

FARMERS AND MULTI-LEVEL GOOSE MANAGEMENT IN SWEDEN

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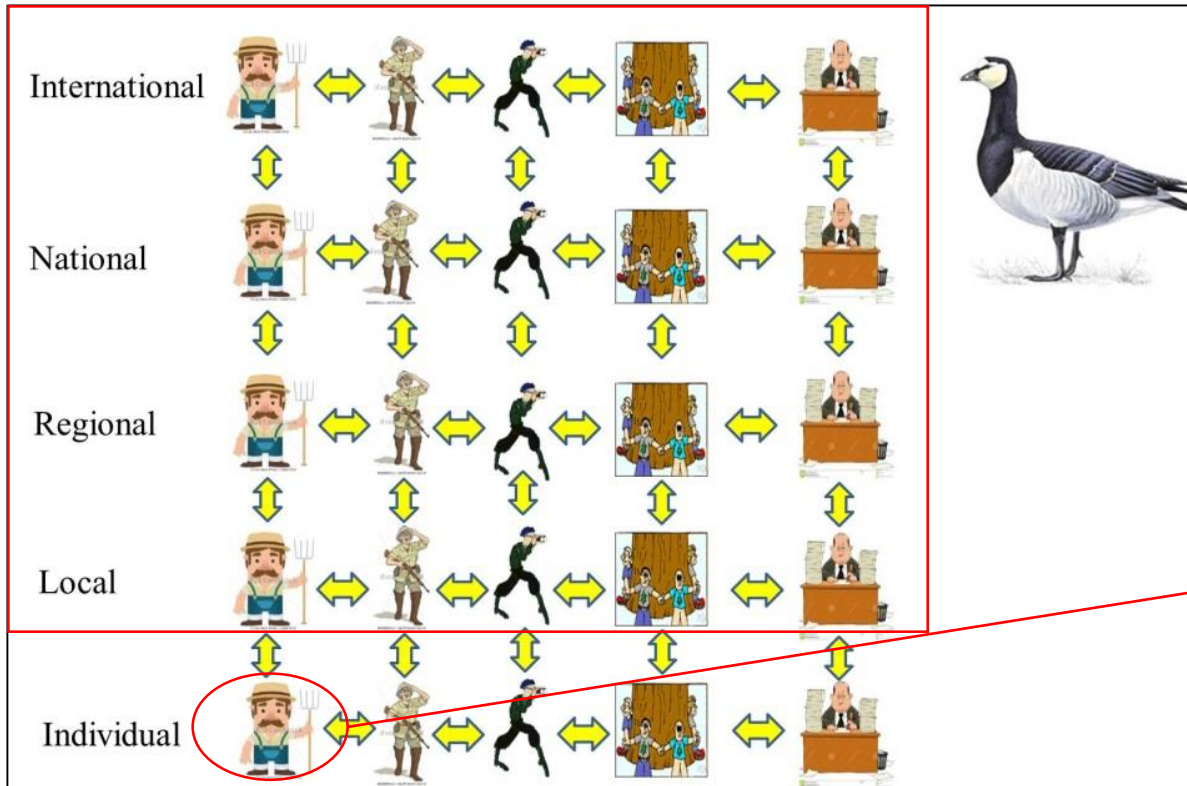
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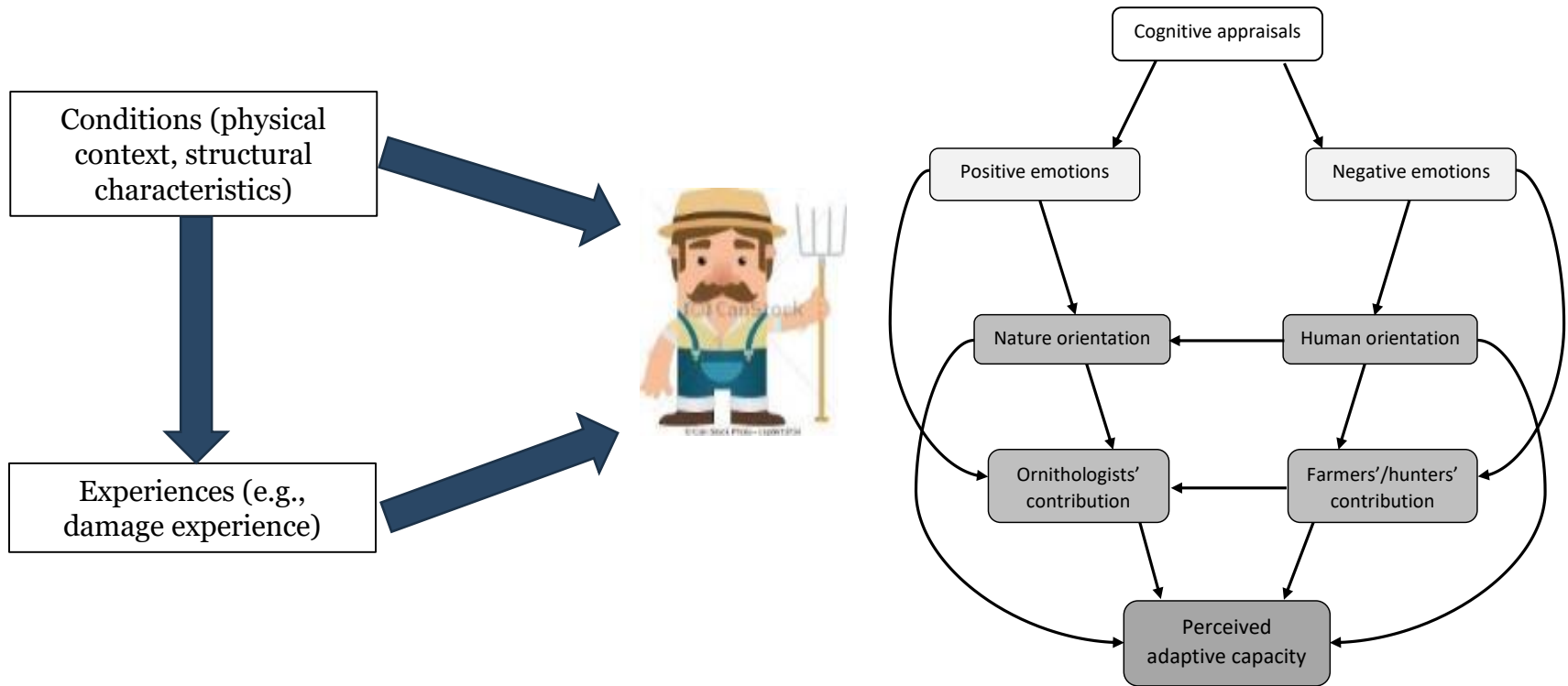


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MULTI-LEVEL MANAGEMENT IN SWEDEN



FRAMEWORK FOR ANALYSES



METHODS

- **Postal survey** directed at 3000 randomly selected farmers, 20-67 years of age, in 13 counties in the south of Sweden (with an active farming business).
Response rate: 36 % (n = 1067)

MEASURES

- **Conditions:** The farmers and the farm (gender, age, farm size, water nearby farm, protected land nearby farm, cultivation of cereals, rapeseed, and root crop)
- **Damage experience:** Three groups, including no damage experience (n = 465), moderate damage experience i.e., little damage by one or several goose species but less than 9 weeks/year (n = 309), extensive damage experience i.e., little or extensive damage by one or several goose species and with damage more than 9 weeks/year (n = 175).
- **Cognitive appraisals of geese:** Relevance, implications, coping potential and normative significance (n = 15, $\alpha = .84$, 1-5)
- **Emotions evoked by geese:** Positive (e.g., joy, enthusiasm) (n = 5, $\alpha = .91$) and negative (e.g., worry, frustration) (n = 7, $\alpha = .91$) (0-6)
- **Management beliefs** (human and nature orientation (n = 3, $\alpha = .79$ and n = 3, $\alpha = .72$), 1-5), ornithologists' contribution, farmer'/hunters' contribution) (n = 2, $\alpha = .94$ and n = 4, $\alpha = .87$, 1-5, don't know)
- The **perceived adaptive capacity** of goose management (e.g., enough knowledge, enough time and money, can adapt to new circumstances, good cooperation, trust in management) (n = 8, $\alpha = .88$) 1-5, and don't know)



SAMPLE OF FARMERS

Number of respondents	1067
Gender distribution (women)	19%
Mean age	55 years
Size of land	73 ha (SD = 21)
Share with work on the side of farming	76%
< 200 meters to a lake or other watercourse	50%
< 200 meters to formally protected land	15%

Farmers without damage experience 44%
(n = 465)

Farmers with moderate damage experience 29%
i.e., little damage by one or several goose species, less than 9 weeks/year
(n = 309)

Farmers with extensive damage experience 16%
i.e., little or extensive damage by one or several goose species and with damage more than 9 weeks/year
(n = 175)

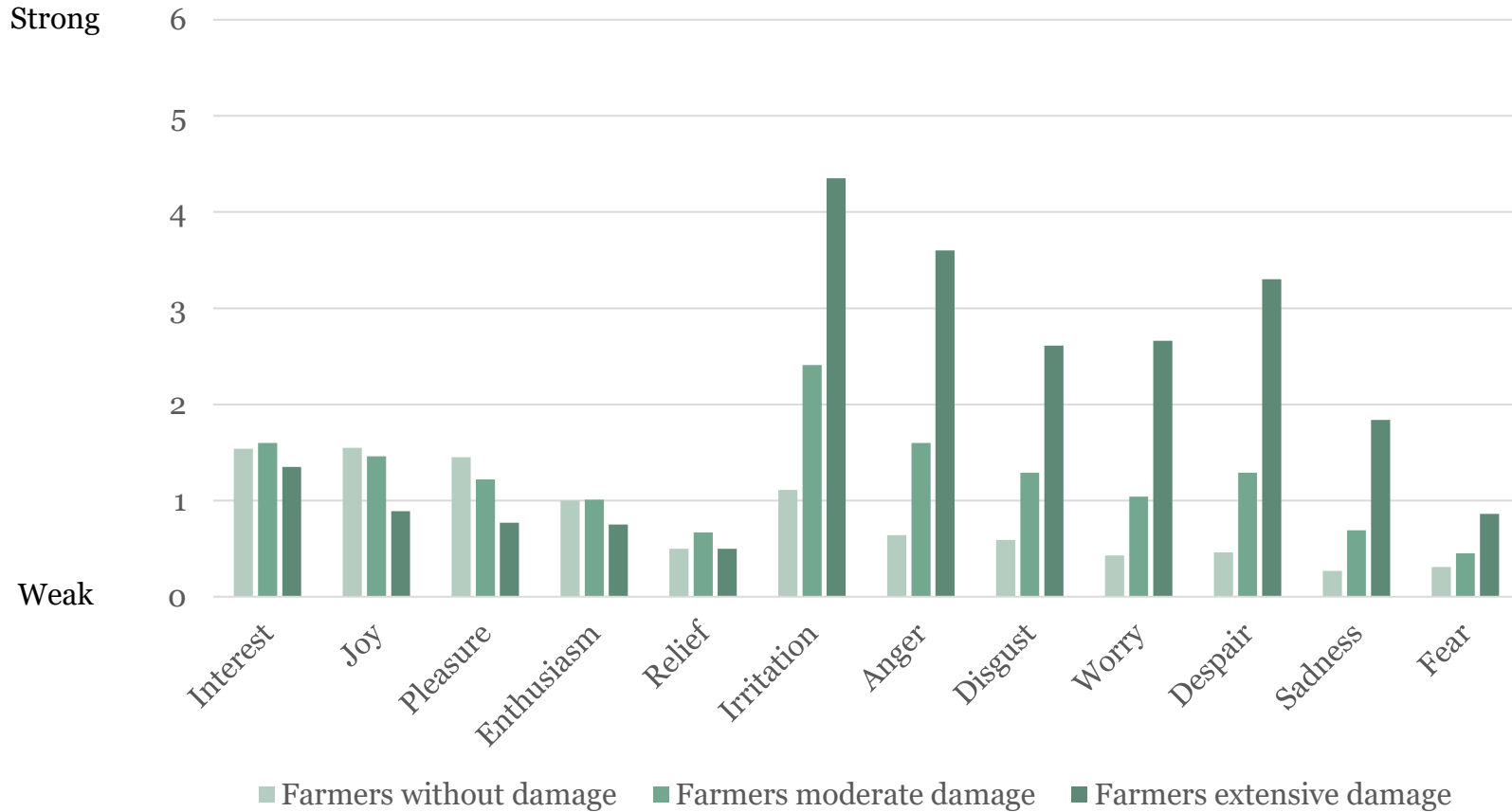


EMOTIONS AND PERCEIVED ADAPTIVE CAPACITY

	No damage	Moderate damage	Extensive damage	Partial η^2
Negative emotions ²	0.57 (1.07) ^a	1.27 (1.34) ^b	2.81 (1.70) ^c	.29
Positive emotions ²	1.23 (1.34) ^a	1.19 (1.20) ^a	0.86 (1.10) ^b	.01
Perceived adaptive capacity ³	2.69 (0.92) ^a	2.46 (0.82) ^b	2.09 (0.83) ^c	.07

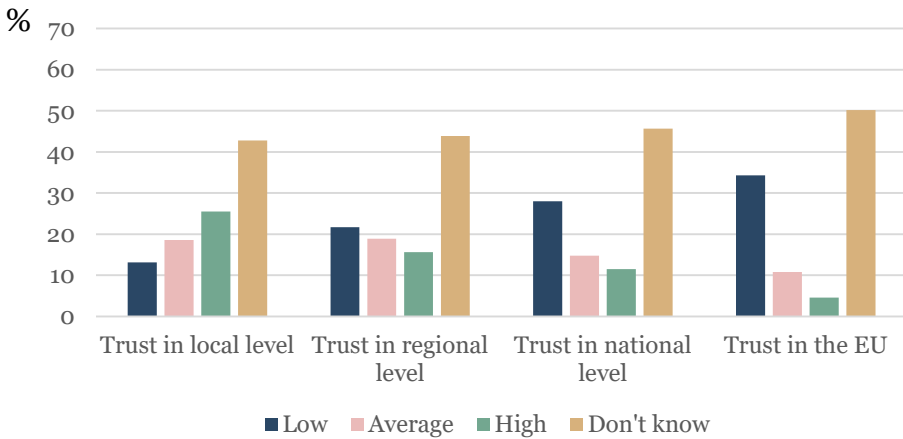


POSITIVE AND NEGATIVE EMOTIONS



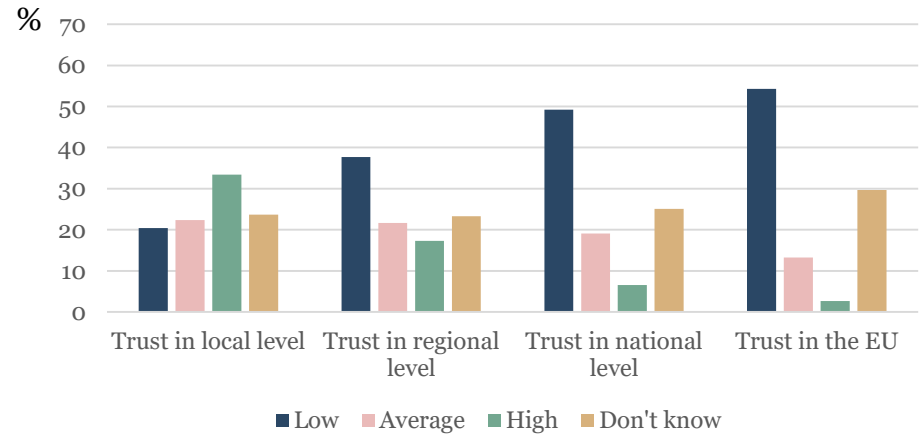
TRUST IN MANAGEMENT

Farmers no damage

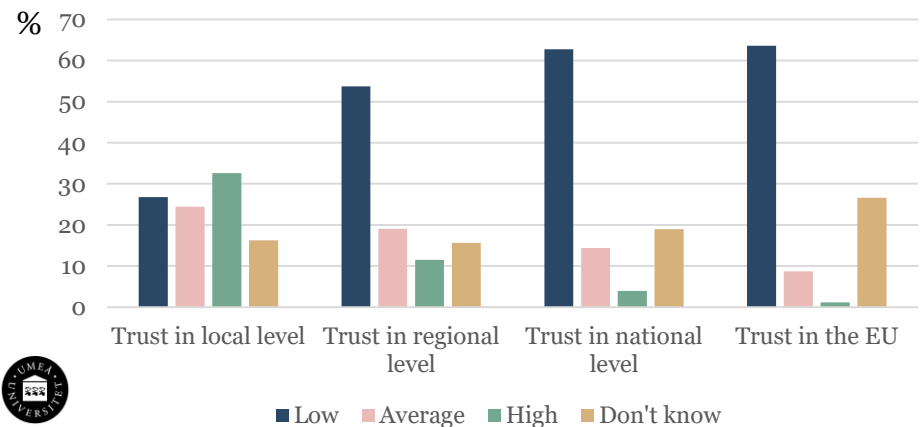


- Trust: Scale: 1-5
- Low trust = 1,2
 - Average = 3
 - High trust = 4,5

Farmers moderate damage



Farmers extensive damage



CONDITIONS AND DAMAGE EXPERIENCE

	Negative emotions (n = 907)	Positive emotions (n = 899)	Perceived adaptive capacity (n = 690)
	β	β	β
Farmer and farm characteristics			
Women (D)	-.05	-.01	.09*
Age	.00	.03	.03
Farm size	.11***	-.05	-.03
Water nearby farm (up to 200 me) (D)	.11***	.03	-.03
Protected land nearby farm (up to 200 m) (D)	.08*	.05	.02
Cultivate cereal (D)	.18***	-.05	-.03
Cultivate rapeseed (D)	.04	-.03	-.02
Cultivate root crops (D)	.09**	-.02	-.06
	Adj R ²	.01	.01
Full model			
Women (D)	.00	-.01	.07
Age	.03	.02	.02
Farm size	.05	-.04	.00
Water nearby farm (up to 200 me) (D)	.06	.03	.01
Protected land nearby farm (up to 200 m) (D)	.03	.06	.04
Cultivate cereal (D)	.07*	-.04	.05
Cultivate rapeseed (D)	.04	-.03	-.02
Cultivate root crops (D)	.04	-.01	-.03
Damage (D)	.19***	.01	-.13**
Extensive damage (D)	.36***	-.09*	-.17***
	ΔR^2	.00	.05***
	Adj R ²	.30***	.06***

PSYCHOLOGICAL DETERMINANTS

Adj R²

Negative emotions: .47***

Positive emotions: .03***

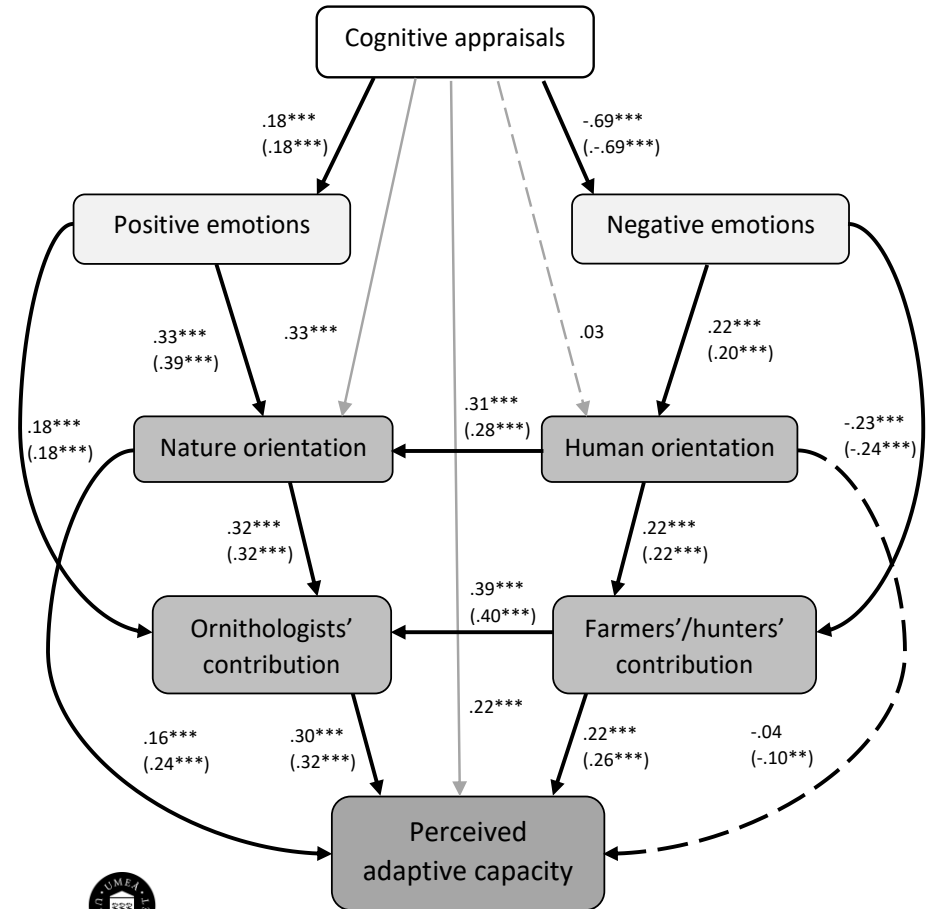
Perceived adaptive capacity: .28***

Model fit

$\chi^2 = 40.62***$

CFI = .98

RMSEA = .05^{ns}



CONCLUSIONS

- Understanding farmers' reactions to geese and their perceptions of the goose management system is important for the development of a legitimate and inclusive system
- The study confirmed the importance of damage experience for negative emotional reactions to geese. However, appraisal processes, emotions, and management beliefs proved to be even more important for how the system is perceived among farmers
- To avoid polarization between stakeholder groups and to facilitate positive appraisal processes of geese, communication and collaboration are needed



Thank you for listening!

Questions and comments?

The project is financed by the Swedish Environmental Protection Agency.

Reference:

Eriksson, L. Johansson, M., Månsson, J., Redpath, S., Sandström, C. & Elmberg, J. (2021) Individuals and multilevel management: A study of the perceived adaptive capacity of the goose management system among farmers in Sweden. Accepted for publication in *Society and Natural Resources*. Soon available at doi: 10.1080/08941920.2021.2015497

For a study of the general public, please see:

Eriksson, L. Johansson, M., Månsson, J., Redpath, S., Sandström, C. & Elmberg, J. (2020) The public and geese: A conflict on the rise? *Human Dimensions of Wildlife*, 25 (5), 421-437. <https://doi.org/10.1080/10871209.2020.1752420>



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