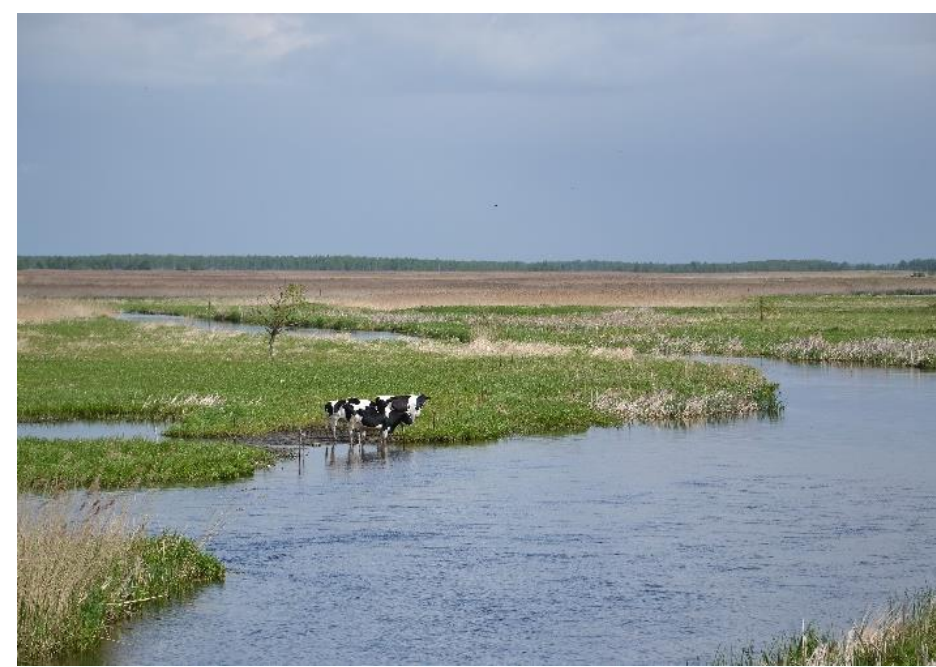


# Drivers of farmers' willingness to adopt extensive farming practices in ecologically valuable river valleys

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## MOTIVATION

Economic objectives vs. Conservation objectives



**Problem:**

- negative biodiversity trends → agricultural sectors as major contributor

(Foley et al., 2005; Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services)

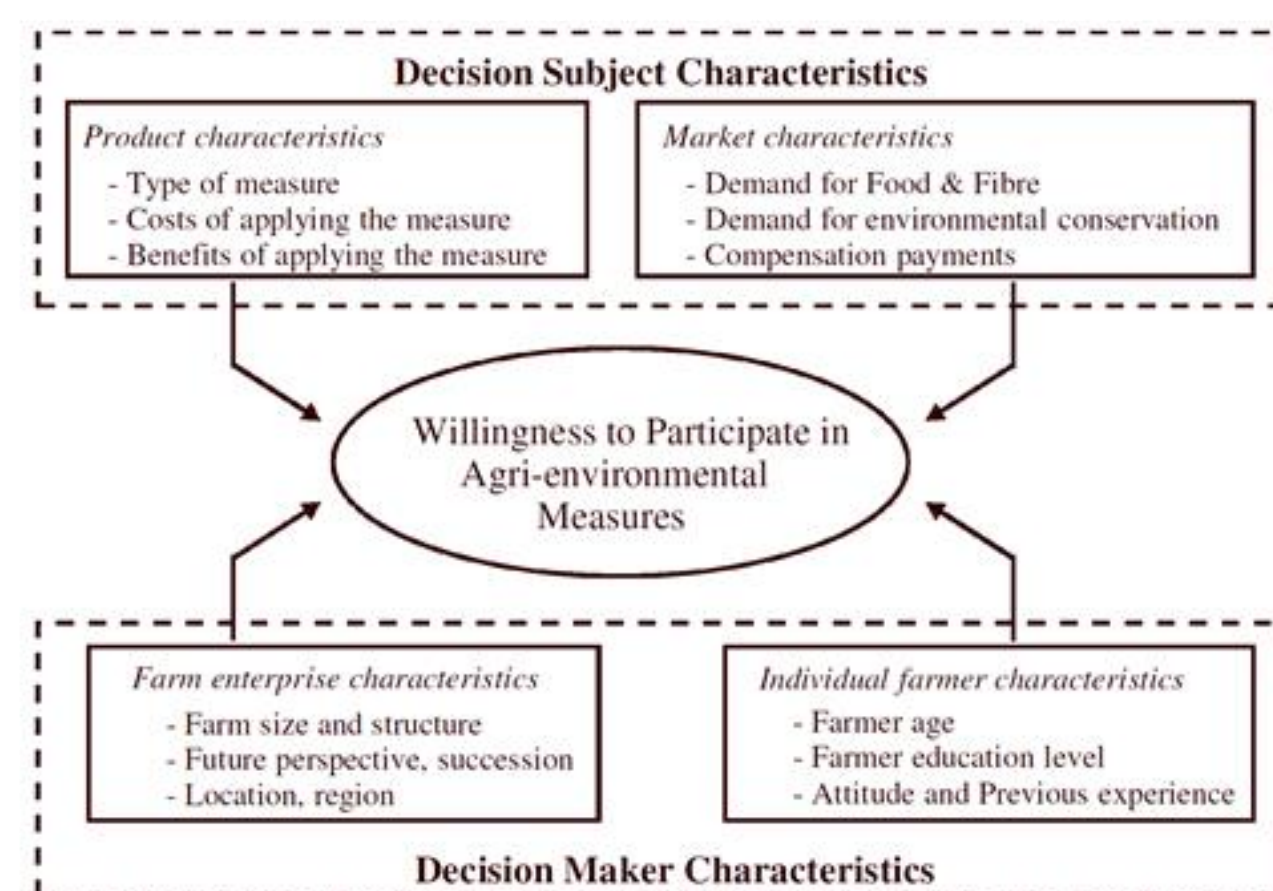
- reliance on voluntary participation: limited uptake of agri-environmental schemes, payments to farmers who voluntarily choose to introduce specific environment-friendly practices on their land, in the European Union

**Goal:** identify factors affecting farmers' willingness to participate in agri-environmental contracts

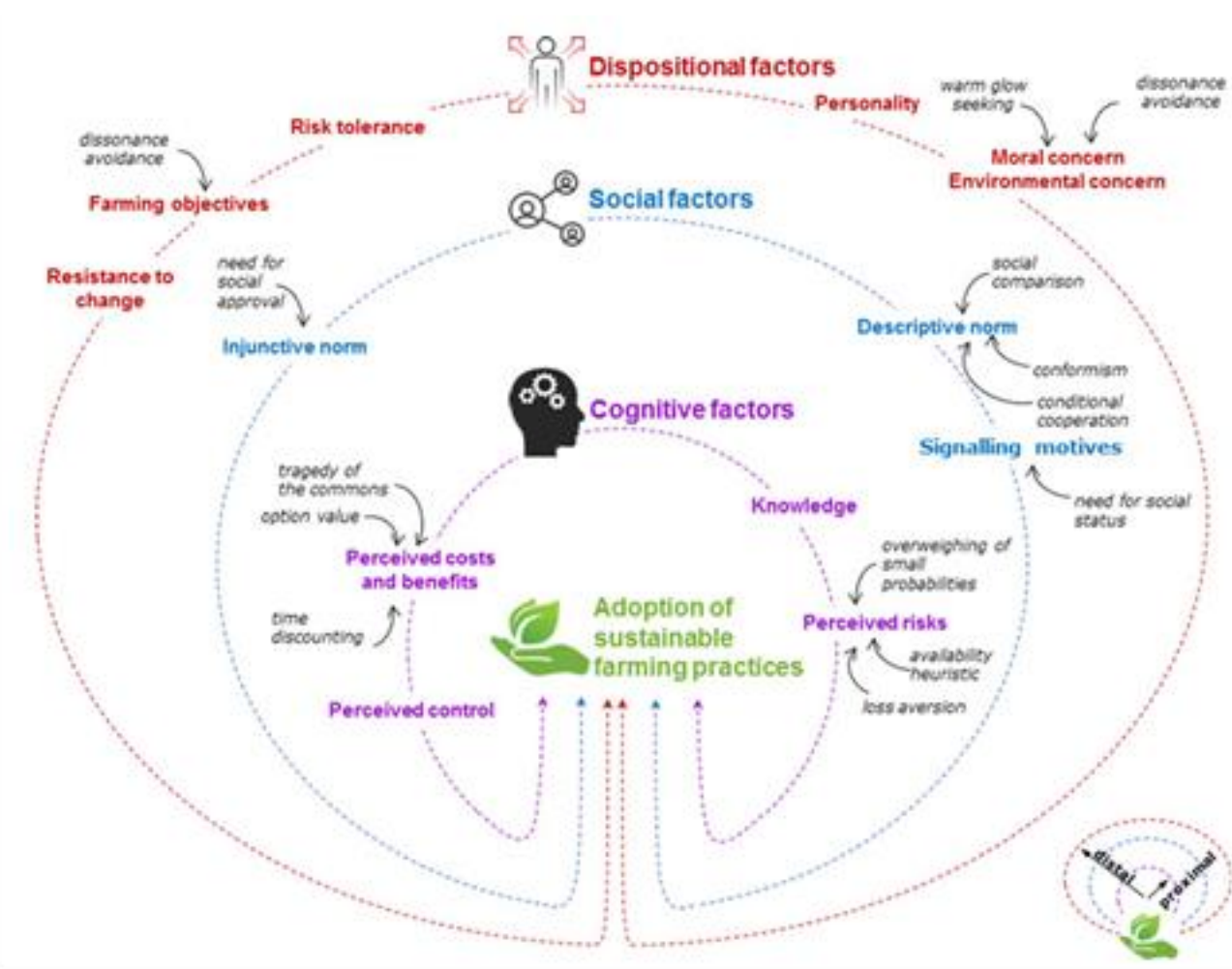
**Area:** Biebrza Valley – large wetland complex and a globally important bird area (Natura 2000 sites)



## LITERATURE



Vanslebrouck et al. 2002



Dessart et al. 2019

## STUDY DESCRIPTION

**Method**

- discrete choice experiment on uptake of agri-environmental schemes (AES)
- 470 farmers, who make managerial decisions
- CAPI by rural advisors
- June - August 2017 & March 2018

Attributes	Description			
<b>Practices</b>	<b>Arable land</b> - improved utilization of fertilizers - crop diversification - catch crops	<b>Peatland basic or extended protection</b>	<b>Meadows extensive mowing and grazing</b>	<b>Livestock / mixed production reduction of Livestock Unit/ha</b>
<b>Duration</b>	the contract will last for a specified number of years			
<b>Termination</b>	possibly to terminate a contract with/without a requirement to pay back the subsidies one have acquired			
<b>Subsidy</b>	Enrolling in a particular contract means that you would receive a payment for adopting the practices. The payments would be paid annually per hectare enrolled.			

**Measures**

- willingness to accept for AES
- factors explaining heterogeneity of farmers' preferences

- 1) randomized information treatments = factual information: why a specific agricultural practice is introduced and what are the benefits of it; matched AES measures
- 2) subjective and objective knowledge
- 3) attitudinal factors: norms, neighbourhood ties
- 4) farm and farmers' characteristics

Subjective knowledge

I know a lot about protected species of birds in the Biebrza Valley.  
I know agricultural practices needed to protect these species of birds in the Biebrza Valley.

Objective knowledge - quiz

Please select a species name:

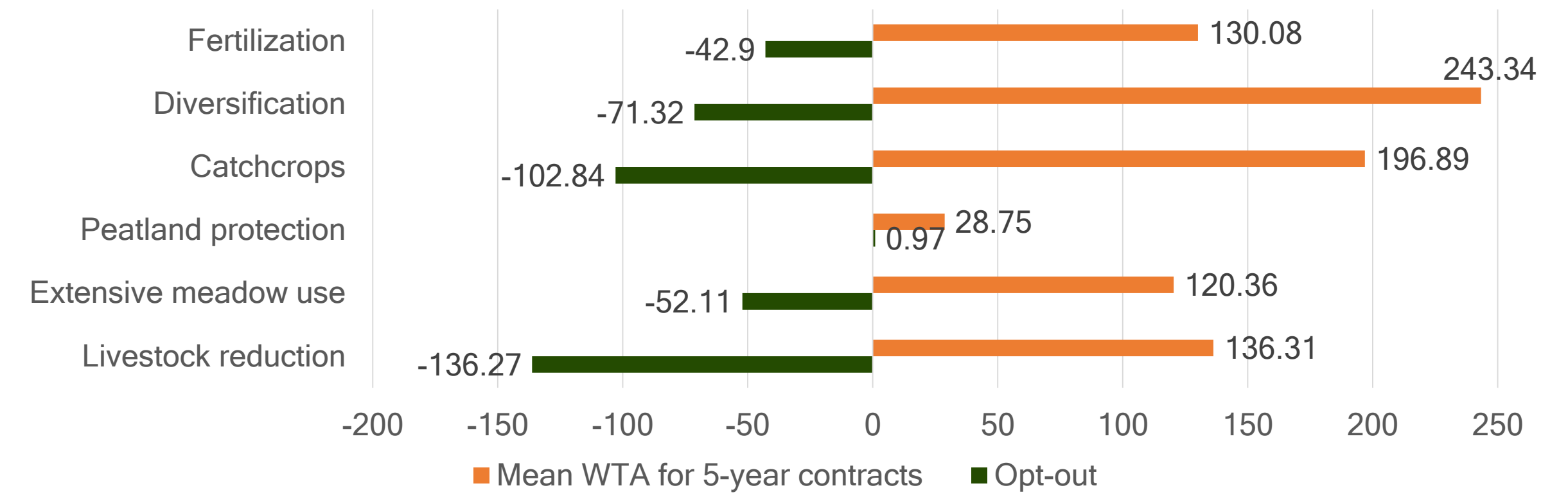
a) Pipit	a) Northern lapwing	a) Black grouse
b) Lark	b) White-winged tern	b) Ruff
b) Lark	b) White-winged tern	b) Ruff
c) Atlantic warbler	c) Montagu's harrier	c) Western capercaillie
c) Atlantic warbler	c) Montagu's harrier	c) Western capercaillie
d) I don't know	d) I don't know	d) I don't know
d) I don't know	d) I don't know	d) I don't know
a) Corn crane	a) Eurasian curlew	a) Eurasian wigeon
b) Black-tailed godwit	b) Montagu's harrier	b) Common starling
b) Black-tailed godwit	b) Montagu's harrier	b) Common starling
c) Great snipe	c) Common snipe	c) Greater white-fronted goose
c) Great snipe	c) Common snipe	c) Greater white-fronted goose
d) I don't know	d) I don't know	d) I don't know
d) I don't know	d) I don't know	d) I don't know

Attitudes – norm and ties

People living in this area are willing to pay higher taxes to protect the environment.  
People living in this area would participate in agri-environmental schemes because of their positive environmental consequences, even if they did not receive the financial compensation.  
People living in this area can be trusted.  
People living in this area do not get along with each other.  
People living in this area are willingly to help each other.  
I often talk to my neighbors about local issues.

## RESULTS

Mean willingness to accept for participation in agri-environmental practices (in EUR per ha a year, RP-MXL)



## RESULTS: INTERACTIONS

	Main effects			Interactions									
	Mean	St. Dev.		Crop prod. (vs. mixed prod.)	Livestock prod. (vs. mixed prod.)	Arable land	Number of crops	Livestock / ha	Work force normalized	Farm with streams or rivers	Farm with areas subject to flooding	Share of land in Natura 2000 and National Park	
Fertilization	-143.82***	181.10***	-55.52	-117.32***	1.76	27.78*	28.60	30.50**	26.49	82.67***	78.11		
Diversification	-124.66**	160.57***	6.24	-165.91***	-0.74	49.88***	45.68*	57.26***	70.66***	-66.76***	62.15		
Catch crops	-245.89***	146.52***	88.25**	-133.80***	-36.74**	13.15	128.97***	54.46***	98.82***	-0.96	-1.09		
Basic peatland protection	-139.13	79.10***	69.08	-230.98***	7.67	26.28	18.02	-5.56	135.69**	55.78	778.20***		
Extended peatland protection	-86.83	-20.47	-71.66	-62.21	-23.62	-18.97	-28.24	-30.89	-65.97	-69.17	-217.35		
Extensive meadow use	-356.34***	69.98***	130.56*	-136.95**	-4.72	-2.95	25.40	67.86**	211.45***	-12.50	365.45		
Livestock reduction	-110.38	-19.48	-77.88	-66.61	-26.32	-24.53	-32.17	-33.75	-71.19	-76.32	-228.31		
Length	-266.32***	213.53***	68.03**	-25.91	-80.63***	56.72***	-7.24	10.37	23.84	22.68	353.26***		
Possible to cancel	-34.74	-12.94	-27.00	-18.71	-11.83	-9.50	-10.51	-10.50	-18.31	-19.15	-75.19		
	-156.05***	79.55***	-43.21	-17.78**	15.66***	-21.87***	-9.85***	-7.76***	18.78***	40.83***	42.39***		
	-18.49	-8.77	-32.90	-7.14	-2.00	-3.48	-2.08	-2.58	-6.16	-10.41	-13.94		
	-6.27**	24.16***	-5.29**	-6.50***	4.06***	-2.45***	-0.34	2.17**	-7.18***	3.69**	14.61		
	-2.93	-1.19	-2.19	-1.96	-0.61	-0.78	-0.66	-0.87	-1.80	-1.67	-9.60		
	156.26***	113.62***	-16.46	-62.35***	26.02***	18.48***	36.92***	-15.35**	45.37***	-24.18*	199.54***		
	-19.46	-6.55	-16.01	-13.80	-5.47	-5.86	-8.49	-6.95	-14.21	-13.52	-65.52		

	Interactions										
	Has participated agri-env schemes	Subjective bird knowledge normalized	Subjective AE practices for birds knowledge normalized	Number of birds recognized	Info treatment	Perceived social norm	Neighbourhood ties	Social norms X Neighbourhood ties	Green efficacy	Environmental concern	Personal norm
Fertilization	264.54***	33.57*	-53.61***	0.00	-82.51***	0.22*	0.21*	0.36***	-0.16	0.15	0.10
Diversification	188.48***	4.85	-12.24	8.96	-50.47**	0.12	0.12	0.08	0.15	0.14	0.13
Catch crops	182.54***	23.37	-41.50**	23.59***	-52.85**	-0.07	0.12	0.20**	-0.02	0.15	0.25*
Basic peatland protection	-30.15	-18.50	-19.29	-6.64	-22.38	0.12	0.12	0.08	0.14	0.14	0.13
Extended peatland protection	182.54***	23.37	-41.50**	23.59***	-52.85**	0.00	0.19*	0.26***	-0.16	0.44***	0.26*
Extensive meadow use	-30.19	-18.01	-18.13	-6.64	-21.74	0.12	0.11	0.08	0.15	0.14	0.14
Livestock reduction	30.49	23.65	-18.11	32.35***	-12.74	0.33	0.24	0.40**	-0.80**	0.49	-0.13
Length	-63.64	-22.35	-23.53	-11.98	-38.72	0.31	0.28	0.20	0.32	0.37	0.34
Possible to cancel	27.38	-6.97	-10.67	51.20***	29.54	0.37	-0.54*	0.29*	-0.95***	-0.03	-0.01
	-73.98	-23.00	-24.84	-13.71	-43.08	0.32	0.29	0.17	0.32	0.35	0.33
	203.62***	-26.26**	32.98**	24.55***	6.14	0.28***	0.18*	0.24***	-0.17	-0.15	0.17
	-26.04	-12.50	-12.87	-6.67	-18.12	0.11	0.10	0.07	0.14	0.13	0.11
	71.85***	-1.36	13.90***	6.68***	-6.32	0.01	-0.04**	0.01	-0.04**	0.00	0.09***
	-8.85	-3.73	-1.96	-2.17	-6.13	0.01	0.02	0.02	0.02	0.02	0.02
	-0.36	5.04***	2.93***	-3.54***	-0.88	-0.01	-0.02***	-0.01*	0.05***	0.01	-0.01
	-1.81	-0.79	-0.81	-0.51	-1.41	0.01	0.01	0.00	0.01	0.01	0.01
	-24.42*	-23.24***	11.41	-20.72***	-6.70	-0.03	0.15**	-0.13***	-0.21***	0.08	0.04
	-12.61	-6.54	-7.26	-3.15	-10.62	0.07	0.07	0.05	0.08	0.09	0.08

## CONCLUSIONS

- strong heterogeneity of preferences
- flexibility preferred: shorter contracts, option to cancel
- simultaneous analysis of multiple agri-environmental schemes → effects of most explanatory variables depend on agricultural practice
- pre-test of information campaign: highlighting environmental benefits of AES is an insufficient incentive for farmers to enroll
- Kruger-Dunning effect observed
- positive effects of
  - ✓ experience in AES
  - ✓ knowledge – local bird species (objectively measured)
  - ✓ norms for people with strong neighbourhood ties

## REFERENCES

Related (working) papers:

Czajkowski M., Zagórska K., Letki N., Tryjanowski P., Wąs A. (in revision for *Land Use Policy*) Drivers of farmers' willingness to adopt extensive farming practices in a globally important bird area.

Hasler B., Czajkowski M., Elofsson K., Hansen L.B., Häggmark T., Konrad M., Nielsen H. Ø., Niskanen O., Pedersen A.B., Petersen K., & Zagórska K. (in revision for *AMBIO: A Journal of the Human Environment*). Farmers adaptation of agri-environmental measures and innovative technologies – a comparative study of farmers in 5 Baltic countries.

Presentations & more results at: [czaj.org/research/conferences](http://czaj.org/research/conferences)

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