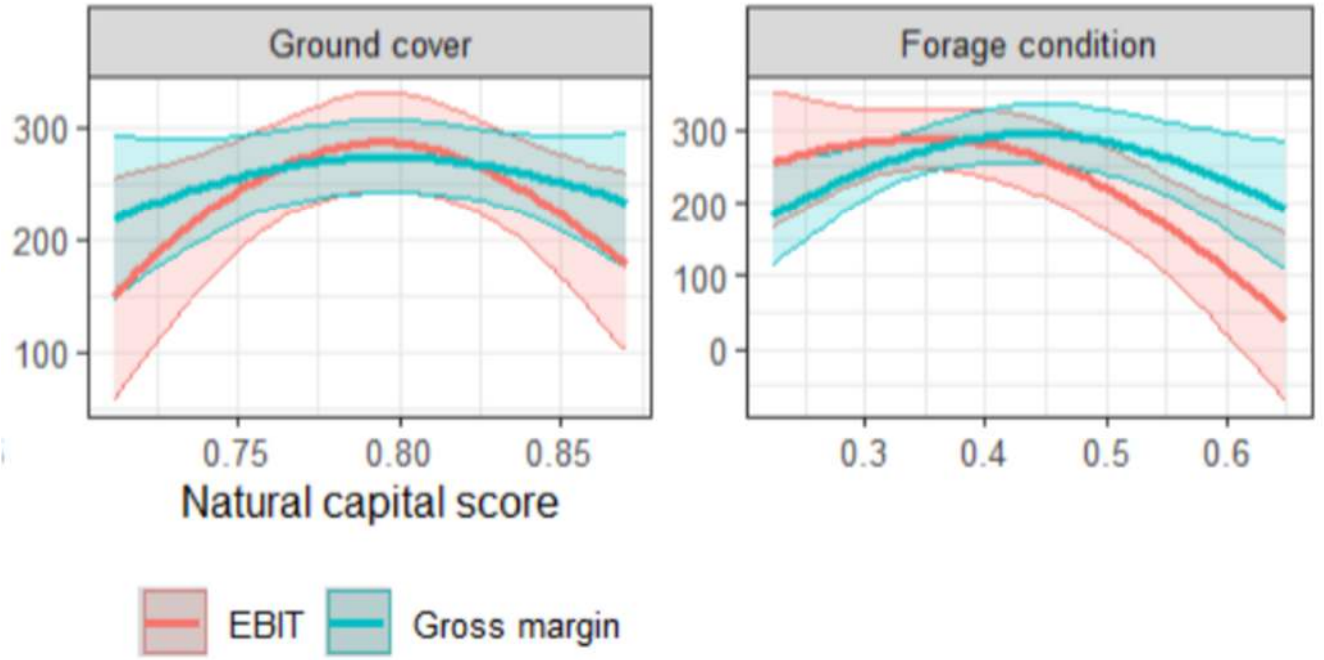


FARMING FOR THE FUTURE

Perth NRM | REGEN WA

Ground cover and Forage show strongest relationship with EBIT and Gross Margin

(All Farms)



Optimised natural capital levels delivered higher EBIT with median

- $75 - $175 /ha/yr higher in the Central and Tablelands region,
- $20 - $135 /ha/yr higher in the South-eastern region, and
- ~$70 /ha/yr higher in the Western region, depending on the farm type.
- Differences in gross margin were of a similar magnitude.

Results for all farms in phase 2 of the study

Take Aways

Nature is good for farm business- most livestock farms can improve their productivity by improving their natural capital.

The data demonstrates that natural capital supports productivity gains, gross margin (Profit) and farm resilience.

The research has met with the motivations and priorities of farmers.

FARMING FOR THE FUTURE

Perth NRM | REGEN WA

Future research plans

- Fund raise for additional research data collection
  - >300 livestock farms needed for data confidence in same regions (170) plus SA and Qld (100).
  - Consider extensions into Cropping, Dairy, Viticulture and Horticulture as well as Rangelands
- Extend our data collection partners with more NRMs and other financial advisors
- Extend technology to simplify and reduce costs of data collection
- Work with finance sector and supply chains on value of the dataset with additional analyses of the data.
- Go to the FFTF Website to express interest to participate (farmingforthefuture.org.au)

Perth NRM | REGEN WA

FARMING FOR THE FUTURE

Thank you.