WAGENINGEN
UNIVERSITY & RESEARCH

Postbus 9101 | 6700 HB Wageningen

UITSLUITEND PER E-MAIL

[redacted]

e-mail: [redacted]

Geachte mevrouw [redacted]

Op 4 februari jl. hebben wij uw verzoek om informatie ontvangen met betrekking tot beleid ten aanzien van de wolf en de terugkeer van de wolf in Nederland.

Uw verzoek om informatie

Uw verzoek heeft betrekking op de onderstaande onderwerpen, over de periode van 1 januari 1996 tot en met 4 februari 2022:

1. Alle communicatie en documenten, e-mails, WhatsApp berichten, foto's, verslagen, subsidies, sectierapporten, laboratoriumonderzoeken, rapporten, video's en facturen tussen WUR en respectievelijk:
   Ministerie van Economische Zaken en Klimaat, Ministerie van Landbouw, Natuur en Voedselkwaliteit, Ministerie van Buitenlandse Zaken, NVWA [redacted] Natuurmonumenten, Staatsbosbeheer, [redacted] Zoogdiervereniging [redacted] Wolvenmeldpunt, Wolven in Nederland, Provincie Gelderland, Provincie Overijssel, Provincie Limburg, Provincie Drenthe, Provincie Groningen, Provincie Friesland, BIJ12, Provincie Noord-Holland, Provincie Noord-Brabant, Provincie Zeeland, Provincie Zuic-Holland, Provincie Utrecht, Faunabescherming, [redacted] IPO, Wereld Natuur Fonds, Politie, Douane en Marechaussee, Commandocentrum, dierentuinen in Nederland en België, Duitsland en Polen, [redacted], KNJV, [redacted] Flaxfield Consultancy, Stichting Free Nature, Stichting Taurus, Dutch Wildlife Health Centre, Naturalis, Stichting ARK Natuur, Rewilding Europe, wolven opvangcentra in Nederland, Polen, Duitsland en België, IVN, IFAW, Landschap Overijssel, Studio Wolverine, Rewilding Foundation, Van Bommel Faunawerk, Wolf Fencing Nederland, Wild Europe, IUCN en [redacted]
2. Alle communicatie en documenten, e-mails, WhatsApp berichten, foto's, verslagen, subsidies, sectierapporten, laboratoriumonderzoeken, rapporten, video's en facturen van WUR op Militaire Defensie terreinen in Nederland;
3. Alle communicatie en documenten, e-mails, WhatsApp berichten, foto's, verslagen, subsidies, sectierapporten, laboratoriumonderzoeken, rapporten, video's en facturen van WUR over respectievelijk een huis (eigenaar Ministerie van Defensie voorheen Ministerie LNV) op Woldbergweg 4 Epe, meldingen/aanhoudingen verdachte situaties Poolse en andere busjes met wolven erin op de Veluwe in Provincie Gelderland en Duitsland, dood gevonden wolf in Luttelgeest, doodgeschoten wolf Stroe, chips in wolven, wolven met halsbandzenders, DNA onderzoeken wolven uit Duitsland die inmiddels in

Wageningen University

DATUM
20 september 2022

ONDERWERP
Besluit op uw verzoek om informatie

ONS KENMERK
[redacted]

POSTADRES
Postbus 9101
6700 HB

BEZOEKADRES
Wageningen Campus
Gebouw [redacted]
Droevendaalsesteeg 4
6708 PB Wageningen

INTERNET
www.wur.nl

CONTACTPERSOON
[redacted]

E-MAIL
[redacted]@wur.nl

Nederland lopen, swabs en alle andere communicatie (tussen WUR en ISK), DNA en swabs wolven (tussen WUR en ASK), wild camera's op de Veluwe, militaire terreinen, Provincie Drenthe, Overijssel en Gelderland.

Behandeling van uw verzoek
Bij e-mail van 8 februari jl. hebben wij de ontvangst van uw verzoek bevestigd. Op 11 april jl. hebben wij u bericht dat de behandeling van uw verzoek vertraging zou oplopen wegens het feit dat het verzamelen en beoordelen van de door u verzochte informatie langer duurde dan verwacht.

Op 25 mei jl. hebben wij u per e-mail verzocht de reikwijdte van uw verzoek nader te specificeren. Op 20 juni jl. heeft u uw verzoek telefonisch nader afgebakend en aangegeven dat uw verzoek strekt tot informatie over wolven binnen Europa.

Bij e-mail van 6 september jl. hebben wij u geïnformeerd over de status van uw verzoek en aangegeven te verwachten het besluit op uw verzoek op korte termijn aan u te kunnen toesturen.

Naar aanleiding van uw verzoek is ons centrale archief geraadpleegd op zoektermen uit uw informatieverzoek. Ook hebben de departementen waarbinnen mogelijk onderzoek wordt verricht op thema's binnen de reikwijdte van uw informatieverzoek zoekacties uitgevoerd door de betrokken personen binnen Wageningen University te laten zoeken in hun persoonlijke archieven. Dit heeft uiteindelijk 47 documenten opgeleverd die onder de reikwijdte van uw verzoek vallen. Wij hebben de documenten vervolgens inhoudelijk getoetst op de aanwezigheid van wettelijke uitzonderingsgronden en gereedgemaakt voor het uitsturen van zienswijzen in de zin van artikel 4.4 lid 3 Wet open overheid ('Woo'). Wij hebben in totaal negen zienswijzen uitgevraagd aan betrokken partijen. De reacties op de uitvraag hebben wij meegenomen in onze uiteindelijke besluitvorming.

Stichting Wageningen Research valt buiten bereik van de Wet open overheid
Zoals u op onze website www.wur.nl kunt zien, bestaat onze organisatie uit enerzijds Wageningen University en anderzijds Stichting Wageningen Research.

Wageningen University, een publiekrechtelijke rechtspersoon, is een bestuursorgaan in de zin van artikel 2.2 lid 1 sub a Woo, en valt daarmee onder de reikwijdte van de Woo. Stichting Wageningen Research is echter een privaatrechtelijke rechtspersoon en kwalificeert niet als bestuursorgaan zoals bedoeld in de Woo. Uw verzoek kan derhalve uitsluitend doel treffen voor zover het gericht is tot Wageningen University en informatie betreft die zich onder Wageningen University bevindt.

In dit geval betreft uw verzoek informatie die zich deels onder Wageningen Environmental Research ('WEnR') bevindt. WEnR is een onderzoeksinstituut binnen Stichting Wageningen Research en valt daarmee niet onder het bereik van de Woo. Op grond van de Woo is Stichting Wageningen Research derhalve niet gehouden de verzochte informatie openbaar te maken.

Besluit en beperkingen
Het college van bestuur van Wageningen University besluit om uw verzoek om informatie gedeeltelijk te honoreren, waarbij wij de kaders van de Woo in acht nemen. Dat betekent dat wij de door u verzochte documenten verstrekken indien en voor zover Wageningen University die informatie onder zich heeft en indien en voor zover de uitzonderingsgronden van de Woo zich niet tegen openbaarmaking

verzetten. Wij hebben in ieder document aangegeven op welke grond wij eventueel informatie hebben afgeschermd.

Openbaarmaking stukken
Omdat naar verwachting belanghebbenden bezwaar kunnen hebben tegen de openbaarmaking van de informatie, maken wij de documenten over twee weken na dagtekening van dit besluit openbaar, zoals voorzien in artikel 4.4 lid 5 van de Woo.

Indien binnen die periode daadwerkelijk bezwaar is gemaakt door een belanghebbende en daarnaast bij de rechtbank is verzocht om, bij wijze van voorlopige voorziening, het onderhavige besluit tot openbaarmaking te schorsen, zullen wij de uitspraak van de voorzieningenrechter afwachten alvorens de documenten te openbaren. De documenten tegen de openbaarmaking waarvan geen bezwaar is gemaakt, zullen wel na de termijn van twee weken openbaar worden gemaakt en aan u worden verstrekt.

Informatie en termijn voor bezwaar
Wij vertrouwen erop u hiermee voldoende te hebben geïnformeerd. Indien u vragen heeft over dit besluit kunt u contact opnemen met onze woordvoerder [redacted]

Voor zover deze brief ziet op het besluit van Wageningen University, kunt u binnen zes weken na de dag waarop dit bekend is gemaakt een bezwaarschrift indienen. U dient in dat geval schriftelijk uw bezwaren te richten aan het college van bestuur van Wageningen University, Postbus 9101, 6700 HB Wageningen dan wel per e-mail gericht aan [redacted]@wur.nl.

Hoogachtend,

[redacted]

Dr. ir. S. Heimovaara
Voorzitter college van bestuur
Wageningen University

Inventarislijst documenten

Doc nr.	doc type
	1. communicatie
6	Afspraak thesis wolf
8	afstudeervak wolf_eindgesprek
9	Artikel levende Natuur
10	Artikel levende Natuur
11	Artikel wolf
12	artikel wolf Potiek etal_
13	Artikel wolf
14	Commentaar verwerkt wolvenartikel
15	Concept-verslag wolf
16	De wolvendiscussie
19	FW_def versie et al
21	PDF gecorrigeerd - rapport wolf 2349
22	FW_resource
23	FW_ Wolf in belgie
24	Illinois_redacted def1
25	Introductie proposal
26	Nieuwe versie proposal
27	Nieuwe versie thesis
28	PDF art. 'Is er ruimte voor wolven in Nederland'
29	Proposal
30	Re_
31	RE_ abstract startcolloquium
32	RE_ afstudeervak wolf, eindgesprek
33	RE_ Artikel Levende Natuur
35	RE_ Artikel Levende Natuur
36	RE_artikel wolf
49	RE_ eerste wolf waargenomen in Nederland
51	RE_ Re_ dichtheidskaarten grazers
53	RE_resource
57	Re_ toesturen artikel Re_ [Contactformulier DLN] Bericht (11-08-2012 16_29_09
59	RUW_ debatavond terugkeer van de wolf
61	Thesis wolf
62	Mail
63	Mail
65	Mail
66	Vorderingen proposal
68	Wolf oppervlaktebehoefte
69	Wolf
70	Wolven artikel

Doc nr.	doc type
	2. publicaties/thesis
71	20120607 Thesis APA style
72	Abstract_Pathways 2018
76	Goldenjackal_Internship
82	2015 Dietary nutrient profiles of wild wolves Insights for optimal dog nutrition Supplementary material
	3. overig
78	Goudjakhals komt naar Nederland
79	Internship assessment form
80	Managing European Wolves_v1

Weggelakt o.b.v. art. 5.1.2.e en 5.1.2.f Woo)

From: [redacted]
To: [redacted]
Subject: Afspraak thesis wolf
Date: maandag 16 januari 2012 09:12:10

Beste [redacted] en [redacted],
[redacted], voor morgen om 11u heb ik een afspraak gepland met [redacted] en [redacted] om bij te praten over mijn afstudeervak. Misschien kun jij hier ook bij aanwezig zijn? Ik heb een zaaltje gereserveerd in het oude zodiac: zaaltje A1.039, van 11 tot 12u.
Groet [redacted]

[redacted]

From: [redacted]
Sent: dinsdag 31 januari 2012 17:02
To: [redacted]
Subject: afstudeervak wolf, eindgesprek

Hoi [redacted],
Het lijkt me goed om nu alvast het eindgesprek te plannen. Behalve jij, [redacted] en (indien mogelijk) [redacted] moet [redacted] hier ook bij aanwezig zijn of niet? Hoe gaat het plannen van het eindgesprek normaal gesproken? Stelt [redacted] een datum voor (aangezien hij waarschijnlijk het drukst is)? Ik stuur eind deze week weer een nieuwe versie met aangepaste materiaal en methode en de eerste resultaten. Alvast een voorproefje: ecoducten hebben een groot effect op de draagkracht van wolven. Klimaat heeft niet zo'n heel groot effect, maar verhoogt de biomassa aan prooidieren iets (maar ik verwacht geen significantie). Het model voor de wolven (METAPHOR) heb ik nog niet gerund ivm technische problemen. Zoals het nu lijkt kan ik die eind deze week of begin volgende week runnen. Met [redacted] heb ik afgesproken om tot uiterlijk half februari te runnen, zodat ik in de laatste twee weken van februari het verslag verder af kan maken. Als ik eind februari de laatste versie op stuur, hebben jij en [redacted] dan genoeg tijd om hiernaar te kijken? Als dit mogelijk is lijkt het me handig om het eindgesprek niet te ver voor het colloquium te houden, zodat jullie genoeg tijd hebben om het verslag door te nemen. Kun je me laten weten hoe dit normaal gepland wordt?

Gr. [redacted]

Geredigeerd op grond van 5.1.2.e en 5.1.2.f Woo

[redacted]

From: [redacted] <[redacted]@hotmail.com>
Sent: zondag 10 juni 2012 23:12
To: [redacted]
Cc: [redacted]
Subject: Artikel Levende Natuur
Attachments: [redacted]

Hoi [redacted],
Zou je commentaar kunnen geven op het concept voor het artikel in de Levende Natuur dat ik heb gestuurd? [redacted] heeft het al gezien, maar ik zou ook graag commentaar van jou willen verwerken. Dan kunnen we het binnenkort opsturen.
Groet [redacted]

From: [redacted]@hotmail.com
To: [redacted]@wur.nl; [redacted]@wur.nl; [redacted]@wur.nl
Subject: Artikel Levende Natuur
Date: Fri, 25 May 2012 19:38:29 +0200

Hoi [redacted] en [redacted],
Hierbij een voorstel voor het artikel voor in de 'levende natuur' waarvan jullie uiteraard co-auteurs worden. Kunnen jullie hiernaar kijken en commentaar geven? Ik heb ook een zip-file met een paar wolvenfoto's van een vriendin bijgevoegd. Hiervan kunnen er ook 1 of 2 in het artikel bij komen.
Groetjes [redacted]

[redacted]

From: [redacted]
Sent: zondag 12 augustus 2012 14:50
To: [redacted]@hotmail.com; [redacted]
Subject: artikel levende natuur

Beste mensen, na wat gedoe is het me gelukt om het artikel voor de levende natuur (over de wolf) te versturen. Het grote afwachten begint.

groetjes [redacted]

Dr. ir. [redacted]
Alterra P.O. box 47
6700 AA Wageningen
The Netherlands

[redacted]@wur.nl
telefoonnummer (0317) [redacted]
www[redacted].wur.nl

[redacted]

From: [redacted]
Sent: woensdag 6 november 2013 16:28
To: [redacted]@hotmail.com; [redacted]
Subject: artikel Wolf

Hoi [redacted] en [redacted]. Het themanummer van het vakblad begint vorm te krijgen en ons artikel zit er nog steeds in, al zal het ben ik bang vechten worden tot het eind om het erin te houden. Er blijkt veel weerstand tegen modelstudies, speciaal over de wolf.
Maandag gaat het artikel naar de leescommissie, inclusief [redacted], daarna krijgen we commentaar.

Ik hou jullie op de hoogte.

groetjes [redacted]

Dr. ir. [redacted]
Alterra P.O. box 47
6700 AA Wageningen
The Netherlands

[redacted]@wur.nl
www.abiotic.wur.nl
[redacted] for an overview of the Mars Moon experiment

[redacted]

From: [redacted]
Sent: donderdag 31 oktober 2013 21:28
To: [redacted]
Cc: [redacted]_@hotmail.com; [redacted]
Subject: artikel wol [redacted] etal.
Attachments: [redacted] vakblad v2.doc

Beste [redacted],

Bijgevoegd het artikel van [redacted] over de wolf op basis van haar afstudeervak bij Alterra. We hebben het samen geredigeerd en twee opties voor de titel, die ik graag aan de rest van de redacteuren voor leg en anderen die het artikel nog gaan redigeren.

Zorg jij ervoor dat het bij de juiste personen terecht komt.

groetjes [redacted]

Dr. ir. [redacted]
[redacted]
Alterra P.O. box 47
6700 AA Wageningen
The Netherlands

[redacted]
www.abiotic.wur.nl
[redacted] for an overview of the Mars Moon experiment

From: [redacted]
To: [redacted]
Subject: artikel Wolf
Date: vrijdag 15 november 2013 13:14:01
Attachments: [redacted] vakblad v4.doc

Hoi,
Naar aanleiding van wat opmerkingen van [redacted] heb ik ons artikel nog wat aangepast. Dit zal het wel worden.
groetjes [redacted]
Dr. ir. [redacted]
[redacted]
Alterra P.O. box 47
6700 AA Wageningen
The Netherlands
[redacted]@wur.nl
telefoonnummer [redacted]
www.abiotic.wur.nl
http://www.youtube.com/watch?v=TgKsYtVuR80 for an overview of the Mars Moon experiment

From: [redacted]
To: [redacted]
Cc: [redacted] ; [redacted]
Subject: commentaar verwerkt wolvenartikel [redacted]
Date: donderdag 14 november 2013 16:18:20
Attachments: [redacted]
Importance: High

Beste [redacted], bijgevoegd het artikel over de modelstudie, mat commentaar verwerkt van de meelezers. Ik heb in de versies van de meelezers aangegeven wat ik heb gedaan met de opmerkingen, de meeste heb ik verwerkt, sommige niet, da staat er waarom niet. Omdat de tijd dringt, stuur ik dit ook direct naar de eerste auteur en coauteur.
Er is nog een ding, opmerking van [redacted] over dispersie. Daar wil ik nog even over overleggen.
[redacted] als jullie het ergens niet mee eens zijn laat dat dan z.s.m. weten maar wel graag voor a.s. dinsdag.
groetjes [redacted]

Dr. ir. [redacted]
Alterra P.O. box 47
6700 AA Wageningen
The Netherlands
[redacted]
telefoonnummer [redacted]
www.abiotic.wur.nl
http://www.youtube.com/watch?v=TgKsYtVuR80 for an overview of the Mars Moon experiment

From: [redacted]
To: [redacted]
Subject: Concept-verslag wolf
Date: maandag 27 februari 2012 15:48:10
Attachments: [redacted]

Hoi [redacted] en [redacted],
Hierbij een nieuwe versie van mijn verslag, inclusief abstract, summary en conclusies. Zouden jullie hier nog 1x naar kunnen kijken? Dan neem ik het commentaar mee voor de laatste versie, die ik later deze week op zal sturen. Het origineel is erg groot (11 MB) door pdf-plaatjes. Deze versie heeft jpg plaatjes, dus met lagere resolutie. In het origineel staan de plaatjes mooier naast elkaar en zijn ze omkaderd.
Groetjes [redacted]

From: [redacted]
To: [redacted]
Cc: [redacted]
Subject: de wolvendiscussie
Date: maandag 12 maart 2012 10:37:07

Naar aanleiding van een serie gesprekken met diverse betrokkenen de afgelopen twee weken over het 'wolvenonderzoek' lijkt het me goed afspraken en overwegingen even op een rij te zetten:
Studente [redacted] heeft voor haar masterscriptie een modelstudie (Metaphor) gedaan naar 'het potentiële leefgebied van de wolf in Nederland', begeleid door [redacted] en [redacted]. De berekeningen komen er op neer dat er in Nederland ruimte is voor maximaal 438 wolven (met ecoducten) en 343 (zonder ecoducten). Het plan was hierover Alterra-rapport uit te brengen en een persbericht. Hierover is contact opgenomen met mij.
[redacted] doen voor EL&I, Faunafonds en IPO een studie naar 'de komst van de wolf in Nederland'. Daarbij zijn afspraken gemaakt over publiciteit conform de tweemaandentermijn van het ministerie, hetgeen inhoudt dat er niet publiekelijk gecommuniceerd wordt tot twee tot drie maanden na de oplevering van de resultaten.
In contacten met betrokkenen van beide kanten heb ik aangegeven dat ik vind dat we op dit moment niet naar buiten moeten treden met de resultaten van de modelstudie van [redacted], om de volgende drie redenen:

1) De afspraak om niet te communiceren over het wolvendossier is niet gemaakt met enkele individuele onderzoekers, maar met Alterra c.q. Wageningen Universiteit. De tweemaandenovereenkomst is namelijk een overeenkomst tussen EL&I en WUR waar iedere WUR-medewerker zich aan te houden heeft. Dat geldt uiteraard niet voor een studentenscriptie, maar wel voor een Alterra-rapport en een Alterra/WU-persbericht. Je kunt discussiëren over de vraag of een onderzoek dat los staat van de feitelijke EL&I-opdracht óók onder de afspraken valt, maar feit is dat de relatie met EL&I en de uitgangspunten van het EL&I-onderzoek (een rustige, pro-actieve beleidsvoorbereiding) daarmee in gevaar komen. Bovendien zal de modelstudie waarschijnlijk in het EL&I-rapport worden meegenomen, en maakt het daarmee onderdeel uit van dit onderzoek en (dus?) van de afspraken. (Voor de goede orde: die afspraken houden dus niet in dat er NIET gecommuniceerd mag worden – er is geen sprake van censuur - maar dat er twee maanden embargo op de resultaten rust.)
2) Er is inhoudelijke discussie over de kwaliteit van het modelonderzoek. Daarbij gaat het onder andere over een mogelijk onvoldoende onderbouwing van de aannames ten aanzien van prooidierkeuze, de vraag of wolven snelwegen oversteken en de vraag of het uitgangspunt ('er staan 50 wolven aan de grens') wel voldoende realiteitsgehalte heeft. Zonder op conclusies vooruit te lopen lijkt de kans te bestaan dat [redacted] c.s. tot een eindconclusie komen die niet geheel en al overeenkomt met de uitkomsten van de modelstudie. Bij dit soort inhoudelijke onenigheid is de afspraak (MT-besluit) dat die eerst intern wordt besproken alvorens eventueel naar buiten te treden. Voor dat laatste is dan een lijnbesluit nodig.
3) Bij het actief zoeken naar publiciteit gaat het niet alleen om een correcte weergave van het onderzoek en de resultaten, maar ook om een inschatting van de impact van het verhaal en het gevolg daarvan

voor het imago van de organisatie. Een bericht dat inhoudt dat er draagkracht is voor vele honderden wolven in Nederland kan zomaar de voorpagina's halen. Zo'n bericht heeft namelijk een hoog sensatiegehalte. De nuancering dat het hier gaat om een modelstudie en niet om een wetenschappelijk onderbouwde toekomstvisie zal daarbij wegvallen. En terwijl je als wetenschappelijke organisatie sowieso voorzichtig moet zijn met sensationele berichtgeving, moet je extra oppassen als een dergelijk bericht kort daarna wellicht wordt gevolgd door een bericht dat een andere toonzetting heeft. Dat gaat ten koste van onze betrouwbaarheid en dus van ons imago. Het is dan beter om de resultaten van beide studies in één persbericht te zetten waarvan de inhoud door alle betrokkenen wordt onderschreven.

Op basis van bovenstaande heb ik met de leiding van het Centrum Landschap de volgende afspraak gemaakt: Er komt op dit moment geen persbericht en geen Alterra-rapport over de modelstudie. Aan [redacted] c.s. zal worden gevraagd inhoudelijk te reageren op de modelstudie en de uitkomst daarvan mee te nemen in de eindrapportage van het EL&I-onderzoek. Beide onderzoekgroepen zullen daarna afspraken maken over de beste manier om e.e.a. op een evenwichtige manier te communiceren.

Voor de goede orde: besluitvorming over de communicatie vindt plaats in de lijn (dus de centrummanagers van Landschap en Ecosystemen). Communicatie adviseert daarbij. Dit laat onverlet dat het [redacted] vrij staat met haar eindscriptie te doen wat ze wil (waarbij ze al heeft aangegeven er niet actief mee naar buiten te treden als dat door de organisatie als niet-gewenst wordt gezien).

[redacted] / 12-03-2012

[redacted]
Alterra / Wageningen University
Environmental Sciences
postbus 47
6700 AA Wageningen
0317 - [redacted]
[redacted]*@wur.nl*

From: [redacted]
To: [redacted]
Subject: FW: def versie [redacted] et al.
Date: maandag 18 november 2013 14:45:50
Attachments: [redacted]

Hoi, de versie voordat hij nog door de eindredactie gaat, zullen alleen punten en komma's zijn.
groetjes [redacted]
Dr. ir. [redacted]
[redacted]
Alterra P.O. box 47
6700 AA Wageningen
The Netherlands
[redacted]@wur.nl
telefoonnummer [redacted]
www.abiotic.wur.nl
http://www.youtube.com/watch?v=TgKsYtVuR80 for an overview of the Mars Moon experiment

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From: [redacted]
Sent: maandag 18 november 2013 13:50
To: [redacted]
Subject: def versie [redacted] et al.
Hoi [redacted],
Hierbij de definitieve versie die door alle meelezers is goedgekeurd.
Groet, [redacted]
****
Dhr. [redacted]
[redacted]
Alterra, Wageningen UR
Postbus 47
6700 AA Wageningen
Bezoekersadres Droevendaalsesteeg 3
Gebouw [redacted]
T 0317 [redacted]
[redacted]
F 0317 [redacted]
www.alterra.wur.nl
www.disclaimer-nl.wur.nl
****

From: [redacted]
To: [redacted]
Subject: FW: PDF gecorrigeerd - rapport wolf 2349
Date: dinsdag 18 september 2012 17:27:02
Attachments: [redacted]

Hoi [redacted] bijgevoegd het officiële Alterra rapport van het onderzoek van [redacted]. Ondertussen teleurstellend nieuws van de Levende Natuur, ze hebben het artikel afgewezen. Ik heb al een redacteur van het Vakblad voor Natuur bos en Landschap gepolst en zij hebben waarschijnlijk wel interesse. Verder heeft [redacted] afgelopen vrijdag in alle haast een stuk op intranet gezet, heb je misschien gezien, waar wij nogal mager ook in zitten. De haast kwam omdat er berichtgeving was in de pers en het rapport van [redacted] was aangeboden aan de tweede kamer.
groetjes
[redacted]
Dr. ir. [redacted]
Alterra P.O. box 47
6700 AA Wageningen
The Netherlands
[redacted]@wur.nl
telefoonnummer (0317) [redacted]
www.abiotic.wur.nl

From: [redacted]
Sent: maandag 17 september 2012 13:15
To: [redacted]
Subject: PDF gecorrigeerd - rapport wolf 2349
Hoi [redacted],
Ik heb dit nu ingevoegd en de nieuwe PDF voor jouw eigen gebruik hierbij gevoegd. Ik vraag [redacted] of ze de oude door de nieuwe PDF wil vervangen, want mij lukt dit tegenwoordig niet meer.
Vriendelijke groet,
[redacted]
Wageningen UR (University & Research centre)
[redacted]
6708 WB Wageningen
Postbus 409, 6700 AK Wageningen
Tel. 0317-[redacted]
Fax 0317-[redacted]
[redacted]@wur.nl

Van: [redacted]
Verzonden: vrijdag 14 september 2012 9:14
Aan: Vermeer, [redacted]
Onderwerp: abstract rapport wolf 2349
Urgentie: Hoog
Hoi [redacted]
Gisteren heeft [redacted] ons rapport over de wolf nr 2349 op onze site gezet ivm de publiciteit. Het rapport heeft een abstract waar nog een kleine fout in stond (I ipv we). Dat heb ik hersteld en het volledige abstract heb ik bijgevoegd. Kan het abstract in het rapport worden vervangen.
Verder heeft het rapport geen Nederlandstalige samenvatting. Die heb ik ook in deze mail toegevoegd, kan die worden toegevoegd?
groetjes
[redacted]
Dr. ir. [redacted]
Alterra P.O. box 47
6700 AA Wageningen
The Netherlands

[redacted]@wur.nl
telefoonnummer (0317) [redacted]
www.abiotic.wur.nl

From: [redacted]
To: [redacted]
Cc: [redacted]
Subject: FW: resource
Date: woensdag 13 juni 2012 09:59:58
Importance: High

Hoi [redacted] en [redacted], Ik sprak op de opening van onze verbouwde gebouwen met [redacted], journalist bij o.a. Resource. Hij heeft lucht gekregen van het wolvenonderzoek en wil graag een stukje schrijven voor de Resource. Ik heb contact met [redacted] opgenomen, zie hieronder, met als resultaat dat [redacted] mij aanraad op de achtergrond te blijven. [redacted] jij mag wel met hem praten als je dat wilt en je verslag toesturen.
Ik ben er niet onverdeeld gelukkig mee, vooral dat ik blijkbaar niet er over mag hebben, het lijkt er nu op dat we toch een min of meer permanent spreekverbod hebben. Ik wil dat met [redacted] e.a. nog wel bespreken.
Graag jullie reactie. Als je het wilt doen [redacted] dan zal ik je in contact brengen met [redacted]. Ik verwacht dat hij je dan behalve over de wolf ook zal vragen waarom er geen Alterra rapport is enz. Want daar weet hij van.
groetjes [redacted]r
Dr. ir. [redacted]
[redacted]
Alterra P.O. box 47
6700 AA Wageningen
The Netherlands
[redacted]@wur.nl
telefoonnummer (0317) [redacted]
www.abiotic.wur.nl

From: [redacted]
Sent: maandag 11 juni 2012 19:36
To: [redacted]
Subject: RE: resource
Jazeker.

Van: [redacted]
Verzonden: maandag 11 juni 2012 18:12
To: [redacted]
Onderwerp: Re: resource

Ok, dan stuur ik het door naar [redacted], dan kan zij haar studentenrapport eventueel dus toesturen?
Gr. [redacted]

Verstuurd vanaf mijn iPad

Op 11 jun. 2012 om 18:11 heeft "[redacted])" <[redacted]@wur.nl> het volgende geschreven:

> [redacted] kan doen wat hij wil. [redacted] kan hem te woord staan als ze wil. Jij kunt je beter afstandelijk opstellen, het dus aan [redacted] overlaten.
>
> ---
>
> **Van:** [redacted]
> **Verzonden:** maandag 11 juni 2012 18:07
> **To:** [redacted]
> **Onderwerp:** Fwd: resource
>
> Hoi [redacted], ik sprak [redacted] al tijdens onze feestelijke opening. Hij heeft via een dag die er over wolven was van gehoord. Ik heb vorige week me op de vlakte gehouden. Wat gaan we nu doen?

Groetjes [redacted]
P.s. Ik geef morgen de hele dag college, maar ik zal af en toe mijn mail bekijken

Verstuurd vanaf mijn iPad

Begin doorgestuurd bericht:

Van: "[redacted]>
Datum: 11 juni 2012 13:17:55 GMT+02:00
Aan: "[redacted]
Onderwerp: resource

Hoi [redacted]
Klopt het dat jij in kaart hebt gebracht wat qua biotoop de mogelijkheden zijn voor wolven in ons land? Ik zou daar graag aandacht aan besteden in Resource. Is er een rapportage, en zoja waar kan ik die vinden?
Groet,
[redacted]
Wageningen UR
0317-[redacted]
www.resource.wur.nl
Op de hoogte blijven? Abonneer je op onze news-alert.
Elke twee weken, en bij belangrijk nieuws

From: [redacted]
Subject: FW: Wolf in belgie
Date: vrijdag 23 september 2011 09:46:07

---

tkn

From: [redacted]
Sent: vrijdag 23 september 2011 9:33
To: [redacted]
Subject: Wolf in belgie

Zie: http://www.ark.eu/ark/werk-in-uitvoering/missing-lynx/wolf-terug-in-belgie

****
Ir. [redacted]

Centre for Water and Climate
Environmental Systems Analyses Group

Landscape Centre
Team Ecological Networks

Wageningen UR, Alterra
Postbus 47, 6700 AA Wageningen
Visitor address: building nr. [redacted]
Droevendaalsesteeg 3, 6708 PB Wageningen

T. +31 (0)317 [redacted]
F. +31 (0)317 [redacted]
E. [redacted]@wur.nl
Website www.esa.wur.nl/UK/
****

From: [redacted] (DNR) <[redacted]@state.mn.us>

Sent: zaterdag 10 augustus 2019 14:41

To: [redacted]

Subject: snr paper copies

Attachments: Figure 1_R3.tif; Figure 2_R3.tif; Manuscript_R3_Final.docx; Response to Reviewer Comments_R3_Final.docx; Tables_R3.docx

Hi all,

Resubmitted versions are attached.

T[redacted]

[redacted], Ph.D.

[redacted] | Division of Fish & Wildlife-Wildlife Research

Minnesota Department of Natural Resources

500 Lafayette Road

St. Paul, MN, 55155

Phone: 6[redacted]

Fax: [redacted]

Email: [redacted]@state.mn.us <mailto:[redacted]@state.mn.us>

Website: mndnr.gov

<https://www.facebook.com/MinnesotaDNR> <https://twitter.com/mndnr>
<http://www.dnr.state.mn.us/emailupdates/index.html>

From: [redacted]@colostate.edu>

Sent: zaterdag 25 mei 2019 16:49

To: [redacted]

Subject: RE: Society & Natural Resources - Decision on Manuscript ID USNR-2018-0302.R2

[redacted],

Some of these revisions do seem pretty straightforward. If you want to chat about any of the edits, just give a shout.

[redacted]

[redacted]Original Message-----

From: [redacted] (DNR) [mailto:[redacted]@state.mn.us]

Sent: Saturday, May 25, 2019 6:43 AM

To: [redacted]

Subject: FW: Society & Natural Resources - Decision on Manuscript ID USNR-2018-0302.R2

Hi all,

Looks like they went out to another reviewer, the decision is minor revision. None of these revisions seem too difficult. I will get this turned around as soon as I can.

[redacted]

[redacted], Ph.D.

Human Dimensions Scientist | Division of Fish & Wildlife-Wildlife Research Minnesota Department of Natural Resources

500 Lafayette Road

St. Paul, MN, 55155

Phone: [redacted]

Fax: [redacted]

Email: [redacted]@state.mn.us

Website: mndnr.gov

-----Original Message-----

From: Society & Natural Resources <onbehalfof@manuscriptcentral.com>

Sent: Saturday, May 25, 2019 4:07 AM

To: [redacted]@state.mn.us>

Subject: Society & Natural Resources - Decision on Manuscript ID USNR-2018-0302.R2

25-May-2019

Dear Dr [redacted]:

Thank you for submitting your manuscript, entitled "Cognitive and affective predictors of Illinois residents' perceived risks from gray wolves," to Society & Natural Resources. The manuscript has now been reviewed, with the reviewers' comments appended below.

The reviews are generally favorable, suggesting that, subject to minor revisions, your paper could be suitable for publication. Based on this, I would like to invite you to closely study the reviewers' comments, revise your manuscript, and resubmit the paper for further review for publication in Society & Natural Resources.

With your resubmission, please include a point-by-point discussion of how you have (or why you have not) responded to all of the reviewers' comments and suggestions, as described below. When revising your manuscript, please keep in mind our recommended length limit for the type of article you are submitting. These limits include text, references, tables, and figures (figures are valued at 300 words each). Please refer to the attached guidelines for more information.

To submit the revision, log into
https://gcc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fmc.manuscriptcentral.com%2Fus

nr&data=02%7C01%7CAdam.Landon%40state.mn.us%7Ce76b4108ab424f6e590408d6e0f05aa7%7Ceb14b04624c445198f26b89c2159828c%7C0%7C0%7C636943720260198226&sdata=A8Znwau8fy0P9a5UQXE%2BKtbpNpWOsNaFFzpPsUY6Bxc%3D&reserved=0 and enter your Author Center, where you will find your manuscript title listed under "Manuscripts with Decisions." Under "Actions," click on "Create a Revision." Your manuscript number has been appended to denote a revision.

Alternatively, once you have revised your paper, it can be resubmitted to Society & Natural Resources by way of the following link:

*** PLEASE NOTE: This is a two-step process. After clicking on the link, you will be directed to a webpage to confirm. ***

https://gcc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fmc.manuscriptcentral.com%2Fusnr%3FURL_MASK%3Dd7597d61ea724678b2232cf30e5ef1c2&data=02%7C01%7CAdam.Landon%40state.mn.us%7Ce76b4108ab424f6e590408d6e0f05aa7%7Ceb14b04624c445198f26b89c2159828c%7C0%7C0%7C636943720260208219&sdata=ZriK%2FY5zun42CmcGt%2FTGQOU%2BZzwbbZuoQEvh5opUOVU%3D&reserved=0

Please enter your responses to the comments made by the reviewers in the space provided. You can use this space to document any changes you made to the original manuscript. Please be as specific as possible in your response to the reviewers.

IMPORTANT: Your original files are available to you when you upload your revised manuscript. Please delete any redundant files before completing the submission.

Because we are trying to facilitate timely consideration of manuscripts submitted to Society & Natural Resources, your revised manuscript should be uploaded within four weeks, if possible. Please contact us if you need more time. If it is not possible for you to submit your revision in a reasonable amount of time, we may have to consider your paper as a new submission.

I look forward to receiving your revision.

Sincerely,

[redacted]

[redacted], Society & Natural Resources [redacted]@iasnr.org

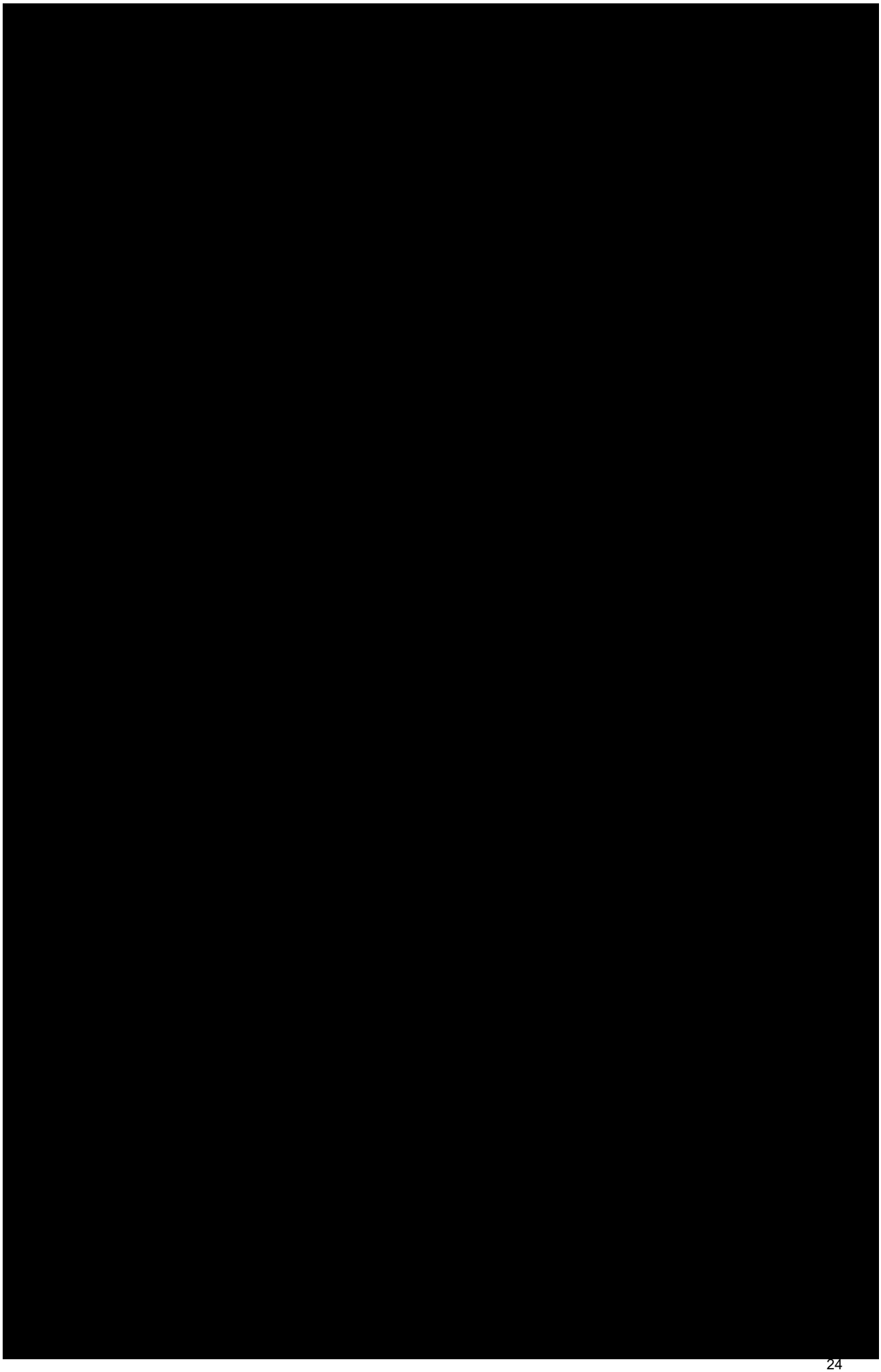
Reviewer(s)' Comments to Author:

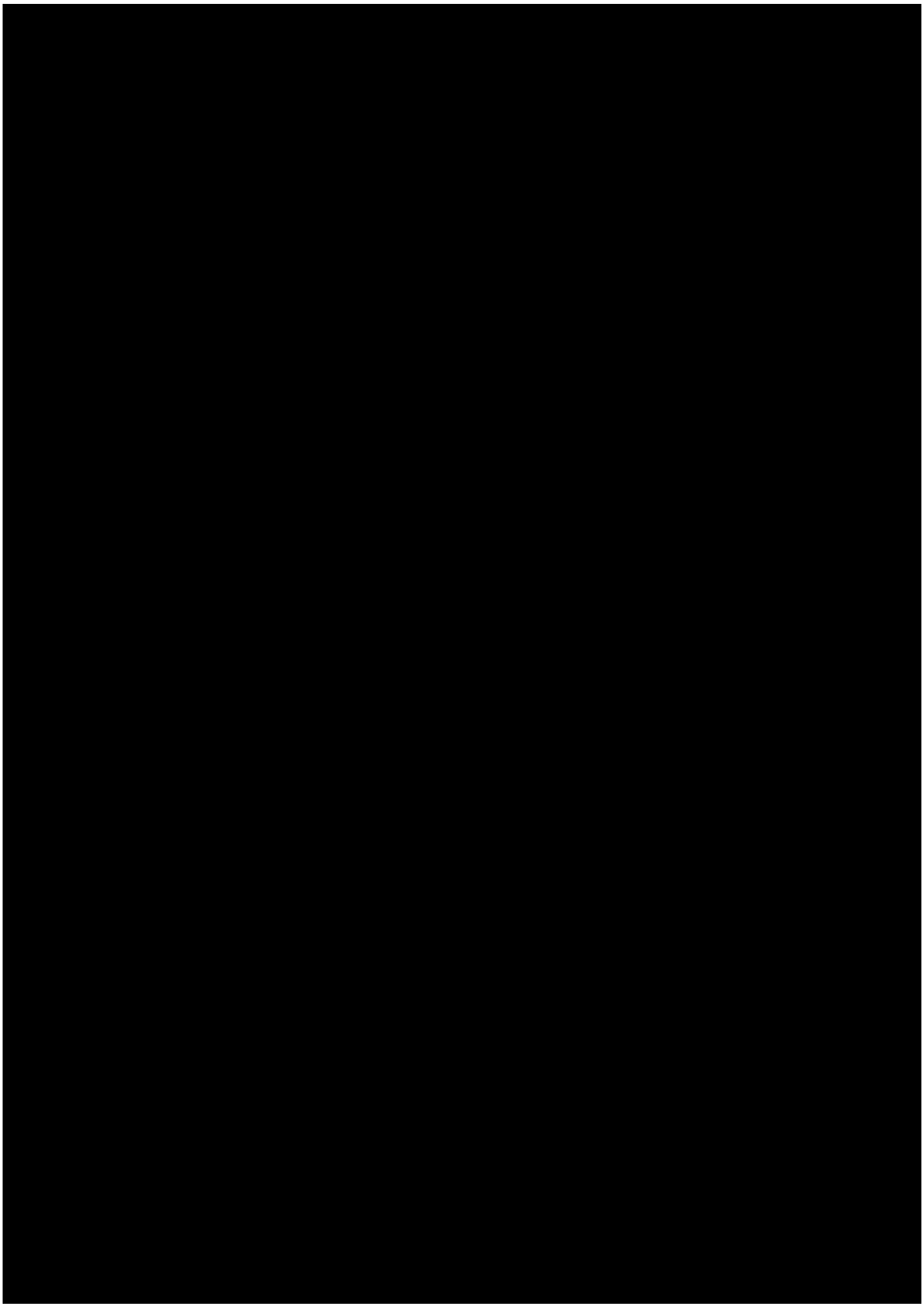
Reviewer: 4

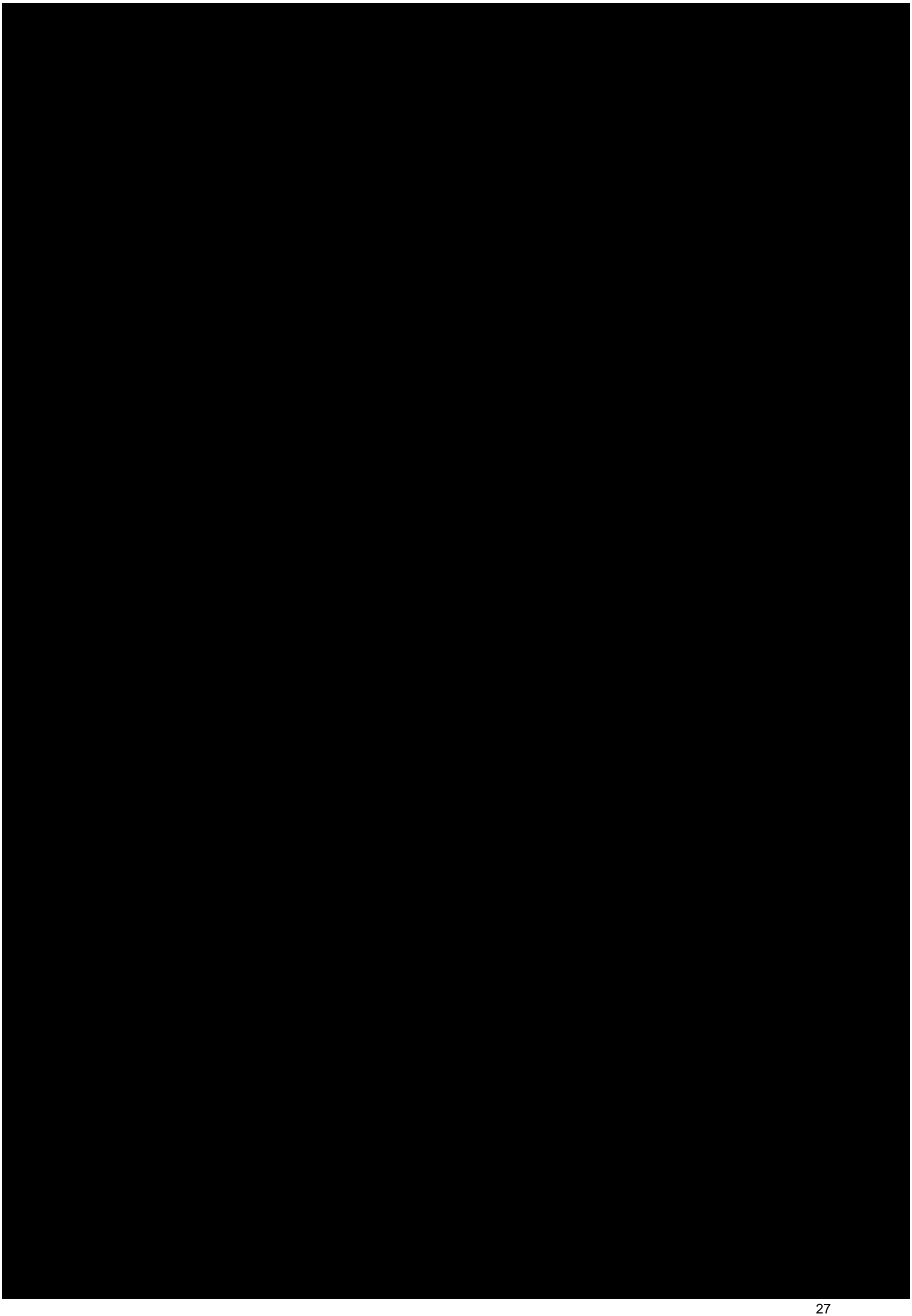
Comments to the Author

[redacted]

Wegens dubbelingen e-mails weggelakt
t/m blz. 28







[redacted]

From: [redacted]@colostate.edu>

Sent: woensdag 3 april 2019 18:17

To: [redacted]

Subject: RE: response to reviews

Yes, I think you should submit.

-----Original Message-----

From: [redacted]@state.mn.us]

Sent: Wednesday, April 3, 2019 9:23 AM

To: [redacted]

Cc: [redacted]

Subject: RE: response to reviews

Thanks, [redacted]. Yes, I meant with respect to [redacted] recommendation.

I think I will submit what I sent to you all and see what happens.

[redacted]

[redacted] | Division of Fish & Wildlife-Wildlife Research Minnesota Department of Natural Resources

500 Lafayette Road

St. Paul, MN, 55155

Phone: [redacted]

Fax: [redacted]

Email: [redacted]@state.mn.us

Website: mndnr.gov

-----Original Message-----

From: [redacted]@illinois.edu>

Sent: Wednesday, April 3, 2019 10:20 AM

To: [redacted]

Cc: [redacted]

Subject: RE: response to reviews

[redacted]

Did you see my response?

[redacted]

[redacted], Ph.D.

[redacted] The Wildlife Society

[redacted]

[redacted]

[redacted]

-----Original Message-----

From: [redacted]@state.mn.us]

Sent: Wednesday, April 3, 2019 9:48 AM

To: [redacted]

Cc: [redacted]

Subject: RE: response to reviews

Thanks, [redacted]

[redacted], what do you think? My only concern is that the reviewer will say "SEE!" and just reject the paper. But like you said, it would not be much work to pull together.

[redacted]

[redacted] | Division of Fish & Wildlife-Wildlife Research Minnesota Department of Natural Resources

500 Lafayette Road

St. Paul, MN, 55155

Phone: [redacted]

Fax: [redacted]

Email: [redacted]@state.mn.us

Website: mndnr.gov

-----Original Message-----

From: [redacted]@wur.nl>

Sent: Wednesday, April 3, 2019 9:25 AM

To: [redacted]@state.mn.us>

Cc: [redacted]

Subject: Re: response to reviews

Hi [redacted]

Thanks a lot. Great work, I definitely agree with your responses and your proposed mode of conduct.

And yet, we might consider another pathway to deal with the split halved problem. What if we simply do it. And then note that some of the relationships are not significant anymore and some are weaker, but that there commonalities in the overall pattern. And also note that the split halves procedure is problematic for the reason you have indicated. And hence we regard the full sample results as more trustworthy than the smaller samples. Perhaps we can add one paragraph to the discussion section for this, and present the models for the smaller samples as supplementary material (or appendix). We could add a few sentences arguing that decisions about methods are always decisions about trade offs and that this study is an example of that (in this case between type I and type II error). It is some extra (but not too much in my view) work, but I think it would then be hard for the reviewer and editor to reject the paper.

I am completely fine with what you propose but I would also be happy to consider this alternative, and I have next week to help writing the extra paragraph. Just let me know what you think.

Cheers, [redacted]

Van: [redacted]@state.mn.us>

Verzonden: woensdag 3 april 2019 16:04

Aan: [redacted]

Onderwerp: response to reviews

Hi All,

I have prepared the response to reviews, attached. I realize they might reject the paper outright, and that is ok. I didn't make any changes to the paper. If they demand the split half appendix I will respectfully pull the paper and send it somewhere else. If you have any edits or would like to expand please feel free. The revision is due on the 12th.

I will not be reviewing for, or submitting anything to SNR until the editors turnover.

Thanks for your help,

-[redacted]

[redacted] Ph.D.

[redacted] | Division of Fish & Wildlife-Wildlife Research Minnesota Department of Natural Resources

500 Lafayette Road

St. Paul, MN, 55155

Phone:[redacted]

Fax: [redacted]

Email: [redacted]@state.mn.us<mailto[redacted]@state.mn.us>

Website: mndnr.gov

[Title: Minnesota Department of Natural Resources - Description: Minnesota Department of Natural Resources] [Facebook logo]<https://gcc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.facebook.com%2FMinnesotaDNR&data=02%7C01%7CAdam.Landon%40state.mn.us%7C0ac4258518fb49033c2c08d6b847e8b0%7Ceb14b04624c445198f26b89c2159828c%7C0%7C0%7C636899016319236743&sdata=8kSOD4IoL8QQVTEdx6mI5enXia0CdynGVWZdlnf5sk0%3D&reserved=0>[Twitter logo]<https://gcc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Ftwitter.com%2Fmndnr&data=02%7C01%7CAdam.Landon%40state.mn.us%7C0ac4258518fb49033c2c08d6b847e8b0%7Ceb14b04624c445198f26b89c2159828c%7C0%7C0%7C636899016319236743&sdata=nJCsgURp39fK1siPRfQJRC6vlrVYiFHY%2FsWR97NXhZU%3D&reserved=0>[Email Subscripiton Icon]<http://www.dnr.state.mn.us/emailupdates/index.html>

Weggelakt wegens dubbeling e-mail

[redacted]

From: [redacted]
To: [redacted]
Subject: introductie proposal
Date: dinsdag 30 augustus 2011 12:52:24
Attachments: [redacted]

Hoi [redacted],
Hierbij alvast een nieuwe versie van de introductie van mijn proposal, zodat jullie wat meer tijd hebben om ernaar te kijken. Vandaag en morgen zal ik verder gaan met de andere onderdelen (materiaal & methode, research questions etc.). Morgen zal ik een update sturen waarin ik deze onderdelen heb aangepast.
Tot donderdag.

Groetjes [redacted]

From: [redacted]
To: [redacted]
Cc:
Subject: nieuwe versie proposal
Date: dinsdag 13 september 2011 11:22:17
Attachments: [redacted]

Hoi [redacted],
Hierbij een nieuwe versie van mijn proposal, [redacted], kun je laten weten of je morgen tijd hebt? Donderdagochtend, of tussen 2 en half 4 ’s middags zou ook kunnen.

Groetjes [redacted]

From: [redacted]
To: [redacted]
Subject: nieuwe versie thesis
Date: zaterdag 4 februari 2012 16:30:42
Attachments: [redacted]

Hoi [redacted],
Hierbij weer een nieuwe versie van mijn verslag. Ik heb jullie commentaar op de vorige versie meegenomen. [redacted] had geadviseerd om alle formules overzichtelijk in een tabel te zetten, en dit heb ik gedaan. Ze staan er nu ook nog tussendoor (scheelt straks tijd als ik moet uitzoeken naar welke formule ik wil verwijzen), maar daar ga ik ze nog weghalen. Voor de resultaten en discussie heb ik alleen niet zoveel tijd gehad [redacted], ik vroeg me daarom af of je tussendoor nog een keer naar mijn verslag zou kunnen kijken? Als je de 25e terugkomt moet ik namelijk ongeveer mijn eindverslag af hebben, aangezien jullie anders niet meer genoeg tijd hebben om het na te kijken voor mijn eindcolloquium (13 maart).

Gr. [redacted]

-----Original Message-----
From: [redacted]
Sent: donderdag 2 februari 2012 21:49
To: [redacted]
Subject: travelling

Dear all
I will travel to South Africa from February 9 and come back on February 25! So if you need to discuss some things before let's make an appointment for next week Monday or Tuesday.
kind regards
[redacted]

From: [redacted]
To: [redacted]
Cc: [redacted]
Subject: PDF art. "Is er ruimte voor wolven in Nederland".
Date: zaterdag 21 december 2013 16:34:57
Attachments: [redacted]

Beste [redacted],
Als het goed dan ligt het themanummer Wolf bij ieder van jullie in de bus. Tevens is de gehele PDF te downloaden vanaf www.vakbladnbl.nl
In aanvulling daarop hierbij jullie artikel als losse PDF.
Bedankt voor de geleverde bijdrage!
Namens de redactie van VNBL wens ik jullie prettige kerstdagen en een goed uiteinde toe.
Met vriendelijke groet, mede namens [redacted],
[redacted] themanummer Wolf Vakblad Natuur Bos Landschap)

****
Dhr. [redacted].
[redacted]
Alterra, Wageningen UR
Postbus 47
6700 AA Wageningen
Bezoekersadres Droevendaalsesteeg 3
[redacted]
T 0317[redacted]
M 06[redacted]
F 0317[redacted]
www.alterra.wur.nl
www.disclaimer-nl.wur.nl
****

From: [redacted]
To: [redacted]
Subject: proposal
Date: woensdag 5 oktober 2011 14:01:54
Attachments: [redacted]

Hoi [redacted],
Hierbij de uiteindelijke versie van mijn proposal.
[redacted] ik heb het evaluatieformulier bijgevoegd (pagina 9 van de laatste bijlage).

Groetjes [redacted]

From: [redacted]
To: [redacted]
Subject: RE:
Date: vrijdag 4 november 2011 11:23:48

Dat is prima. Ik zal [redacted] ook uitnodigen.
Tot dan.

Groetjes [redacted]

-----Original Message-----
From: [redacted]
Sent: vrijdag 4 november 2011 11:18
To [redacted]
Subject: RE:

Hoi [redacted]
Mooi dat het goed gaat! Ik was vorige week van plan om even langs te gaan, maar dat was ik vergeten.... Prima om weer eens te overleggen, zullen we dan maandag 14 november om 11 uur afspreken?
groet
[redacted]

From: [redacted]
Sent: 04 November 2011 08:59
To: [redacted]
Subject:

Beste [redacted],
Ik heb al even niks van me laten horen, dus hierbij even een update. Alles gaat goed. Ik ben langs geweest bij [redacted], die voor stichting ARK werkt en erg veel van (de ecologie van) wolven af weet. Dit was erg nuttig. De gis-kaarten van de prooidieren heb ik inmiddels gekregen van [redacted]. Ook heb ik kaarten van landschapstypen en wegen in nederland. Daarnaast ben ik deze week begonnen met een gis-vak in de middag, wat ik zeker zal kunnen gebruiken voor mijn afstudeervak. Vind je het handig om een afspraak te maken om bij te praten? Zo ja, welke dag ben je er volgende week? [redacted] heeft volgende week vakantie, dus een andere week kan ook. Ik kan voorlopig ivm mijn middagvak alleen 's ochtends.

Groetjes [redacted]

From: [redacted]
To: [redacted]
Subject: RE: abstract startcolloquium
Date: vrijdag 30 september 2011 11:48:57
Attachments: [redacted]

Hoi [redacted], bijgevoegd het stuk met commentaar van mij met track changes, inhoudelijk niet veel veranderd, alleen tekstueel wat en wat dingen die er dubbel in stonden verwijderd.

Tot vanmiddag, rond drie uur?

groetjes [redacted]

Dr. ir. [redacted]
Alterra P.O. box 47
6700 AA Wageningen
The Netherlands

[redacted]@wur.nl
telefoonnummer [redacted]
www.abiotic.wur.nl

From: [redacted]
Sent: vrijdag 30 september 2011 10:17
To: [redacted]
Subject: abstract startcolloquium

Hoi [redacted],
Voor mijn startcolloquium moet ik een abstract opsturen, en ik zou het fijn vinden als jullie hier naar zouden kunnen kijken als jullie hier tijd voor hebben. Ik zal het voor de lunch naar [redacted] sturen, zodat hij het rond kan sturen.
Alvast bedankt.

Groetjes [redacted]

From: [redacted]
To: [redacted]
Subject: RE: afstudeervak wolf, eindgesprek
Date: woensdag 1 februari 2012 14:18:18
Attachments: [redacted]

Hoi [redacted]
Sorry dat het wat langer duurde... hierbij mijn suggesties. Op zich staat alle benodigde info erin, maar er staat ook flink wat in dat volgens mij niet nodig is. Daarnaast herhaal je veel en onnodig. Je hebt dus te veel tekst: probeer in het uiteindelijke artikel maximaal 6000 woorden aan te houden (en beperk het aantal figuren en tabellen, die kan je ook in de Appendix stoppen).

[redacted] hoeft niet bij het eindgesprek aanwezig te zijn, dat heeft hij gedelegeerd aan de docenten. Ik stel voor dat we [redacted], jij, eventueel [redacted] en ik) direct na het colloquium het eindgesprek houden, dus op 13 maart (rond 17uur of zo). Lukt dat?

Ik ben erg benieuwd naar de resultaten!

groet
[redacted]

From: [redacted]
Sent: 31 January 2012 17:01
To: [redacted]
Subject: afstudeervak wolf, eindgesprek

Hoi [redacted]
Het lijkt me goed om nu alvast het eindgesprek te plannen. Behalve jij, [redacted] en (indien mogelijk) [redacted] moet [redacted] hier ook bij aanwezig zijn of niet? Hoe gaat het plannen van het eindgesprek normaal gesproken? Stelt [redacted] een datum voor (aangezien hij waarschijnlijk het drukst is)?
Ik stuur eind deze week weer een nieuwe versie met aangepaste materiaal en methode en de eerste resultaten. Alvast een voorproefje: ecoducten hebben een groot effect op de draagkracht van wolven. Klimaat heeft niet zo'n heel groot effect, maar verhoogt de biomassa aan prooidieren iets (maar ik verwacht geen significantie). Het model voor de wolven (METAPHOR) heb ik nog niet gerund ivm technische problemen. Zoals het nu lijkt kan ik die eind deze week of begin volgende week runnen. Met [redacted] heb ik afgesproken om tot uiterlijk half februari te runnen, zodat ik in de laatste twee weken van februari het verslag verder af kan maken. Als ik eind februari de laatste versie op stuur, hebben jij en [redacted] dan genoeg tijd om hiernaar te kijken? Als dit mogelijk is lijkt het me handig om het eindgesprek niet te ver voor het colloquium te houden, zodat jullie genoeg tijd hebben om het verslag door te nemen. Kun je me laten weten hoe dit normaal gepland wordt?

Gr. [redacted]

From: [redacted]
To: [redacted]
Cc: [redacted]
Subject: RE: Artikel Levende Natuur
Date: maandag 30 juli 2012 22:02:27
Attachments: [redacted]

Hoi [redacted],
Ik heb de opmerkingen verwerkt, dus hierbij een nieuwe versie van het artikel.
Groetjes [redacted]

From: [redacted]
To: [redacted]
CC: [redacted]
Subject: RE: Artikel Levende Natuur
Date: Mon, 16 Jul 2012 12:36:30 +0000

Hoi [redacted]
Hierbij mijn opmerkingen. Ik heb toch nog wat gesleuteld aan de discussie....
Groet
[redacted]

From: [redacted]]
Sent: zaterdag 14 juli 2012 17:31
To: [redacted]
Cc: [redacted]
Subject: RE: Artikel Levende Natuur
Hoi [redacted],
Hierbij een nieuwe versie, waarin ik de opmerkingen heb verwerkt.
Het gaat hier erg goed! De PhD is erg leuk, en de mensen ook.
Ik heb nog 1 opmerking in het document staan, kunnen jullie hier naar kijken?

Groetjes [redacted]

> Subject: RE: Artikel Levende Natuur
> Date: Sun, 24 Jun 2012 20:12:47 +0000
>
> Hoi [redacted]
> Hierbij mijn opmerkingen. Sorry dat het aan de late kant is, het is nu erg druk met Animal Ecology....
> Hoe gaat met je project?
> groet
> [redacted]
>
>
> _____
> From: [redacted]
> Sent: 10 June 2012 23:11
> To: [redacted]
> Cc: [redacted]
> Subject: Artikel Levende Natuur
>
> Hoi [redacted]
> Zou je commentaar kunnen geven op het concept voor het artikel in de Levende Natuur dat ik heb gestuurd? Wieger heeft het al gezien, maar ik zou ook graag commentaar van jou willen verwerken. Dan kunnen we het binnenkort opsturen.
> Groet [redacted]
>
> _____
> From: [redacted]
> To: [redacted]
> Subject: Artikel Levende Natuur

> Date: Fri, 25 May 2012 19:38:29 +0200
>
>
> Hoi [redacted],
> Hierbij een voorstel voor het artikel voor in de 'levende natuur' waarvan jullie uiteraard co-auteurs worden. Kunnen jullie hiernaar kijken en commentaar geven? Ik heb ook een zip-file met een paar wolvenfoto's van een vriendin bijgevoegd. Hiervan kunnen er ook 1 of 2 in het artikel bij komen.
> Groetjes [redacted]

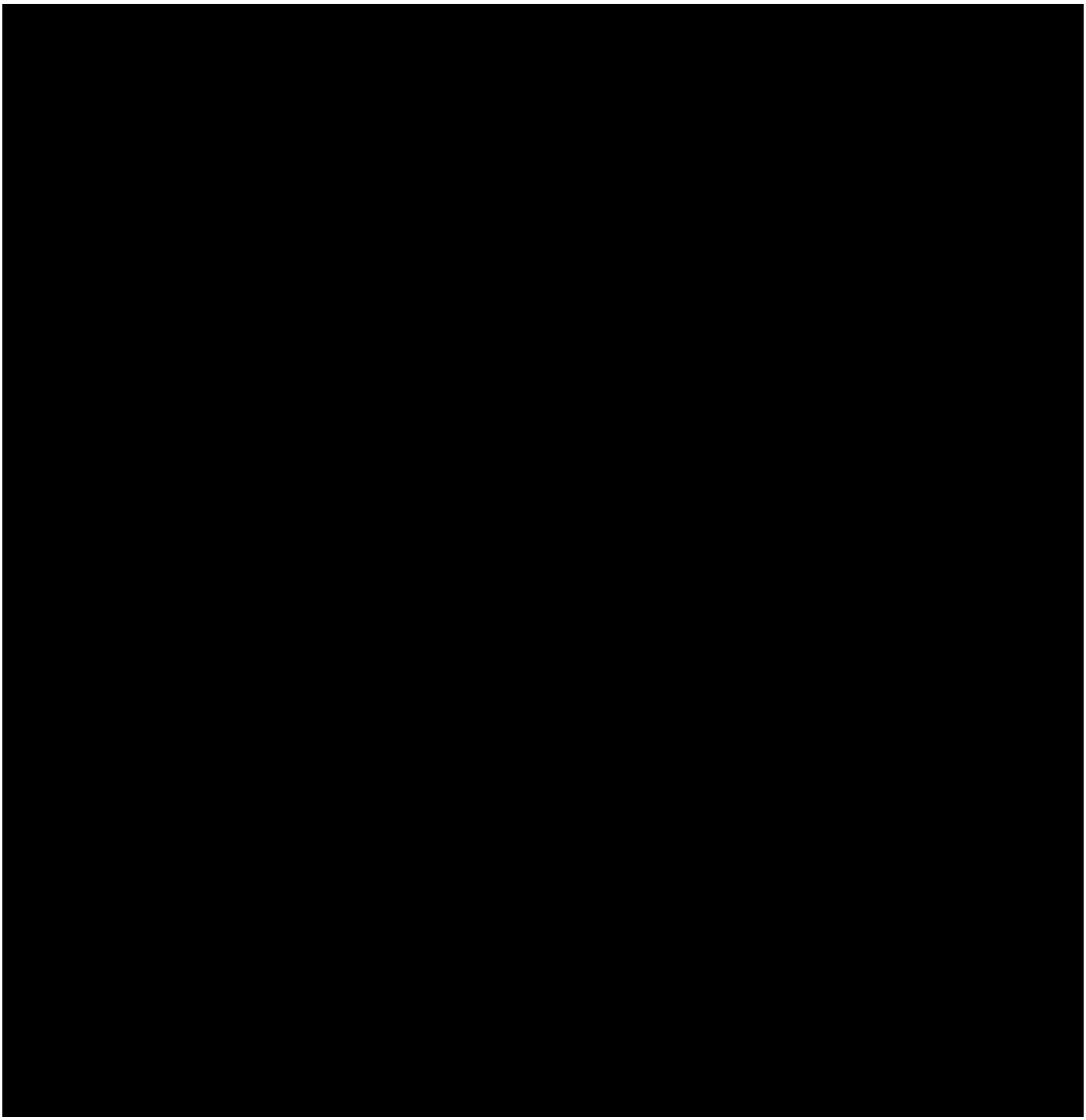
Geredigeerd op basis van art. 5.1.2.e en 5.1.4 Woo

From: [redacted]
To: [redacted]
Subject: RE: Artikel Levende Natuur
Date: dinsdag 31 juli 2012 16:21:44

Hoi [redacted], ik sluit me bij [redacted] aan het kan naar De Levende Natuur. Ik vond nog wel een taalfout en ik vraag me af of ze M&M toch niet te uitgebreid vinden, maar dat horen we wel. Stuur jij het op of zal ik dat doen. Als jij het opstuurt, er moet dan nog een soort begeleidende brief bij met wat uitleg over het artikel, waar het over gaat en hoe het tot stand is gekomen.
Verder neem ik aan dat nu heel snel de proefopmaak komt van het rapport en dan is het wachten op [redacted] voor het daadwerkelijk uit komt. Ik zal vast over een aangepast persbericht nadenken.
groetjes [redacted]
Dr. ir. [redacted]
[redacted]
Alterra P.O. box 47
6700 AA Wageningen
The Netherlands
[redacted]
telefoonnummer [redacted]
www.abiotic.wur.nl

Weggelakt vanwege dubbeling e-mails

[redacted]



From: [redacted]
To: [redacted]
Subject: RE: artikel Wolf
Date: zondag 24 november 2013 15:06:49

Hoi [redacted],
Op het moment heb ik het aardig druk, maar tussen kerst en oud en nieuw zou ik het stuk naar het engels kunnen vertalen en idd wat internationale context toevoegen.
Waarschijnlijk kom ik in januari een paar dagen naar Wageningen om samen met [redacted] aan het artikel uit mijn andere afstudeervak te werken. Dus als ik voor die tijd een opzetje heb gemaakt zouden we dit eventueel kunnen bespreken.
Groetjes [redacted]

> From: [redacted]
> To: [redacted]
> Subject: RE: artikel Wolf
> Date: Sat, 16 Nov 2013 10:51:51 +0000
>
> Hoi [redacted]
> Inderdaad het is een leuk artikel geworden, niet al te stellige claims, dat lijkt me wel goed. Goed gedaan, [redacted]!
> Nu nog naar het engels vertalen, uitbreiden met een internationale context en kijken of we het kunnen publiceren.
> groet
> [redacted]
>
> _____
> From: [redacted]
> Sent: 15 November 2013 16:49
> To: [redacted]
> Subject: Re: artikel Wolf
>
> Beste [redacted]
> Ben het er mee eens, het is een leuk stuk geworden. Ik heb geen scherpere foto van een wolf, maar een vriendin van mij wel (erg mooie, gemaakt in een wolvencentrum in Verden, Du). Heb 1 ervan als bijlage bijgevoegd, maar ze heeft er een heel aantal. Haar emailadres is [redacted] dus mochten jullie nog foto's nodig zjin.. Als jullie de bijgevoegde willen gebruiken, graag ook even contact met haar opnemen. Ik kijk naar het vakblad uit.
> Fijn weekend.
> Groet [redacted]
>
> From: [redacted]
[redacted] Friday, November 15, 2013 1:39 PM
> To: [redacted]

[redacted]
> Subject: RE: artikel Wolf
>
> Beste [redacted]
>
> Bedankt voor jullie fraaie bijdrage. Uiteraard krijgen jullie t.z.t. een hardcopy exemplaar van het vakblad en een PDF van het artikel.
>
> Nogmaals dank en prettig weekend.
>
> Met vriendelijke groet,
> [redacted]
[redacted] **********
> [redacted]
[redacted]: zoetwatervissen, amfibieën en reptielen
>
> Alterra, Wageningen UR
> Postbus 47
> 6700 AA Wageningen
> Bezoekersadres Droevendaalsesteeg 3
> [redacted]
>
> T [redacted]
> M [redacted]
> F [redacted]
>
> www.alterra.wur.nl<http://www.alterra.wur.nl>
> www.disclaimer-nl.wur.nl<http://www.disclaimer-nl.wur.nl>
> **********
>
>
>
>
> Van: [redacted]
> Verzonden: vrijdag 15 november 2013 13:14
> Aan: [redacted]
> Onderwerp: artikel Wolf
>
> Hoi,
>
> Naar aanleiding van wat opmerkingen van [redacted] heb ik ons artikel nog wat aangepast. Dit zal het wel worden.

>
> groetjes [redacted]
[redacted]
[redacted]
> Dr. ir. [redacted]
[redacted]
> Alterra P.O. box 47
> 6700 AA Wageningen
> The Netherlands
>
> [redacted]
> telefoonnummer [redacted]
> www.abiotic.wur.nl<http://www.abiotic.wur.nl>
> http://www.youtube.com/watch?v=TgKsYtVuR80 for an overview of the Mars Moon experiment
>
>

From: [redacted]
To: [redacted]
Subject: RE: eerste wolf waargenomen in Nederland (?)
Date: zondag 4 september 2011 12:33:30

Tja, en dat tussen mijn woonplaats Duiven en de A12... Onze oud-collega [redacted], destijds nauw betrokken bij onderzoek aan zoogdieren op het RIN en al vele jaren [redacted] alhier, reageerde terecht heel terughoudend: een wolf gespot op 3 meter afstand is wel erg onwaarschijnlijk... [redacted]

Van: [redacted]
Verzonden: vrijdag 2 september 2011 14:27
Aan: [redacted]
Onderwerp: eerste wolf waargenomen in Nederland (?)

Tkn!

Mét – vage – foto's: http://www.ark.eu/ark/werk-in-uitvoering/missing-lynx/eerste-wolf-in-nl

Groet, [redacted]

From: [redacted]
To: [redacted]
Subject: RE: Re: dichtheidskaarten grazers
Date: vrijdag 9 december 2011 09:48:36

Beste [redacted] en [redacted],
Voor mijn afstudeervak ben ik op dit moment de aantallen prooidieren (voor wolven) aan het bepalen. Nu ben ik op zoek naar gegevens over de dichtheid van konijnen en hazen, en vroeg ik me af of een van jullie me hierbij kan helpen. Dus, in gebieden waar konijnen aanwezig zijn, een schatting van de aantallen per hectare (of km2). Bovendien kan ik me voorstellen dat bijvoorbeeld in de duinen deze dichtheid hoger zal zijn dan bijv. in bossen. Heeft een van jullie gegevens over dichtheden onder verschillende landschapstypen? Of anders een globale schatting?
Alvast bedankt.
Met vriendelijke groeten,
[redacted]

From: [redacted]@zoogdiervereniging.nl]
Sent: vrijdag 28 oktober 2011 13:56
To: [redacted]
Subject: Fwd: Re: dichtheidskaarten grazers

Nieuwe poging. Anders doe ik dropbox.

[redacted]

---------- Doorgestuurd bericht ----------
Van: [redacted]zoogdiervereniging.nl>
Datum: 27 okt. 2011 13:24
Onderwerp: Re: dichtheidskaarten grazers
Aan: [redacted]@wur.nl>

Hmm. attachment te groot. Poging 2!

[redacted]

Op 27 oktober 2011 13:20 schreef [redacted] zoogdiervereniging.nl> het volgende:

> Hoi [redacted]
>
> hier zijn de gegevens. de X en de Y liggen in het midden van de kilometerhokken, dus dat is in gis heel makkelijk te koppelen.
>
> Wil je bij gebruik steeds vermelden dat de gegevens door ons beschikbaar zijn gesteld: in engels zijn we de Dutch Mammal Society? En we ontvangen graag een exemplaar (digitaal) van je eindrapport. Ik graag op [redacted]@gmail.com .
>
> groet,
>
> [redacted]
>
> Op 27 oktober 2011 11:34 schreef [redacted]@wur.nl> het volgende:
>
> > Hoi [redacted]
> > Dat is fijn. Stuur de kmhok-shape er voor de zekerheid maar bij. De persoon die weet wat er precies

beschikbaar is, is er op dit moment niet.
Groetjes [redacted]
From: [redacted]@zoogdiervereniging.nl]
Sent: donderdag 27 oktober 2011 11:32
To: [redacted]
Subject: Re: dichtheidskaarten grazers
Hoi [redacted]

we gaan er vandaag, misschien morgen mee aan het werk. Je krijg dan een acces-tabel met middens van kmhokken, die je zelf nog aan een kmhok-shape moet hangen. Heb je daar een shape van of stuur ik die je ook toe?

groet

[redacted]

Op 27 oktober 2011 11:13 schreef [redacted]
<[redacted]@zoogdiervereniging.nl> het volgende:
Hoi [redacted]

die stop ik erbij!

groet,

[redacted]

Op 27 oktober 2011 11:08 schreef [redacted]@wur.nl> het volgende:

> Beste [redacted]
> Dat is prima. Ik vroeg me af of er ook soortgelijke gegevens zijn van damherten. Uit een gesprek met [redacted] (stichting ARK) bleek namelijk dat deze ook een belangrijke prooi zouden kunnen vormen.
> Heel erg bedankt.
>
> Met vriendelijke groeten,
> [redacted]
> **From:** [redacted]@zoogdiervereniging.nl]
> **Sent:** woensdag 26 oktober 2011 8:11
> **To:** [redacted]
> **Subject:** Re: dichtheidskaarten grazers
> Hoi [redacted]
>
> zeker, we zijn er mee bezig, maar het is even een klus die ingepland moest worden: het wordt waarschijnlijk volgende week maandag.
>
> groet,
>
> [redacted]
>
> Op 24 oktober 2011 13:49 schreef [redacted]@wur.nl> het volgende:
> Beste [redacted]
> Eerder hebben we contact gehad over kaarten van de presentie van prooidieren van de wolf (zie hieronder). Kunt u mij laten weten of dit nog mogelijk is? Dan kan ik hiermee verder.
> Alvast bedankt.
> M.v.g., [redacted]

From: [redacted]
Sent: woensdag 12 oktober 2011 15:19
To: [redacted]'
Subject: RE: dichtheidskaarten grazers
Beste [redacted],
Ik zou de gegevens graag in shapefiles willen als dit mogelijk is, met als periode 5 jaar.
Alvast bedankt.
Groet [redacted]
From: [redacted]@zoogdiervereniging.nl]
Sent: maandag 10 oktober 2011 15:37
To: [redacted]
Subject: Re: dichtheidskaarten grazers
Beste [redacted]

ik zou de gegevens van de laatste 5 jaar nemen, dan sluit je bezoek-effecten uit (mensen die waarnemingen gaan bijvoorbeeld in 2008 voor het eerst in die hoedanigheid naar een gebied, melden dan een soort en denken de jaren erop "oja, edelhert had ik al doorgegeven). In welke format wil je de gegevens?

Voor de kaarten van SOVON kun je het beste [redacted] benaderen: [redacted]@sovon.nl

groet,

[redacted]

Op 10 oktober 2011 11:35 schreef [redacted]@wur.nl> het volgende:
Beste [redacted]
Bedankt voor uw reactie. Ik zou graag deze gegevens van presentie van prooidieren (edelhert, wild zwijn, ree, konijn en haas) willen gebruiken om het model te initialiseren. Als periode, wat is hiervoor gebruikelijk? 1 jaar o.i.d.?
Ook de SOVON kaarten zou ik graag willen gebruiken.
M.v.g.,
[redacted]
From: [redacted]@zoogdiervereniging.nl]
Sent: dinsdag 20 september 2011 14:54
To: [redacted]
Subject: Re: dichtheidskaarten grazers
Beste [redacted]

sorry dat ik je niet eerder terugschreef. Helaas hebben we geen inschatting van biomassa, alleen presentie (aan- of afwezig). Dat is gebaseerd op waarnemingen van onze vrijwilligers. Die zijn er van edelhert, wild zwijn en ree, en van konijn, haas. Muizen zijn lastiger: die nemen we waar door middel van lifetrapping en braakballen van uilen, en dan ben je dus afhankelijk van toevallige onderzoekslocaties, en het broedgebied van de kerkuil in Nederland.

Ik kan je per kmhok aan-of afwezigheid sturen voor een periode naar jouw keuze.

Daarnaast zijn er door SOVOn kansenkaarten ontwikkeld op basis van landschapskenmerken en verspreidingsgegevens. Ook daarin geen biomassa of dichteheden, maar wel kans op voorkomen. Zouden die handig zijn?

groet,

[redacted]

Op 20 september 2011 09:09 schreef [redacted]@wur.nl> het volgende:

Beste [redacted],

Een paar weken geleden heb ik je gemaild met de vraag of je kaarten met biomassa en/of verspreiding van prooidieren van de wolf hebt (zie hieronder). Zou je kunnen laten weten of je deze hebt, en of ik hiervan gebruik zou kunnen maken?

Alvast bedankt.

Met vriendelijke groeten,

[redacted]

From: [redacted]

Sent: donderdag 1 september 2011 11:11

To: [redacted]@zoogdiervereniging.nl'

Subject: dichtheidskaarten grazers

Beste [redacted]

Vorige week heeft [redacted] me aan je voorgesteld, aangezien ik vanuit Wageningen Universiteit met een afstudeervak bezig ben over de verspreiding van de wolf en de draagkracht in Nederland. Je gaf toen aan dat er gegevens (kaarten) zijn over grazers in nederland, en die zou ik graag willen gebruiken voor de simulatie van de prooien. Wat voor gegevens zijn hier precies van? Zijn er gegevens over waar ze zitten en/of de populatiegrootte (in aantallen of in biomassa)?

Als prooi gaan we iig reeen, edelherten en wilde zwijnen gebruiken, aangezien dit de belangrijkste prooisoorten in duitsland zijn. Als er gegevens van zijn zou ik ook graag die van konijnen, hazen en muizen willen gebruiken.

Daarnaast zijn adviezen e.d. uiteraard welkom.

Hebben jullie bij de VZZ toevallig ook dergelijke gegevens van lokaties en populatiegrootte van Duitse populaties?

Alvast heel erg bedankt.

Met vriendelijke groeten,

[redacted]

--

Dr. Ir. [redacted]

Zoogdiervereniging
Postbus 6531
6503 GA Nijmegen
Telefoon: [redacted]

www.zoogdiervereniging.nl

www.zoogdieratlas.nl
www.zoogdiervanhetjaar.nl
www.vleermuizenindestad.nl

twitter: [redacted]

--

Dr. Ir. [redacted]

Zoogdiervereniging
Postbus 6531
6503 GA Nijmegen
Telefoon: [redacted]

www.zoogdiervereniging.nl

www.zoogdieratlas.nl
www.zoogdiervanhetjaar.nl
www.vleermuizenindestad.nl

twitter: [redacted]

--
Dr. Ir. [redacted]

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www.zoogdiervanhetjaar.nl
www.vleermuizenindestad.nl

twitter: [redacted]

--
Dr. Ir. [redacted]

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www.vleermuizenindestad.nl

twitter: [redacted]

--
Dr. Ir. [redacted]

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Telefoon: [redacted]

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www.zoogdieratlas nl
www.zoogdiervanhetjaar nl
www.vleermuizenindestad nl

twitter: [redacted]

--
Dr. Ir. [redacted]

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Telefoon: [redacted]

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www.zoogdiervanhetjaar.nl
www.vleermuizenindestad.nl

twitter: [redacted]

--
Dr. Ir. [redacted]

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Postbus 6531
6503 GA Nijmegen
Telefoon: [redacted]

www.zoogdiervereniging.nl

www.zoogdieratlas.nl
www.zoogdiervanhetjaar.nl
www.vleermuizenindestad.nl

twitter: [redacted]

From: [redacted]
To: [redacted]
Cc: [redacted]
Subject: RE: resource
Date: donderdag 14 juni 2012 14:20:13
Importance: High

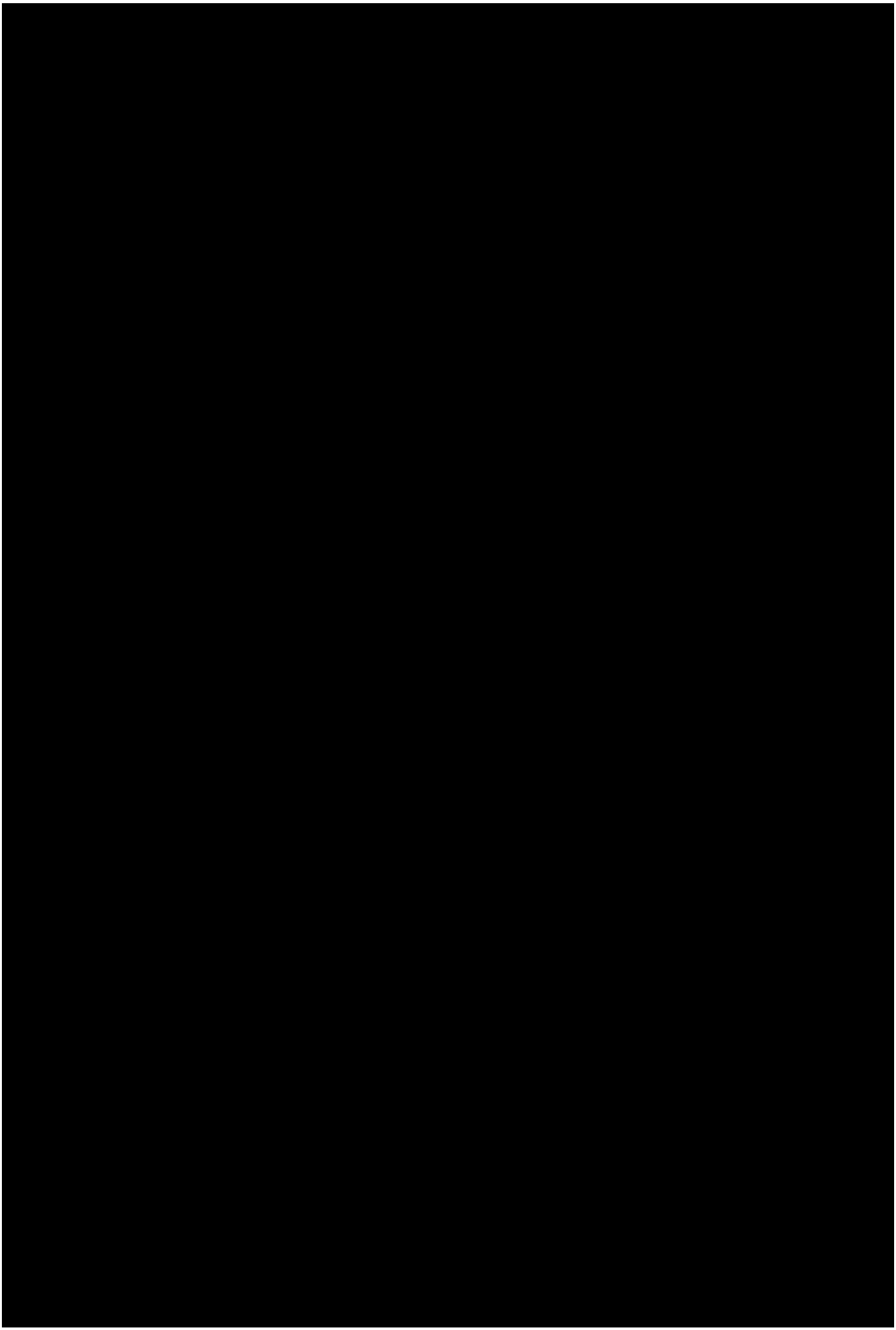
Hoi [redacted], ik zal zo een mail naar [redacted] sturen. [redacted] gaf mij twee mogelijkheden

1. Jij doet het interview als student en je hebt een studentenverslag gemaakt en bent met een artikel bezig dat zo goed als af is. Ik ben het met [redacted] eens dat het beter is om het artikel onder embargo te sturen en niet het verslag. Als er gevraagd wordt naar een Alterra rapport of welk ander gedoe dan ook ([redacted] weet er wel iets van had ik de indruk) dan verwijs je maar naar mij. Beantwoord zelf geen enkele vraag daarover.
2. Een voorstel om het stuk over de zomervakantie heen te tillen en dan samen met [redacted] een interview te doen waarbij ook zijn onderzoek naar voren komt zodat we een compleet beeld gegeven wordt.

Ik ga beide opties naar [redacted] doormailen. Hij kan dan beslissen. Het is volgens mij dan wel duidelijk dat er iets raars aan de hand is, en dat zal ook al wel blijken uit het artikel want daar zijn dan ineens allemaal co-auteurs, maar dit is wat [redacted] goed vindt en dan zien we wel weer.
Ik heb ook [redacted] en [redacted] gemaild, maar die zijn beide niet te bereiken. Daarover mail ik nog weer met [redacted] want ik wil wel graag dat ze op de hoogte zijn.
groetjes [redacted]
Dr. ir. [redacted]
[redacted]
Alterra P.O. box 47
6700 AA Wageningen
The Netherlands
[redacted]@wur.nl
telefoonnummer [redacted]
www.abiotic.wur.nl

From: [redacted]@hotmail.com]
Sent: woensdag 13 juni 2012 16:59
To: [redacted]
Cc: [redacted]
Subject: RE: resource
Importance: High
Hoi [redacted],
Het lijkt me erg leuk om op dit verzoek in te gaan en het verslag op te sturen. Wanneer [redacted] vraagt waarom er geen Alterra-rapport van is o.i.d., wat kan ik dan het best antwoorden? Het lijkt me niet dat iedereen hoeft te weten dat Alterra op de achtergrond wil blijven. Als [redacted] er niet naar vraagt zal het dus een verslag vanuit de universiteit zijn, en niet vanuit Alterra? (wat in principe ook zo is, aangezien het afstudeervak voor de universiteit was)
Groetjes [redacted]

[redacted]



From: [redacted]
To: [redacted]
Cc: [redacted]
Subject: Re: toesturen artikel Re: [Contactformulier DLN] Bericht (11-08-2012 16:29:09)
Date: maandag 13 augustus 2012 12:25:06

Beste [redacted]
Hartelijk dank voor deze 'platte' versie van jullie artikel. We zullen het in komende redactievergadering bespreken, zodat je eind september een nadere reactie kunt verwachten.
Vriendelijke groet, [redacted].)
Redactie De Levende Natuur
[redacted]
[redacted]@delevendenatuur.nl
www.delevendenatuur.nl

From: [redacted]
Sent: Monday, August 13, 2012 10:34 AM
To: [redacted]'
Cc: [redacted]
Subject: RE: toesturen artikel Re: [Contactformulier DLN] Bericht (11-08-2012 16:29:09)

Beste [redacted], bijgevoegd het artikel, maar dan zonder opmaak, met regelnummers en dubbele lijnafstand, figuren aan het eind. Als ik nog wat gemist heb, laat het dan weten.

groetjes [redacted]
[redacted]
Alterra P.O. box 47
6700 AA Wageningen
The Netherlands
[redacted]@wur.nl
telefoonnummer [redacted]
www.abiotic.wur.nl

From: De Levende Natuur [mailto:[redacted]@chello.nl]
Sent: maandag 13 augustus 2012 7:59
To: [redacted]
Subject: Re: toesturen artikel Re: [Contactformulier DLN] Bericht (11-08-2012 16:29:09)

Beste [redacted],
Je artikel was inderdaad aangekomen; hartelijk dank daarvoor. Maar voor de redactiebespreking kunnen we niet een opgemaakte versie gebruiken. Graag gewoon platte tekst (over hele pagina, niet in 2 kolommen) en kaderteksten, figuren en tabellen achteraan (na de auteursgegevens). Verwijzing naar die kaders, figuren en tabellen staat dan in de platte tekst aangegeven. Daarom in de bijlage je artikel terug (ter vergemakkelijking van toesturen heb ik de foto's er al uit geknipt).
Vriendelijke groet, [redacted]
Redactie De Levende Natuur
[redacted]
[redacted]
[redacted]@delevendenatuur.nl
www.delevendenatuur.nl

From: [redacted]

Sent: Sunday, August 12, 2012 2:47 PM
To: [redacted]
Subject: RE: toesturen artikel Re: [Contactformulier DLN] Bericht (11-08-2012 16:29:09)

Beste [redacted], ik heb het artikel in originele vorm toegevoegd. Hopelijk lukt dit wel.
Beste redactie, bijgevoegd een artikel over een mogelijke toekomst van de wolf in Nederland. Wij zouden het zeer op prijs stellen als dit artikel ter overweging zou kunnen worden genomen voor plaatsing in de levende natuur.
Mede namens de andere auteurs,
met vriendelijke groeten,

[redacted]
groetjes
Dr. ir. [redacted]
[redacted]
Alterra P.O. box 47
6700 AA Wageningen
The Netherlands
[redacted]@wur.nl
telefoonnummer [redacted]
www.abiotic.wur.nl

From: De Levende Natuur [mailto:[redacted]@chello.nl]
Sent: zaterdag 11 augustus 2012 16:50
To: [redacted]
Subject: toesturen artikel Re: [Contactformulier DLN] Bericht (11-08-2012 16:29:09)

Beste [redacted],

Misschien lukt het wel rechtstreeks (in reply) naar dit e-mailadres ([redacted]@delevendenatuur.nl)?

Groet! [redacted]

Redactie De Levende Natuur

[redacted]
[redacted]
[redacted]@delevendenatuur.nl
www.delevendenatuur.nl

From: [redacted]
Sent: Saturday, August 11, 2012 4:29 PM
To: [redacted]@delevendenatuur.nl
Subject: [Contactformulier DLN] Bericht (11-08-2012 16:29:09)

Reactieformulier van www.delevendenatuur.nl
verzonden door [redacted]@wur.nl)
op 11-08-2012 16:29:09

---

voornaam: [redacted]
achternaam: [redacted]
email: [redacted]@wur.nl
bericht: Beste [redacted], ik probeer een artikel up te loaden via jullie systeem maar dat lukt maar niet, kan ik een mail naar iemand persoonlijk sturen, bijvoorbeeld naar [redacted]?

groetjes

[redacted]

From: [redacted]
To: [redacted]
Subject: RUW: debatavond terugkeer van de wolf
Date: woensdag 12 oktober 2011 10:29:31

---

28 november geeft stichting RUW een debatavond over de terugkeer van de wolf in Nederland. Hieronder een beschrijving.

Sinds deze zomer is de wolf weer in Nederland gesignaleerd. Heeft de terugkeer van de wolf belangrijke gevolgen voor natuur en/of landbouw? Deze en andere vragen zullen tijdens deze debatavond aan bod komen. Met sprekers als [redacted] (economisch wildbeheer) en [redacted] (faunabeheereenheid Overijssel). Deze activiteit wordt georganiseerd in samenwerking met studievereniging Sylvatica

Van iemand van de organisatie heb ik begrepen dat [redacted] hier ook bij aanwezig zal zijn. Misschien interessant om bij aanwezig te zijn. Er staat nog geen tijd vermeld, alleen dat het 's avonds zal zijn.

Groetjes [redacted]

From: [redacted]
To: [redacted]
Subject: Thesis wolf
Date: zondag 26 februari 2012 16:59:58
Attachments: [redacted]

Hoi [redacted],
Ik hoop dat je een goede vakantie hebt gehad. Eind deze maand zou ik mijn eindversie inleveren. Het verslag schiet heel erg op, maar ik zou het fijn vinden als je er nog 1 keer naar zou kunnen kijken. [redacted] heeft het tussendoor wel bekeken, maar mogelijk zie je andere dingen. De summary, abstract en conclusies zijn nog niet af, dus het gaat in eerste instantie om de introductie, mat. en meth. (deze heb je al vaker gezien) en (vooral) discussie. Morgen zal ik de summary, abstract en conclusies sturen. Het commentaar kan ik dan nog meenemen in mijn eindverslag, die ik dan later deze week opstuur. Is dit ok?
Groet [redacted]

From: [redacted]
To: [redacted]
Date: vrijdag 4 november 2011 08:59:26

Beste [redacted],
Ik heb al even niks van me laten horen, dus hierbij even een update. Alles gaat goed. Ik ben langs geweest bij [redacted], die voor stichting ARK werkt en erg veel van (de ecologie van) wolven af weet. Dit was erg nuttig. De gis-kaarten van de prooidieren heb ik inmiddels gekregen van [redacted]. Ook heb ik kaarten van landschapstypen en wegen in nederland. Daarnaast ben ik deze week begonnen met een gis-vak in de middag, wat ik zeker zal kunnen gebruiken voor mijn afstudeervak. Vind je het handig om een afspraak te maken om bij te praten? Zo ja, welke dag ben je er volgende week? [redacted] heeft volgende week vakantie, dus een andere week kan ook. Ik kan voorlopig ivm mijn middagvak alleen 's ochtends.
Groetjes [redacted]

From: [redacted]
To: [redacted]
Date: maandag 19 september 2011 12:03:19
Attachments: [redacted]

Hoi [redacted],
Hierbij een nieuwe versie van mijn proposal. Vanmiddag zal ik nog kijken naar de materiaal en methode en de referenties.
Tot morgen.

Groetjes [redacted]

From: [redacted]
To: [redacted]
Cc: [redacted]
Date: donderdag 15 maart 2012 09:10:25
Attachments: [redacted]

Beste mensen, bijgevoegd het verslag van [redacted]. Ze heeft afgelopen dinsdag haar verhaal gehouden, de opkomst was groot. [redacted]) heeft voor haar verhaal gezegd dat als er journalisten in de zaal er geen aantekeningen mochten worden gemaakt, maar dat een interview met [redacted] wel mogelijk was. Zover ik kon beoordelen was er geen journalist in de zaal. [redacted] hield een goed duidelijk verhaal. Ze is daarna beoordeeld door [redacted] en mij en heeft een 9 gekregen.
Ze wil graag een wetenschappelijk artikel schrijven over het geheel, voorlopig mikken we op Nature Conservation.
[redacted] stelde voor om een artikel voor de Levende Natuur te schrijven. Vinden we een goed idee en we overleggen nog of [redacted] dat ook gaat doen of dat ik dat stuk ga schrijven.
Het abstract komt zoals afgesproken op de site van de vakgroep, zonder verdere aandacht.
[redacted] en/of [redacted] zouden jullie het verslag van [redacted] door willen sturen naar je opdrachtgever en projectleider?
Inmiddels is [redacted] begonnen aan zijn literatuurstudie, die zich zal focussen op de Wolf, na het vak komt hij bij ons een afstudeervak doen. Graag samen met [redacted] en [redacted].
Graag zou ik de mogelijkheid verkennen om uiteindelijk het verslag toch als Alterra rapport of onderdeel van het rapport voor EL&I, bijvoorbeeld als losse bijlage.
[redacted] was ook aanwezig tijdens het praatje en ik heb hem daarna kort gesproken. [redacted] heeft aan de VU een vergelijkbaar onderzoek gedaan op een totaal andere wijze als [redacted] en heeft ongeveer dezelfde uitkomsten. Zijn rapport is nog niet af (onzekerheidsanalyse), maar komt een dezer dagen ook.
Er zijn dus twee studentenrapporten die dezelfde richting op wijzen.
Als ik iets vergeten ben hoor ik het graag.
groetjes [redacted]

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[redacted]@wur.nl
telefoonnummer [redacted]
www.abiotic.wur.nl

From: [redacted]
To: [redacted]
Subject: vorderingen proposal
Date: woensdag 24 augustus 2011 13:07:19
Attachments: [redacted]

Hoi [redacted],
Hierbij de versie van het proposal voor zover ik nu ben. Als onderwerp heb ik de verspreiding van de wolf naar Nederland gekozen. Ik ben voornamelijk met de introductie bezig geweest. Voor de experimental approach (materiaal en methode) heb ik wat dingen op papier gezet, maar zoals jullie wel zullen zien moet ik hier nog mee aan de slag. Hiervan zijn een aantal dingen me nog niet helemaal duidelijk, dus hier kunnen we het morgen misschien over hebben. Ook andere delen zijn nog niet af, maar zo krijgen jullie iig een beeld van hoe het gaat.

Tot morgen.
Groeten [redacted]

From: [redacted]
To: [redacted]
Cc: [redacted]
Subject: wolf oppervlaktebehoefte
Date: donderdag 1 september 2011 10:24:23
Attachments: [redacted]

Hoi, zie referenties in tabblad 2 (hoort bij publicatie van Kelt & van Vuren, bijgevoegd, hoef je niet te begrijpen!!)

Taxon	Trophic Group	Mass (log10)	Home Range (log10)	References (See Sheet 2 for details)
Canis lupus	Carnivor	4.63317	4.67028	Ballard et al. 1997, Bjorge and Gunson 1989, Carbyn 1983, Ciucci et al. 1997, Fritts and Mech 1981, Fuller 1989, Messier 1985, Okarma et al. 1998, Peterson et al. 1984, Potvin 1987, VanBallenberghe et al. 1975

From: [redacted]
To: [redacted]
Subject: Wolf
Date: zondag 14 oktober 2012 19:51:03

Hoi [redacted] en [redacted], het interview met Resource over de wolf is uit. Het is nog gelukt om jullie ook genoemd te krijgen. Zie voor het stuk de Resource website. [redacted] als je een papieren exemplaar wilt laat dan even weten dan stuur ik er een (mail dan ook je adres).

groetjes [redacted]

From: [redacted]
To: [redacted]
Cc:
Subject: wolven artikel
Date: maandag 14 oktober 2013 20:52:41

Hoi [redacted], hoe loopt je PhD?
Het is me gelukt om je wolvenartikel in principe in het vakblad voor bos landschap en natuurbeheer te krijgen en wel in het special issue over de wolf (ik ben gast editor). Er zullen tov het stuk wat er ligt nog wel wat wijzigingen nodig zijn en het mag maximaal 2000 woorden zijn. Wil je dat ik er nog een keer door heen loop en aanpassingen voor stel? Jij blijft uiteraard eerste auteur.
groetjes [redacted]

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Risk Perception and Risk Acceptance concerning Wolves and Wild Boars in the Netherlands

Author:

Supervisors: (1st supervisor, Department of Communication Science),

(2nd supervisor, Department of Forest and Nature Conservation Policy)

Wageningen University

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ABSTRACT

In the near future, wolves might enter the Netherlands and lawfully they cannot be barred. Moreover, they can be seen as threats for Dutch citizens, whom possibly overestimate these risks. On the other hand, wild boars, already prevalent in the Netherlands, induce risks that are underestimated by Dutch citizens. Nature managers will have to communicate with the public about nature policy, and for effective communication they will need to know about the public's risk perception and acceptance. This study aims to provide such insights, focusing on risks concerning wolves and wild boars. The study investigates – with two questionnaires (N = 1024 & N = 214) – if risk dimensions from previous research can be applied, and what the effects of objective and subjective vicinity, urbanity, and prior experience are on risk perceptions and acceptance. Results show that from a broad range of risk factors, two broader risk dimensions were distilled. Also, there was a trend towards a connection between objective vicinity and perceptions of wild boar risks. Subjective vicinity was related to acceptance of wild boar risks, but this was mediated by prior experience. The valence of prior experiences was related to risk perception and acceptance for both species. Finally, the impact of experiences was marginally significant to risk acceptance for wild boar risks. Insights of this study could be useful for nature managers' communication activities with citizens concerning wildlife-risks. Most applicable are the values people ascribe to wildlife experiences, and the link this has with risk perception and acceptance.

CONTENT

INTRODUCTION

PROBLEM STATEMENT

"Wolves are gaining ground" is the title of an article in the Telegraaf, a Dutch newspaper ("Wolven rukken op", 2012). Afterwards, another newspaper heads with "On the Veluwe you can easily harbour 5 wolf packs" (Beekmans, 2012). This illustrates how several newspapers see the relevance of a Dutch wolf comeback as a news item. The autumn before these articles were published, a wolf was allegedly spotted near two villages on the Veluwe. Questions in the governmental Chamber of representatives were raised; representatives were wondering what course of action the Dutch government would take, if wolves would re-enter the Netherlands. European law assigns a protected status to wolves (Trouwborst, 2010). However, does this mean that Dutch citizens need to fear for their own safety when they go out into the woods, once wolves have crossed the borders? Another issue that came to the attention of media is the possible threat of aggressive semi-domesticated wild boars, for instance in downtown Hamburg, Germany ("Everzwijnen in Hartje Hamburg", 2012). Do Dutch nature managers have the task of eliminating such threats posed by wildlife? An important question is how people actually perceive the risks of wolves, wild boars and other wildlife, perceptions that depend on more than only objective probabilities. The main purpose of this study is to attend to the lack of insights on Dutch citizen's risk perceptions and acceptance concerning wildlife species, particularly risks concerning wolves and wild boars.

Studying perception and acceptance of risks together in one study is something not often found in previous studies, but such a combination can be insightful. Risk perception can be defined as *"intuitive risk judgments*" (Slovic, 1987, p. 280) and risk acceptance as "*an acceptable balance of personal risks and benefits*" (Fischhoff, 1994, p.2). Risk acceptance is considered to be situation specific; there are "*no universally acceptable options"* (Fischhoff, 1984, p.3). Despite the difference, risk perception and acceptance do show a high, but inversed, relation with one another – high perceived risks relate to low acceptance of such risks. For instance, Fischhoff and colleagues found that factors underlying risk perception – such as perceived control, familiarity, immediacy and

voluntariness – *also* influenced people's risk acceptance, but inversely so (Fischhoff, Slovic, Lichtenstein, Read & Combs, 1978). Yet, high risk perceptions do not *automatically* lead to low acceptance; other factors play a role as well (Fischhoff, 1984). So, although the latter suggests that risk perception is just one of many factors influencing acceptance, most studies assume that acceptance emanates solely from perception, and consequently only focus on these perceptions. Therefore, they could unjustifiably omit other possible factors. In this study, a conscious decision was made to look at both perception and acceptance to ameliorate for this bias.

The issue of risk perceptions and acceptance has two sides or 'applications'. On the one hand there is a practical side – nature managers' need for insights into risk perceptions and acceptance of the Dutch public, to increase effectiveness of their management practices – and on the other hand there is a scientific side – furthering the research field on risk perceptions and acceptance.

Further on in this introduction, the problem statement is addressed by means of discussing both practical and scientific side of the issue. Thereafter, in the section 'Theoretical Framework', risk factors are discussed and particularly two are highlighted – a person's vicinity to the habitat of a wild species and a person's prior experience with the risky animal. Consequently, hypotheses are formulated, which are put to the test in two subsequent studies thereafter. First, though, the practical side is addressed below.

Practical Issue.

Need for nature management: What to do when the Wild returns? The practical question that inspired this research proposal is: what to do when the wolf returns to the Netherlands? A second question that currently occupies nature managers also begs attention: what to do when the wild boar overruns our forests? (Groot Bruinderink & Dekker, 2010) Both wolves and wild boars can potentially harm humans, if they are provoked. Yet whether everyone shares the same notion on the harmfulness of these animals remains a question. In a country as densely inhabited as the Netherlands, where nature areas are multi-functional and shared among citizens for multiple purposes, approaching the return – or expansion – of large wildlife species is not only an ecological

matter, it is a social issue as well. Thus, the issue merits an approach from a social perspective, especially if effective policy – which needs the mandate of the masses – is the final goal. Therefore this thesis aims to deal with the question: what are the public's risk perceptions and acceptance concerning the wolf and wild boar?

The actuality of the issue is evident from recent wolf-sightings and the reaction of newspapers on this news. In 2011, people reported wolf-sightings on several occasions near the Dutch-German border. When these sightings reached the regional and even national news, many Dutch citizens were confronted with risks involved in the return of such a large carnivore as the wolf. This news coverage, and future appearances of wolves in the news, increases the need for nature managers to formulate a good communication plan concerning the risks of wolves; a plan that takes into account the perceptions of people concerning these risky animals. If not, risk perceptions may go 'astray' and all kinds of tall stories might emerge. Similarly, wild boars have been 'in the news' because of their rapid expansion in Dutch nature areas, their devastating effects to cultivated lands and the potential threat they pose to people (Pennings, 2012).

One important aspect to consider is that, due to their legal 'protected status', wolves cannot be banned from Dutch nature areas, whereas wild boars – not assigned such a protected status – can (Trouwborst, 2010). But since wolves and wild boars cannot read the law, it is up to nature managers to realize such population management, both the ecological management, and the communication of such actions towards civil society. In line with the multi-functionality of nature areas, people have a right to such information. But why would nature managers bother with values, opinions and perceptions of citizens, on the matter of wildlife?

Relevancy for nature management. Nature managers need the approval of the public – or at least absence of resistance – when managing nature areas effectively. Opposition from the public can cause 'difficult procedural challenges' when there is a discrepancy between the public's risk perception, and that of managers (Gore, Knuth, Curtis & Shanahan, 2007a). People's behaviour has been linked to risk perception in several studies, for instance 'willingness to act' (O'Conner, Bard &

Fischer, 1999), 'environmental practices' (Baldassare & Katz, 1992) 'health behaviour' (Brewer et al., 2007) and 'risk mitigation behaviour' (Martin, Martin & Kent, 2009). Such behaviour is aimed at risk reduction, but if the public's risk perceptions are not in line with managers' risk perception, discrepancy can arise and this reduces management effectiveness. For making wildlife management effective, therefore, it is essential to develop plans that are in line with the risk perceptions and acceptance of the public (Decker, Lauber & Siemer, 2002; Gore et al., 2009).

Past case studies show that policy makers' attempts to communicate with the public can influence their risk perceptions (for an overview, see Kasperson, Kasperson, Pidgeon & Slovic, 2005). So in order to work within the limits of public approval, it is pivotal for managers to communicate about risks, risk perceptions and risk acceptance, besides 'routine' technical management tasks. This applies for nature managers as much as for any other civil servant; an important step towards a publicly supported policy on large wildlife management therefore is the formulation of communication plans addressing wildlife risks. Formulating such plans requires first an understanding of the public's perceptions concerning the risks involved (Gore et al., 2007a). In order to reach this understanding, this study investigated the public's risk perceptions and acceptance of two large wildlife species – wolves and wild boars. The next two paragraphs explain first why particularly risk perceptions and acceptance of *Dutch* people are topic of this study, and consequently why particularly wolves and wild boars are examined.

Need for country-specific insights. Apart from broad risk perception studies, scientific literature offers only few insights into wildlife specific risk perceptions, and no studies so far have specifically focused on the case of Dutch wildlife risks. This is particularly problematic for Dutch nature managers if they want to base their communication with the public on such insights; the use of literature from elsewhere may be of limited value. Because of high urbanisation levels, nature areas in the Netherlands do not contain large free-roaming wildlife, as in other countries or regions. Nature managers have only recently started to reintroduce large herbivores to some of the Dutch nature areas. Therefore many Dutch citizens are still quite inexperienced with the presence and potential

encounters of such wild animals, whereas in other countries inhabitants have more exposure to wildlife. Several studies found that experience – exposure to wildlife – can have effects on fear and risk perception respectively (Johansson, Karlsson, Pedersen & Flykt, 2012; Thornton & Quin, 2010). The difference in levels of experience results in the inapplicability of insights from elsewhere to the Dutch case. Thus, country-specific knowledge is needed for Dutch nature managers. Consequently, the next paragraph argues why this study focuses on two species within this Dutch-specific context.

Two species, one study. The news items that were discussed before already point towards the urgency of the issues revolving around wolves; people do seem to care about whether the wolf returns to the Netherlands. Yet, the wolf is not the only potentially dangerous large wild animal for Dutch citizens. Such safety concerns are illustrated by the city of Hamburg, Germany, which is currently experiencing harassment by a herd of wild boars ("Everzwijnen in Hartje Hamburg", 2012). Maybe not as menacing and notorious in reputation as the wolf, wild boars can also inflict harm upon humans if they are provoked and sometimes even kill humans (Manipady, Menezes & Bastia, 2005). Yet, whereas there may be an overreaction concerning a potential re-emergence of the wolf in the Netherlands, risks for humans posed by wild boars are received with indifference at best, and disbelief at worst. Such indifference is a problem that nature managers have to deal with, in both technical management terms and in terms of communication towards the public.

Wild boars are currently already causing several problems in rural and sub-urban areas, such as devastation of agricultural lands. Moreover, populations of wild boars are currently expanding in numbers and are spreading to non-nature areas, such as rural and sub-urban settings. This process is taking place across Western-Europe (Schley, Dufrêne, Krier & Frantz, 2008), however, it is notoriously difficult to contain wild boars to certain areas (Groot Bruinderink, 2008). Despite nature managers' best efforts, wild boars are 'roaming freely' in areas where they are not wanted, as was the case in Hamburg. A similar difficulty is encountered with containment of wolf packs across Europe. Wolves seem to have no need for very large areas of undisturbed nature; they can – and sometimes do – live close to urbanised areas (e.g. in outskirts of Rome: Boitani, Fritts, Stephenson & Hayes, 2003).

Moreover, because both species are scavengers, they have the natural instinct to move to wherever they sense food can be 'scavenged', no matter if these areas are densely populated. Because human presence often goes hand in hand with waste disposal, it is even likely that these animals will be drawn to more populated areas. Both species can thus pose risks for people who live near the habitats of these animals, or people who want to visit such areas. Although both species are inherently shy and avoid human contact if possible, both are perfectly able to harm humans when they feel threatened. Therefore, they pose a risk for those who encounter them in the wild, especially so for people with little experience on how to deal with such wildlife encounters.

One important and evident difference between the two species is that wolves are not yet present in the Netherlands, whereas wild boars are. Moreover, wild boars do not suffer from the bad image that wolves have (Beekmans, 2012). Instead, wild boars are seen as a nuisance by farmers – wild boars tend to lay waste to agricultural lands – or as 'cuddly' animals by nature visitors (Groot Bruinderink et al., 2011). This latter image is the more troublesome, because seeing wild boars as harmless cuddly animals can induce risks when tourists start to approach wild boars with food and treats. The boars may get used to such treatment and lose their shyness, and consequently enter people's gardens in search for more treats. This can cause dangerous situations, because when a wild boar feels threatened, it might attack and inflict severe damage. So, whereas the reputation of the wolf could be overly negative, the reputation of wild boars might be too positive, allowing for dangerous situations to arise. In order to communicate these risks, nature managers will first need to know people's current risk perceptions and acceptance, so that they can respond accordingly. However, at the moment little is known about Dutch people's risk perceptions and acceptance, as the subsequent paragraph will discuss.

Scientific Issue.

Wildlife-risk perceptions: a knowledge deficit. In the last few decades many studies into risk perceptions and acceptance have been conducted, but only few of these focused on wildlife related risks. No studies focused specifically on risk perceptions concerning wolves or wild boars in Europe.

There are some reported studies into risk perception on other large wildlife in North America, for example concerning cougars (Thornton & Quinn, 2010, Zinn & Pierce, 2002) and black bears (Gore et al., 2006, 2007a, 2007b). North America is sparsely populated in comparison to Western European countries[1], so extrapolating from these studies should be done cautiously.

Additionally, there are several studies into public opinions on European wildlife, but these studies did not specifically focus on risk perceptions or acceptance. For instance, studies were done into factors that influenced people's attitudes towards -(Bjerke, Reitan & Kellert, 1998; Ericsson & Heberlein, 2003; Heberlein & Ericsson, 2005; Karlsson & Sjöström, 2007; Williams, Ericsson & Heberlein, 2002); social acceptability of - (Kleiven, Bjerke & Kaltenborn, 2004) and fear of - (Johansson & Karlsson, 2011) large wildlife species. Influential factors were for instance: experienced economic losses and personal control (Kleiven et al., 2004), personal experience with predation or hunting, having little knowledge of large wildlife species and having received a rural upbringing (Ericsson & Heberlein, 2003) indirect experience (Karlsson & Sjöström, 2007) and closeness to the area where the animal in question habited (Ericsson & Heberlein, 2003; Karlsson & Sjöström, 2007)[2]. For a more extended overview of factors influencing attitudes on wildlife, the interested reader is referred to Appendix C, Mind map 3. However, it is clear that two central themes emerge from the above summation of factors; both closeness to – and experience with – the risky animal seems to play an important role in attitudes towards the animal in question. However, fact remains that no risk-perception research was published concerning large wildlife species in Europe. And although attitudes and risk perception are linked concepts (Sjöberg, 2000a, 2000b), they are not identical, and should not be used interchangeably. Thus, there is a lack of studies into risk perceptions among Europeans concerning large wildlife species, which this thesis aims to overcome by investigating just that: risk perceptions and acceptance concerning wildlife in the Netherlands.

THEORETICAL FRAMEWORK

[1] Average population density of Western Europe is 171 inhabitants/km^2 whereas in Northern America this is 16 inhabitants/km^2 (UN Statistics, 2010).

[2] The mentioned concepts are formulated such that a high score on the concept corresponds to more negative attitudes on/less acceptance of the animal in question.

Due to this knowledge gap, species-specific studies into risk perception and acceptance were not available to use in a theoretical framework, which is why the theoretical background supporting this study is based on findings from both research into perceptions on other risk topics, and from research into wildlife attitudes. The field of research into risk perception covers a broad range of risks, and has revealed the influence of many different aspects – or factors – to both risk perception and acceptance. This sub-section presents only those factors, theories and research that were used as theoretical framework in this study. For a more elaborate overview of factors influencing risk perception and acceptance, both general and for ecological risks specifically, the reader is referred to Appendix C, Mind map 1 and 2 respectively.

Risk perception literature. Past research – focusing on various risk topics – resulted in insights on factors that influence people's risk perception and – to a lesser extent – acceptance. Broadly two types of factors can be distinguished: a) factors that differ between risks b) factors that differ between persons. The former factors are often referred to as 'risk factors' – such as novelty of the risk and size or impact of the consequences – whereas the latter are 'individual factors' – such as personality characteristics and socio-demographics. Both are of interest to this study.

Risk factors. One of the major models focusing on risk factors originates from the psychometric paradigm. This approach used numerous potential factors that seem to influence risk perceptions, and consequently merged these many factors into a few overarching dimensions. Dread and Newness of risks are two dimensions[3] that are often found in such studies (Fischhoff et al., 1978; Slovic, 1987, 1999). One important insight from such studies is that lay-people base their risk perceptions on different factors than experts do. Factors like controllability, voluntariness, dread and if a risk is familiar are important to risk perceptions of lay-people (Trimpop, 1994). Such factors can be divided into a Dread dimension, containing factors adding to how dreadful people think the risk is, and a Newness dimension, containing factors on how novel and unknown people judge a risk to be.

[3] These terms might be confusing, since the terms 'dread' and 'newness' are also often used as factors. However, the dimensions Dread and Newness are broader than the factors dread and newness. The dimension Dread contains the factor dread, but also many other factors. To prevent conceptual confusion, whenever talking about dimensions, Dread and Newness are capitalized to emphasize their 'overarching' character.

In these past studies, risk dimensions were investigated and found for a very broad range of risks; this makes it plausible that the same risk dimensions will also explain risk perceptions concerning wolves and wild boars. Therefore, it is hypothesised that the risk dimensions originating from psychometric studies –specifically those mentioned in Slovic (1987) – are also applicable to risk perceptions of wolf or wild boar encounters. To test this assumption, this study aims to replicate the dimensions found in Slovic (1987), a Dread dimension and a Newness dimension. The following Hypothesis will be tested:

01. Risk factors relevant for the risks posed by wolves and wild boars can be classified into a Dread dimension containing dread-related factors and a Newness dimension containing newness-related factors.

Individual factors. Whereas psychometric research aimed at explaining risk factors, other studies focused more on individual factors: differences between people that can explain their different risk perceptions. These studies yielded weaker results than psychometric studies (for instance: Barnett & Breakwell, 2001; Kallmen, 2000; Sjöberg & Wåhlberg, 2002), probably because there are many potential individual factors involved in risk perception and acceptance. However, many individual factors were found to have some influence, nonetheless. Socio-demographic factors - age, gender, income, education, religion – are often found to influence risk perceptions. For instance, being male, white and having a high income or education level all adds to reduced risk perceptions and increased risk acceptance (Finucane, Slovic, Mertz, Flynn & Satterfield, 2000). Other individual characteristics that have been studied are for instance: anxiety (Kallmen, 2000); new age beliefs (Sjöberg & Wåhlberg, 2002); personal experience with the risk (Barnett & Breakwell, 2001); worldviews and personal norms (measured on Schwartz's Personal Norm Scale) (Slimak & Dietz, 2006; Willis & DeKay, 2007); trust in industry or in other people (Sjöberg & Wåhlberg, 2002); aesthetics of the environment where the risk takes place (Willis, DeKay, Fischhoff & Morgan, 2005) and experience with the risk (Barnett & Breakwell, 2001; Kellens, Zaalberg, Neutens, Vanneuville & De Maeyer, 2011) (see Appendix C for a more elaborate and schematic overview).

The above summation presents the multitude of individual factors, which could even be supplemented farther by potential other factors from wildlife attitude-research, mentioned earlier on. From this wide range of factors, there are two of particular interest to the case of wolves and wild boars: vicinity to the animal's natural habitat, and prior experience people have with wildlife. Both people's vicinity and prior experience differ for risks of wolves and wild boars respectively. Dutch citizens are 'closer' to wild boars – who already roam the Dutch countryside, whereas wolves do not. Secondly, Dutch citizens have – chance to – experience wild boars; for wolves they do not. Both constructs are inspected more closely, below.

Vicinity. Firstly, several studies incorporated some form of proximity measurement and found this to be linked to attitudes or risk perception concerning wild animals (Ericsson & Heberlein, 2003; Karlsson & Sjöström, 2007; Teigen, 2005; Thornton & Quinn, 2010). One can distinguish between actual and perceived closeness of people towards wild animals, as well as the level of urbanity of their living environment. It is likely that in line of previous findings, vicinity influences Dutch citizens' risk perception and acceptance towards risks concerning wolves and wild boars. However, this assumption has not been tested yet in Europe, let alone a Dutch setting, nor has it been tested for risks concerning wolves and wild boars.

People's actual proximity to wild animals – or their 'objective vicinity'- was shown to influence the attitudes on wolves of Swedish inhabitants (Karlsson & Sjöström, 2007). Whether such objective vicinity also influences risk perceptions of Dutch citizens is something this study aims to investigate. Moreover, currently there are no published studies that measure subjective – self-reported – vicinity of wildlife risks. Yet, a study into people's perception on risk probabilities found that proximity, or 'subjective vicinity' influences such risk probability estimates (Teigen, 2005); the more proximate a risk was, the higher its probability was judged to be. However, whether this also counts for wildlife risks remains unanswered. Thus, both objective and subjective vicinity merit an investigation, to see whether these influence people's risk perceptions and acceptance concerning wolves and wild boars.

In case of objective vicinity, the question remains which areas in the Netherlands are 'objectively close' to habitats of wild boars and wolves. Currently wild boars are allowed to roam freely only in two nature areas in the Netherlands, the Meinweg in Limburg, adjacent to the German border, and the Veluwe in Gelderland (Groot Bruinderink et al., 2010). Moreover, if the wolf enters the Netherlands, it will most likely do so via Germany. If it decides to stay, this will most likely be in the Veluwe, where it can nourish itself on the bountiful wild herbivores (Beekmans, 2012; Huizenga, Mölling & Hoof, 2010). Because both species thus are most probable to have their habitats near the German border or on the Veluwe, this will be considered as 'objectively close', whereas other areas in the Netherlands are considered less so. This has led to the following Hypothesis:

02. People living closer to the German border or close to the Veluwe have a higher risk perception and lower risk acceptance of risks concerning wolves/wild boars.

It could be argued that, because the Netherlands has such a small area of nature lands, roughly the entire country is 'objectively close' to the wolf and wild boar, since both can survive in semi-urban settings. Additionally, the wolf can travel up to 50 kilometres in one night in its search for food (Boitani, 2003, p.119). Instead, what may be more relevant for people's risk perception is not so much their objective vicinity, but their perceived closeness to habitats of these animals. According to Teigen (2005) more proximal risks are perceived as more probable. However, this was investigated for traffic accidents, which are rather different risks than those posed by wildlife. Therefore, subjective vicinity will be tested with the following Hypothesis:

03. People who consider themselves to live closer to a wolf/wild boar habitat have a higher risk perception and lower risk acceptance of risks concerning these animals.

A third approach to vicinity is to look at urbanity of people's living environment. Many studies found that urbanity influenced attitudes towards wild animals, the more 'urban' people lived, the more positive they were towards these animals (Bjerke et al., 1998; Karlsson & Sjöström, 2007; Kleiven et al., 2004; Williams et al., 2002). Thornton & Quinn (2010) found that risk perceptions of Canadians concerning cougars was positively related to the proximity of respondents to urban areas,

which suggests that urbanity indeed could influence risk perceptions. In order to see if this effect also matters for Dutch citizens, the following Hypothesis was postulated:

04. People who consider themselves to live in urban areas have a lower risk perception and higher risk acceptance of risks concerning wolves/wild boars.

Insight into all three vicinity measures can be useful for nature management. For instance, if objective vicinity is an important factor to risk perception or acceptance, then communication efforts can have a primary emphasis on the areas that are likely the first to encounter the risks involved. If perceived vicinity or urbanity matters to risk perception or acceptance, then efforts can be made to enhance or reduce these perceived levels of vicinity or urbanity, or the assumptions underlying it (for instance, living in urban areas safeguards one from wolf-encounters).

Prior experience. Secondly, whether or not people have prior experience[4] with risk topics, this can influence risk perceptions (Barnett & Breakwell, 2001). Prior experience is found to influence attitudes of people towards wildlife, whether experience is indirect (Karlsson & Sjöström, 2007) or direct, and whether it originates from hunting or victimization by a wild animal (Ericsson & Heberlein, 2003) or from suffered economic losses (Kleiven et al., 2004). Thus, experience with wildlife can be an important factor for risk perceptions and acceptance.

Experience is related to one's vicinity to nature areas, since people who live in the vicinity of the habitats of wildlife are more probable to have actual encounters – experience – with animals (Ericsson & Heberlein, 2003). However, experience is not completely dependent on vicinity, because wildlife encounters can also originate from daytrips into nature areas, or encounters on the road; both situations do not require a person to actually 'live' close to the habitat of the risky animal. Moreover, experiences from others can also influence people's attitudes towards wildlife (Karlsson & Sjöström, 2007); this may also be the case for risk perceptions or acceptance concerning wildlife.

In their study on prior experience on risk perceptions, Barnett and Breakwell (2001) distinguish between three aspects of experience – quantity, impact and valence – and found that experience had

[4] Experience in this study is interpreted as exposure to wildlife.

explanatory power *"over and above the more commonly used predictor variables of gender and perceptions of "dread" and "knowledge*" (Barnett & Breakwell, 2001, p. 176). They found that higher risk perceptions were linked to increased frequency of experience, higher reported impact of the experiences and a more negative value judgement of the experiences. In line with these findings, the following three Hypotheses were postulated:

05. People with more prior experience with wildlife encounters have higher risk perceptions and lower risk acceptance of risks concerning wolves/wild boars.

06. People whose experiences had big impacts on them have higher risk perceptions and lower risk acceptance of risks concerning wolves/wild boars.

07. People who judge their experiences more negative have higher risk perceptions and lower risk acceptance of risks concerning wolves/wild boars.

***Model*.** The suggested model is visualised in Figure 1 below. It presents Hypothesis 1 to 7.

- Insert Figure 1 here –

OVERVIEW OF STUDIES

This research aimed to investigate the relation between vicinity to wolf or wild boar habitats and prior experience with wildlife on the one hand, and risk perception and acceptance of risks concerning wolves and wild boars on the other hand by means of two subsequent questionnaire studies. Because the division of the concept 'prior experience' into quantity, impact and valence has not been tested before in a Dutch setting, a pilot study was done first to test whether this distinction was capable of explaining risk perception and acceptance on a wide range of risks. Based upon findings from this pilot study the three-fold division of the concept 'prior experience' was used for the subsequent main study. In this latter study, experience, subjective and objective vicinity and urbanisation were operationalized in a questionnaire on risks concerning wolves and wild boars, in order to test Hypotheses 2-7. In addition, risk factors from Fischhof (1978) were translated and used for testing of hypothesis 1. Below, the results from the pilot study will be presented, firstly, followed by a brief discussion and consequently the main study results.

RESULTS

PILOT STUDY

Method.

Participants and Procedure. The pilot study was part of a university course where students handed out questionnaires on a risk topic of their choosing. In total more than a thousand people, contacted in public places, responded to these questionnaires (*N* = 1024), divided over ten risk topics with approximately a hundred respondents per topic.

Measures.

Socio-demographics and control variables. Socio-demographics were measured to control for differences, by entering gender (0 = male, 1 = female), age (in years), religiousness (0 = no, 1 = yes) and education (four-options multiple choice) as covariates in the analyses. Additionally, two control variables on personal characteristics were measured; knowledge on the risk topic (mean score on 5 knowledge true/false questions) and innovativeness of the respondent (computed average on two statements on the willingness to try out new products and on pioneering in use of new technologies; 1 = totally disagree, 7 = totally agree).

Risk perception. Risk perception was measured with two seven-point scale items. Respondents were asked about how safe they thought the situation was (1 = extremely unsafe, 7 = extremely safe), and how risky it was (1 = very risky, 7 = totally safe). The responses had a high scale reliability (α = .83). An average score of both items was computed and used for further analysis. The scale was inversed for ease of interpretation; high scores on the scale equal high risk perceptions.

Risk acceptance. For risk acceptance again two 7-point scale items were used. Respondents were to state their agreement or disagreement (1 = totally disagree, 7 = totally agree) on two statements; first a statement about whether the risk in question is acceptable, secondly a statement similar to the first, but with a synonym instead of the term 'acceptable'. Responses had a high scale reliability (α = .87). An average score of both items was computed and used for further analysis.

Experience. In line with Barnett and Breakwell (2001) three questions were asked about the experience people had with the risk-topic of the questionnaire. All three questions were based on self-reported experiences of respondents, and were measured on 7-point scales. The first question tapped into the amount of experience people had with the risky item or situation (1 = very little, 7 = a lot). Secondly respondents were asked about the impact of these experiences on their lives (1 = very small, 7 = very big). Thirdly, there was a question on whether these experiences were received as more positive or more negative (1 = very negative, 7 = very positive).

Results.

Demographics were close to the average Dutch society, although complete representativeness cannot be claimed on basis of the results. The percentage of women in the sample was 54.8%, which is more than the average in Dutch society (50.5%, CBS (2012)), and the average age of the sample was lower than the average of 39 years in Dutch society (M_{age} = 31.38, SD_{age} = 15.31, ranging from 11 to 82). Approximately 58% of the respondents said they were non-religious and about 43% claimed to have obtained higher practical or academic levelled education.

In order to test the applicability of prior experience into a three-fold question – for the sake of answering Hypotheses 5-7 in the main study – two-step linear regression analyses were conducted, with risk perception and acceptance as dependent variables. Table 1 presents the results of the two hierarchical regression analyses. Two steps were included in the regression analyses: in the first step demographics were entered – age, gender, education and whether people were religious or not. Additionally, two personal trait-like variables were entered: a measurement of how innovative people judged themselves to be and a measurement of how much they knew about the risk in question. The second step in the regression analyses introduced the three variables on experience. The adjusted R^2 in the regressions indicated that this second model explained 11.7% of the variance in risk perception (R^2=.12, F(8,946)=16.752, p<.001) and 12.9% of the variance in risk acceptance (R^2=.13, F(8,950)=18.72, p<.001). Thus, the variables on experience added 7% and 6% respectively to the explained variance of the regression models on risk perception and acceptance.

- Insert Table 2 here -

In the second step, risk perception and acceptance were both influenced by age – older people judged risks to be higher, and less acceptable – but gender and education only influenced risk acceptance –lower educated men accepted risks more than higher educated women. This confirms earlier findings from risk perception studies on the 'white male effect' (e.g. Finucane et al., 2000). Both innovativeness and knowledge of respondents were significant predictors for risk perception; both characteristics added to reduced risk perceptions. Furthermore, having more knowledge also predicted finding risks more acceptable. However, both constructs were oriented towards risks concerning *man-made* products; these constructs are less applicable to the risk studied in the main study, which is a *natural-borne* risk.

From the three questions on prior experience, the valence of prior experiences emerged as the strongest of the three items. Valence was highly significant for both risk perception and acceptance, with more positive experiences predicting lower risk perception and more acceptance. Additionally, the height of impact of experiences was a significant predictor for risk perception but

only marginally significant for acceptance. This indicates that when impacts of experiences are higher, people perceive risks as riskier, and there is a trend towards less acceptance. The item on the amount of experience predicted neither risk perception nor acceptance.

DISCUSSION PILOT STUDY AND INTRODUCTION TO MAIN STUDY

Firstly, the above discussed pilot study was useful in discovering whether asking about people's risk perception and acceptance with a two-item question was warranted. There was a high reliability between the two items for both constructs, yet also significant differences between their means. In other words, people judged the two items to be different from one another, yet their answers on both items were highly related, giving reason to use the two items' averages as a single measure for risk perception and acceptance respectively. This is in line with recommendations from Gliem and Gliem (2003) who state that reliability of multi-item questions is considerably higher than single-item questions. Therefore, in the main study this procedure was repeated.

Moreover, the pilot study showed how the amount of experiences with a risky product or situation had no influence on people's risk perceptions and acceptance, but that qualitative aspects of such experiences – level of impact and value ascribed to the experiences – did. However, despite that the data from the amount of experiences does not produce significant results, it is difficult to omit this question in a questionnaire; it would make a questionnaire needlessly difficult to comprehend if respondents are straightaway asked about qualitative aspects of experiences without first asking if they had prior experiences or not in the first place. Therefore all three items on experience were used in the subsequent main study.

Additionally, personal characteristics such as innovativeness and knowledge were found to be important contributors to risk perception and acceptance. But because innovativeness and knowledge are less applicable traits to the risks concerning wildlife, it was decided to adopt a personal trait concerning the natural risks specifically. A previously studied construct focusing on environmental orientation (New Ecological Paradigm Scale) was found to be relevant for ecological risk perceptions (Slimak & Dietz, 2006; Willis & DeKay, 2007). Because the NEP scale is a 16-item scale it was too long

for adoption in this questionnaire. Instead, a shorter construct measuring a person's interest in nature was adopted, as will be explained in the upcoming main-study section.

The main study focused on the effect of experience quantity and quality – impact and valence – on Dutch citizens' risk perceptions and acceptance concerning wolves and wild boars. The effect of experience was subject of Hypotheses 5-7. In addition, the first Hypothesis about dimensions of risk factors, and Hypotheses 2-4 on vicinity to wildlife areas, were investigated in this study.

Method.

Participants and Procedure. The questionnaire was handed out in public transport; travellers were approached with the request to complete a seven-page paper questionnaire taking about 15 minutes on 'nature perceptions'. In return for participation respondents had a chance to win one of ten book-coupons. The full questionnaire in this study can be found in Appendix A. In total 214 people completed a questionnaire in public transport in the Netherlands (of which 48.6% were female; M_{age} = 39.06, SD_{age} = 18.80, ranging from 17 to 86). Of the people reporting on religion (N=206) 47.2% were religious – either Roman Catholic, Protestant, Muslim or 'other'. Higher, middle, lower and primary education were completed by 52.2%, 39.2%, 7.2% and 1.4% of the respondents, respectively.

Measures.

Socio-demographics and control variable. Socio-demographic and control variables were measured to control for differences, by entering gender (0 = female, 1 = male), age (in years), religiousness (0 = no, 1 = yes) and education (4-options multiple choice) as covariates in the analyses. Moreover, a personal trait relevant to the natural risks of wildlife – interest in nature – was measured by means of a 3-item question. Respondents were asked whether they were interested in wild animals (1 = not at all, 7 = very much so), whether they liked to go to nature areas to see such wild animals (1 = not at all = 1, 7 = very much so) and whether they visited nature areas often (1 = not at all = 1, 7 = very often). The reliability for these three items was high (α = .86). Therefore, an average of all three items was computed for further statistical analysis.

Objective vicinity. In order to objectively measure how close people lived to the German border – from where wolves are likely to enter the Netherlands – people were asked to report the first two digits of their postal code. No more than two digits were asked in order to accommodate respondents' privacy. With these digits the respondents' data was split up into two groups, one living closer to, the other farther away from the German border or the Veluwe. This division was based on three criteria. The first criterion was direct adjacency of the postal area to the German border. Respondents with postal codes directly adjacent to the German border were coded with "1". Secondly, all postal areas that had areal within 20 kilometres of the German border were coded "1". Thirdly, because wolves are most likely to inhabit a large nature area close to the German border, such as the Veluwe, if they cross the border, all postal areas that had areal within the Veluwe were included in the code "1" as well. Postal areas that met none of these criteria were coded "0". In appendix B an image is included showing the division of the Netherlands based on these criteria.

Subjective vicinity. Respondents were also asked how close they judged themselves to live near areas where wolves or wild boars respectively could live, in comparison to the average Dutch citizen (1 = much closer, 7 = much farther away). For ease of interpretation, this scale was inversed during the data analysis, so that high scores on this scale correspond to high perceived 'closeness'.

Urbanity. To measure whether respondents judged themselves to live either in an urban or a rural setting, a question was asked on whether respondents thought they lived in an urban area or in a rural area (0 = rural, 1 = urban).

Experience. In line with the results of the pilot study, the construct experience was measured with three items, one pertaining to *amount of experience* (1 = experience at all, 7 = very frequent experience), a second to the *impact of the experience* (1 = very little impact, 7 = very big impact), and a third to the *valence of experiences* (1 = very negative, 7 = very positive). Because each item is about a different aspect of experiences (quantity, impact and valence respectively) the items were not averaged into one variable but were treated separately.

Risk perception. Questions on risk perception and risk acceptance were preceded by the short description of a scenario of potential risk-encounters. Respondents were asked to envision the scenarios as if they were really happening, and consequently answer the questions. Each scenario was followed by two-item questions on both risk perception and acceptance. The first three scenarios dealt with wolf-encounters, in a garden, on the road and during a nature hike respectively. The following three scenarios were similar, but instead of wolves they dealt with wild boar-encounters. The entire questionnaire is added in appendix A. Risk perception was measured with a similar two-item scale that was used in the pilot study. Respondents were asked whether they judged the scenario safe or not, and risky or not respectively (1 = safe/unrisky, 7 = unsafe/risky respectively).

Risk acceptance. Directly following the question on risk perception for each scenario a two-item question concerning risk acceptance was asked. Respondents were asked whether they thought the risk in the scenario was acceptable or not – using a different Dutch term that is a synonym for the word 'acceptable', for the second item (1 = completely acceptable, 7 = completely unacceptable). For ease of interpretation, this scale was inversed during the data analysis, so that high scores on the scale equal high risk acceptance.

Risk factors. In order to check whether risk factors could be classified into two dimensions, a Dread dimension containing dread-related factors and a Newness dimension containing newness-related factors (Hypothesis 1), nine risk factors were translated from Fischhoff et al (1978) and adopted in the questionnaire. The following nine risk factors were used: voluntariness ("Do you have the feeling you are voluntarily exposed to the risk?"); immediacy ("Do you feel that you will experience the consequences of this risk very directly?"); knowledge of exposed ("Do you think that you know enough about this risk?"); knowledge of science ("Do you think science knows enough about this risk?"); control ("Do you feel you have control over how much risk you are running?"); newness ("Is this risk new to you?"); chronic/catastrophic potential ("Is this a risk that only a few people are exposed to, or many?"); common/dread ("When you think about the risk, can you stay calm about it or do you experience a feeling of dread?") and finally severity of consequences ("How

fatal do you think are the consequences of this risk?"). Answer options were seven-point scales ranging from one extreme to the other (e.g. in the first question: 1 = completely voluntary, 7 = completely involuntary).

Results.

Descriptive statistics and correlations. Table 2 shows the mean scores, standard deviations and correlations for all socio-demographics, control variables and the three measurements for both vicinity and prior experience. A first particularity is that men perceived less risks and found the risks more acceptable, concerning both species. Similar significances in correlations were found for age, except for risk perceptions concerning wild boars, where no significance was found. Education correlated only to risk perception and acceptance of wolves, but not to those concerning wild boars, and religion had similar correlation patterns. Thus, high education and non-religiousness correlated to lower risk perceptions and higher risk acceptance, but only in the case of risks from wolves, not in the case of risks from wild boars.

Table 2 also suggests that risk perception and acceptance are highly correlated. High risk perception correlated strongly to low risk acceptance. This suggests that indeed risk perception and acceptance are highly related to one another, as prior research has suggested (Fischhoff et al., 1978.

Additionally, subjective vicinity to both wolf and wild boar habitats was highly correlated to objective vicinity. This means that people living closer to the German border or the Veluwe actually perceived themselves to be closer to potential wolf and wild boar-habitats. Moreover, subjective vicinity was negatively correlated to urbanity; rural inhabitants felt to live closer to wildlife habitats.

From the three questions on experience, both amount and valence were significantly correlated to risk perception and acceptance concerning both animals, but impact of experiences was not. However, whether the constructs vicinity and experience were sound predictors for risk perception or acceptance required further regression analyses. First, however, the nine risk factors that were topic of the first Hypothesis, are addressed in factor analyses.

- Insert Table 2 here –

Factor Analyses. The first Hypothesis predicted that from nine risk factors adopted from Slovic (1987), two dimensions – Dread and Newness – could be identified. Factor analyses were performed for wolves and wild boars separately. Because the measured risk factors and the dimensions they would form into were likely related to one another, oblique rotations were most appropriate as a rotation method (Field, 2009, p. 644). Therefore Direct Oblimin was used, with the selection of components – also known as dimensions – based on Eigenvalues greater than 1 and a clear point of inflexion in the scree-plot. When the number of factors is less than 30, this is an accurate approach (Field, 2009, p. 641). In both cases, this led to the identification of two components, also called 'dimensions'. According to Stevens (2002) for samples greater than 200 respondents, factors loadings should be greater than .364 for inclusion of a factor onto a component. The pattern matrix was used for the analysis of the results, as is suggested in Field (2009, p. 666) because it gives insights into the unique contributions of each variable on the components of the analysis.

In the scree plot for the factor analysis concerning wolves a point of inflexion was seen after the second component/dimension. Thus, two dimensions were distinguished in the risk factors concerning wolves. Nearly all factors loaded on the first dimension: voluntariness, knowledge of those exposed and of scientists about the risk, control, catastrophic potential, dread and severity of consequences. Apart from the two factors on knowledge, the first dimension corresponded with the Dread-dimension found by Slovic (1987). Onto the second dimension voluntariness also loaded, but inversely so, as well the factors (not dimensions) newness and dread, the only positive contributor was immediacy. Two of these – immediacy and newness – correspond to the second Newness dimension found in Slovic (1987). The other factors, however, belong to Slovic's first dimension, and were in this analysis found to also load on the first dimension. No exact replication of the dimensions of Slovic (1987) could therefore be obtained. The left columns of Table 3 give the factor loadings for the two dimensions on risk factors concerning wolves.

- Insert Table 3 here –

The same procedure was also followed for the risk factors concerning wild boars, of which results are shown in the right two columns of Table 3. An even sharper point of inflexion was observed in the scree plot right after the second component, so again two components/dimensions were taken into consideration. The first dimension contained all risk factors except for immediacy of consequences. The second component only loaded immediacy of consequences, in the traditional Newness dimension found by Slovic this is accompanied by the two risk factors on knowledge, and the factor newness. Thus, the results did not correspond fully with the dimensions of Slovic (1987) and therefore, Hypothesis 1 is rejected. However, to check whether the dimensions found could be interpreted as 'belonging to one dimension', the reliability between these factors was investigated.

For the first dimensions of both wolf and wild boar risks, Chronbach's Alphas were computed to see whether the factors were consistent among one another. For the first dimension on wolf risks, the Chronbach Alpha was moderate (α = .733). This score could not be improved by deleting factors from the dimension nor by adding the factors immediacy and newness – from the second dimension. In the case of the first dimension of wild boars – which contained all but the immediacy factor – Chronbach's Alpha was also moderate (α = .744); deleting or adding factors could again not improve the reliability of this scale. This suggests that the factors in the first of both the wolf risks and wild boar risks were reliable as one dimension, and adding or subtracting factors from these dimensions would not increase their reliability; these factors could be taken together as a multi-item measure.

Objective and subjective vicinity and urbanity. Hypotheses 2 to 4 concerned the effect of respondents' objective and subjective vicinity to wolves and wild boars, and their perceived urbanity in relation to risk perception and acceptance of these species. In order to test these Hypotheses, four hierarchical regression analyses were conducted; two regression analyses for wolves, and two for wild boars, with as dependent variables risk perception and acceptance respectively. Each regression analysis consisted of two steps. In the first step socio-demographic variables were entered in order to control for relationships with these variables and others. The interest in nature variable was

entered as a personality trait in this first step as well. In a second step, the variables measuring urbanity, subjective vicinity and objective vicinity were entered.

In Table 4 the results of these regression analyses are presented (step 1 and 2 are shown in the first and second column of each of the 4 analyses).The adjusted square R-values indicate that the second model with the three items on vicinity explained 11.2% of the variance in risk perception concerning wolves (R^2 = .11, F(8,182) = 4.00 p < .001) and 31.2% of the variance in risk acceptance concerning wolves (R^2 = .31, F(8,180) = 11.66, p < .001). Concerning wild boars, the second model explained 7.4 % of variance in risk perception *(R^2* = .08, F(8,182) = 2.89, p < .01) and 17.0% of the variance in risk acceptance (R^2 = .17, F(8,181) = 5.83, p < .001).

- Insert Table 4 here –

For risks concerning wolves, neither risk perception nor acceptance was predicted by the three variables of vicinity. Correlation Table 2 however suggested that both objective and subjective vicinity were highly correlated to acceptance of wolf-encounter risks. The correlations suggested that both actual closeness to the German border or the Veluwe, and perceived closeness to wolf habitats were positively related to risk acceptance. No correlation between urbanity and risk perception or acceptance was found, and in the regression analysis indeed urbanity did not contribute either to risk perception or acceptance concerning wolves. Yet, the significant correlations found in Table 2 – between vicinity and risk acceptance – were not found in the regression analyses in Table 3, which suggests that the correlation found in Table 2 was mediated by other variables.

The regression analyses on wild boar risks resulted in (marginally) significant findings for objective and subjective vicinity as predictors to risk perception and risk acceptance respectively. First of all, objective vicinity was a marginally significant predictor of risk perception; living closer predicted lower risk perceptions. Secondly, subjective vicinity significantly predicted risk acceptance; feeling closer to a wild boar habitat corresponded to more acceptance of risks concerning wild boars. Again, the variable measuring urbanity had no predictive power over either risk perception or acceptance.

These findings suggest that – in line with Hypothesis 2 - objective vicinity to the German border or the Veluwe influenced risk perceptions, but the direction of this influence was in contrast to what was expected. The Hypothesis proposed that objective vicinity would increase risk perceptions, whereas the findings from the regression analysis suggest that risk perceptions were actually lower for those living closer to the German border or the Veluwe. This was only the case for wild boar risks, but not for risks concerning wolves; objective vicinity did not have any influence on either risk perception or acceptance concerning wolf risks.

Hypothesis 3 – stating that subjective vicinity will increase risk perceptions and decrease acceptance – was confirmed partly. In case of wild boars, the perceived closeness of people to the animal's habitat predicted acceptance of risks posed by the animal. However, again the direction of the influence was counter to what was hypothesized; increased subjective vicinity was related to more, rather than less, risk acceptance. Again, no results were found for risks concerning wolves.

Finally, Hypothesis 4 concerning self-judged urbanity of people had no significant effect on risk perception or acceptance, for either species. Thus, this Hypothesis is not supported by this study; urbanity – measured by asking participants to fill in their self-perceived level of urbanity – does not influence risk perception or acceptance directly.

The lack of significant findings for wolf related risks suggests that an influence of 'actual encounters' might be important, and that effects of vicinity are mediated by these experiences. Therefore, the construct of 'experience' was also measured and analysed in the same regression analyses, in order to see whether it had a mediating effect on the constructs of vicinity. The next section will dive deeper into the findings from this third set of questions on prior experience.

Prior experience. In order to test the Hypotheses on experience – amount of experience, impact and valence – the four regression analyses discussed above and shown in Table 4 were expanded with a third step, containing three experience variables: amount, impact and valence.

Table 4 presents the results of these regression analyses in the third column of each set of regression analyses. The results of the regressions indicated that the third model with the three

items on experience explained 12.5% of the variance in risk perception concerning wolves (R^2 = .13, F(11,179) = 3.42, p < .001) and 32.5% of the variance in risk acceptance concerning wolves (R^2 = .33, F(11,177) = 9.22, p < .001). When comparing these results to the explained variance of the first step in the regression – which covered only demographics and interest in nature – there is no improvement in explained variance for risk perceptions, but there is an increase of 1.7% in explained variance for risk acceptance. This means that for acceptance of wolf-related risks the addition of prior experience and vicinity variables increased the model's explanatory power.

For wild boars, the third model explained 11.8% of variance in risk perception (R^2 = .12, F(11,179) = 3.30, p < .001) and 21.9% of the variance in risk acceptance (R^2 = .22, F(11,178) = 5.82, p < .001). When comparing these results with explained variance from the first step on demographics, the third model concerning risk perception has an increase of 6.4% in explained variance and concerning risk acceptance there is an increase of 6.4% as well.

Hypothesis 5, which predicted that with more prior experiences risk perceptions would be higher, and acceptance lower, was not supported by these findings and Hypothesis 4 must therefore be rejected based on these results. The amount of people's experiences with wildlife did not directly affect risk perceptions nor risk acceptance concerning wolf or wild boar risks.

Hypothesis 6, concerning the influence of impact of experiences on risk perception and acceptance resulted in marginal significance only in case of risk acceptance concerning wild boars. Impact of experiences was no predictor to risk perception, nor to acceptance of wolf-risks. The results therefore only partly support Hypothesis 6; that at least for wild boar risks, the larger the impact of experiences with wildlife encounters the lower people's risk acceptance is.

For both species, the valence of prior experiences was found to significantly predict both risk perception and acceptance. With negatively valued experiences come higher risk perceptions and lower acceptance. This is completely in line with what was proposed by Hypothesis 7.

Despite the lack of findings from Hypothesis 5 concerning amount of experiences, experience may be a candidate for mediating the link between subjective vicinity and risk acceptance. In order to investigate this, supplementary analyses were done as discussed below.

Supplementary Analyses. Table 4 illustrates how the beta coefficients of subjective vicinity dropped after adding experience constructs to the regression. This suggests that one of the three constructs of prior experience might mediate between subjective vicinity and risk perception and acceptance. When living near wildlife habitats, the chance of experiencing wildlife encounters is bigger, so on average those who live closer could have more experiences with wildlife. Rather than living in the vicinity, the experience with wildlife – and aspects of that experience – may be more important for risk perception or acceptance. Vicinity of people to wildlife habitats would in that case only indirectly influence risk perception and acceptance. The regression analyses support this suggestion; when the three variables on experiences were added in the third regression step, the subjective vicinity beta coefficients changed in all regressions, and in the case of acceptance of wild boar risks it reduced significance to insignificance.

Independent T-tests were done to see if aspects of people's prior experience differed for people who perceived themselves to live closer than average to wolf or wild boar habitats. The respondents' data was divided into two groups, one scoring high, the other scoring low on subjective vicinity. Consequently for these two groups the average scores on the three experience variables were compared. *Experience amount* was indeed higher for those who judged themselves living closer than average to wild boar habitats (M = 3.64; SD = 2.10) than the farther away group (M = 2.63; SD = 1.81). This difference was significant ($t(206) = 3.64$, $p < 0.001$). Similar results were found for differences in amount of experiences in the case of wolf habitats; those living closer by had more experience (M = 3.62; SD = 2.16) compared to those who answered that they lived farther away (M = 2.68; SD = 1.75). Again, the difference was significant ($t(207) = 3.38$, $p < 0.01$). No significant differences were found for the other two experience measurements – impact and valence – when comparing the two 'subjective vicinity' groups.

In order to explore whether experience amount was indeed a mediating variable, a Sobel Test was done (Baron & Kenny, 1986) for the mediating effect of experience amount concerning risk acceptance of wild boars, because this was where the variable of subjective vicinity was reduced to insignificance by adding experience to the regression. The Sobel test turned out to be significant (z = 2.12, $p < 0.05$). This mediating effect as well as the significant beta-coefficients for other variables are schematically displayed in Figure 2 below.

- Insert Figure 2 here –

Another finding that merits some supplementary attention is related to the construct of interest in nature, which had very significant and high beta-coefficients in the regression analyses. Because no Hypothesis was formulated to investigate this construct further there will be no statistical analysis to explore these findings, but given the significant results it was judged unfair to leave them unmentioned. Therefore, interest in nature is discussed briefly below.

When looking at Table 3 it becomes apparent that the beta coefficients of interest in nature drops firstly after adding vicinity variables, and even more after adding prior experience variables. In the case of risk perception the latter reduction even results in a loss of significance; a p value lower than 0.05. This suggests that the variable is related to – and possibly even mediated by – the variables on vicinity and experience. When looking at the correlations in Table 2 this suggestion is corroborated; interest in nature is highly correlated to particularly subjective vicinity (r(214) =.24, p<.01 and r(214).29, p<.001 for wolves and wild boars respectively) and to all three of the experience constructs (r(214) =.43, p<.001 for amount of experience, r(214).32, p<.001 for impact of experience and r(214) =.37, p<.001 for valence of experience). These correlations and the drop in beta coefficients after entering vicinity and experience variables in the regression analyses, suggests that the relationship between interest in nature and risk perception and acceptance is mediated by both subjective vicinity and experience. However, especially for acceptance, interest in nature remains a significant predictor even after adding vicinity and experience variables in the regressions, so even if interest in nature is mediated by vicinity and experience, this is only partly so.

Because the suggested mediating effects are expected to be highly complex due to multiple possible mediators – both subjective vicinity and the three constructs on experience could play a mediating role – in this paper no further statistical analyses are done. This requires formulation and testing of additional Hypotheses on this topic. Suffice to say for this supplementary analysis-section, is that interest in nature has a very strong influence on risk perception and even more so on risk acceptance concerning both wolves and wild boars, both by mediation via other variables, as well as by directly affecting risk perception and acceptance.

GENERAL DISCUSSION

The first Hypothesis focused on reproducing the risk dimensions of Dread and Newness. However, in the main study, the exact replica of these was not possible in case of risk factors measured for wild boar- and wolf risks. Thus, as Hypothesis 1 could not be confirmed, the two dimensions found by Slovic (1987) seem not to be universally applicable to all risks. Yet, both risk topics did produce two distinctive dimensions which were noteworthy predictors of both risk perception and acceptance. So even though the exact dimensions of Slovic (1987) were not found, this does suggest that – in line with the approach of psychometric studies – a few overarching dimensions can be distilled from a range of 'factors' of risks. These dimensions were found to be strongly related to both risk perception and acceptance. This latter finding corroborates the idea that risk perception is related to risk acceptance, and that factors for risk perception are also factors for acceptance of that risk.

An explanation for not finding Slovic's exact dimensions could be that in the main study only two very specific risk topics were investigated, whereas Slovic's (1987) prior factor analyses were done with data on many different risks. Although the questionnaire tapped into different scenarios in which the risks could occur to replicate this diversity, maybe this was not enough to mimic the very diverse risk topics addressed in original psychometric studies. Moreover, those risk topics from prior research were acknowledged by most people as 'risky', such as risks of radiation and flooding. It might be the case that the risks concerning wildlife in this study were not considered 'risks' by some

respondents. The risks of wildlife were not compared to other more 'common' risks, such as radiation risks, which could be an interesting avenue for further research.

The second dimension of both factor analyses contained the risk factor 'immediacy of consequences' with extremely high factor loadings, which is a peculiarity that merits an explication. A reason for this finding may lie in the questionnaire itself. People were first asked to 'imagine an actual encounter', followed by some questions, and consequently they were asked to think about the '*possible risk* of encountering a wolf/wild boar', after which the risk-factor questions were asked. It could be the case that respondents were still thinking of the actual encounter, rather than the '*potential risk* of encountering'. If this is true, then the question on 'immediacy' would have made little sense to respondents; it asked people whether they considered the consequences of the risk to be immediate or delayed in time. If people were still thinking in terms of standing 'face-to-face' with an animal, then logically the consequences would be immediate and not delayed in time. The confusion concerning this question could therefore have partially caused the extremely high loading[5].

None of Hypothesis 2 to 4, concerning people's vicinity to the risk – objective or subjective vicinity, or perceived urbanity – were confirmed by this study. Subjective vicinity was only related to wild boar risk acceptance, but after considering experience the relationship between subjective vicinity and acceptance disappeared. Only a weak relationship was found between objective vicinity and risk perception, again only for wild boar risks. A possible reason why no relationships were found between wolf-related risks and subjective vicinity may lie in the fact that the wolf does not yet inhabit Dutch nature areas, and that people are aware of this. Each person feels equally distant to these wolves, being abroad and not in the Netherlands. People could be convinced of this, since newspapers framed the topic of wolves entering the Netherlands as such; they were depicted as 'newcomers' and thus 'from abroad'. Thus, many Dutch people may be aware that the wolf is not yet

[5] Because this was not additional to answering Hypothesis 1 a further analysis into the possible effects of this confusing question was not adopted into this research paper. The interested reader is therefore referred to Appendix D for a deeper analysis of what happens when the factor 'immediacy' is left out of the equation.

living in the Netherlands, and this could have affected their scores on the scale of perceived vicinity. This suggestion is supported by the fact that subjective vicinity did relate to risk perception and acceptance for wild boar risks, but not for wolf risks.

A finding that merits more attention is that the connections between vicinity and risk perception and acceptance were reversed to what previous literature suggested and the Hypotheses posited. In Teigen (2005) for instance, proximity to a risky situation or topic led people to estimate probabilities of risks as higher than to risks that were less proximate. In line with this, it was proposed in Hypothesis 2, that people living closer to the German border – where wolves could be expected to enter the Netherlands – or to the wild boar habitat on the Veluwe[6], would have higher perceptions on the risk. Moreover, Hypothesis 3 proposed that perceived closeness or 'subjective vicinity' would affect risk perception in a similar manner. Because risk perceptions are inversely related to risk acceptance (Fischhoff et al., 1978), these Hypotheses were extended to predict the reversed connection with risk acceptance; vicinity would lead to lower acceptance levels. Moreover, urbanity was found to influence attitudes (Bjerke et al., 1998; Karlsson & Sjöström, 2007; Kleiven et al., 2004; Williams et al., 2002) and even risk perceptions (Thornton & Quinn, 2010), which is why Hypothesis 4 postulated that with increased urbanity risk perceptions would decrease, and acceptance would increase. Yet, this study could not replicate any of these results concerning links between urbanity and risk perception or acceptance, and only very weak relationships between both objective and subjective vicinity and risk perception and acceptance. The weak relationships that were found, moreover, were opposite to what was expected; risk perception was lower for those living close to the Veluwe or the German border, rather than higher, as was expected in Hypothesis 2. Similarly, subjective vicinity to wild boar habitats had a positive relationship with risk acceptance, rather than the hypothesized negative relationship. Finally, adding experience variables made these connections even weaker.

[6] The other area where wild boars roam freely is the Meinweg. This area is located within the first criterion of 'closeness to German border' which is why it is not mentioned as a separate criterion for 'objective vicinity'.

One explanation for the lack of connection between vicinity and risk perception and acceptance lies in the potential mediating influence of prior experience. Further testing corroborated this suggestion; when the amount of prior experience was added in the regression, the predictive power of subjective vicinity dropped considerably in the case of acceptance of wild boar risks. This was not the case for objective vicinity, which suggests that objective vicinity is not mediated by experience. It could be that people infer their subjective vicinity-judgment from prior experiences, and also infer risk perceptions and acceptance towards wildlife from the same prior experiences.

Both the main study and the pilot study showed the great influence of the valence of prior experiences on risk perception and acceptance. Moreover, impact of experiences was related to risk perceptions in the pilot study as well, but not in the main study. This suggests that especially the way people value their prior experience, and to a lesser extent the impact of such experiences, are aspects of prior experiences that influence risks concerning wildlife – shown in the main study – and also for a diversity of other risks – as shown in the pilot study. This corroborates findings from Barnett & Breakwell (2001) who also found that impact and valence of experiences were the two most relevant aspects of experience for the prediction of risk perception for a broad range of risks.

Additionally, two other findings merit mentioning. Firstly, this study showed that factors influencing risk perception also mostly influenced risk acceptance and that the two – perception and acceptance – were highly but inversely correlated to one another. Secondly, the study showed that the measure on interest in nature was an important determinant to both risk perception and acceptance, one that might merit future investigation.

PRACTICAL AND THEORETICAL IMPLICATIONS

This study showed that the dimensions of Dread and Newness are not universally applicable to all risk topics, but that the idea of identifying a few dimensions for risk perception and acceptance is viable. Perhaps the dimensions of Dread and Newness can be found on aggregate levels incorporating many different risks, but not on a risk-specific level, such as was the case in the main study. Unfortunately the risk factors from the main study were not measured in the pilot study, due

to restrictions in length of the questionnaire. This could have allowed for a better understanding of the potential of finding risk dimensions when different risks are considered. However, it is clear that risk factors were highly correlated with one another, and clusters of risk factors, called 'dimensions' could be distinguished, although they do not necessarily correspond exactly to the Dread and Newness dimensions of Slovic (1987).

Objective vicinity did not seem to affect people's risk perceptions or acceptance, and neither did self-reported urbanity. In case of the latter variable, it might be interesting to investigate whether a stronger relationship emerges when a more objective measurement of urbanity is used. For instance, by asking people for their full postal code, a more objective distinction between urban and rural living conditions could have been made, which might have resulted in more relevant findings. Subjective vicinity was connected to risk acceptance, but was mediated partly by experience. In terms of theoretical implications, the findings from the main study indicate that the relationships between vicinity and attitudes, found in prior research concerning wildlife cannot be extrapolated to risk perception or acceptance without first investigating these relationships further.

Additionally, another theoretical implication is that this study suggested the mediating influence of experience to the relationship between vicinity to wildlife habitats and risk perception and acceptance. People who judged themselves to live closer to wild boar or wolf habitats actually also had more experience with wildlife encounters. Such prior experience, and specifically the way these experiences are valued by people, did influence risk perceptions and acceptance concerning wildlife, the more positive these experiences were, the more accepted the risks, and the less risk was perceived. Future studies ought to dive deeper into this before a sound theoretical framework can be based on the connections between these separate but related constructs of vicinity, experience and risk perception and acceptance.

Practical implications of this study are that nature managers now have a body of knowledge available concerning factors of risk perceptions and acceptance that are country- and species specific. The results of both the pilot and the main study showed that especially the value people

assign to prior experiences is an influential factor for risk perception and acceptance. This suggests that nature managers could try to influence risk perceptions and acceptance by offering people possibilities to have positive encounters with wildlife and by attempting to make such experiences either positive or negative. Such experiences need not be personal, however, since people are also often very influenced in their perceptions by others (Bonninger et al., 1995). Hearing others' experiences or learning from others via the media was related to people's attitudes and knowledge towards wolves (Karlsson & Sjöström, 2007, Hook & Robinson, 1982) and could maybe also be linked to people's risk perceptions and acceptance.

The factor interest in nature was not part of a formal hypothesis in this study but findings about it may still guide future communication efforts between nature managers and the public. People's interest in nature influences how acceptable they judge the risks of encountering wildlife. An entry point for nature managers might be to aim for an increase in people's interest in nature, thus increasing public acceptance concerning wolf-related risks, so that the public will be less opposed to the possible future of wolves crossing the border.

STRENGTHS, LIMITATIONS AND FUTURE DIRECTIONS

This section shortly describes the most urgent constraints for the study itself: the sampling method and questionnaire content. Additionally, a few words are said about the strong points and limitations that are related to the choice of using APA formatting in this paper. Following, three interesting future directions are identified. First, the mediating effect of interest in nature and prior experience via other variables perception and acceptance, secondly, whether experience needs to be personal or can be vicarious and thirdly, cross-national comparisons.

Limitations to the study. First, the sampling method – inviting people in public transport to fill out a questionnaire – may have resulted in a biased sample. Similar constraints are subject to the pilot study, where students approached people in various public areas. Although such an approach is very cheap and results in a fairly quick way of distributing and retrieval of many questionnaires, the sample that is reached is not representative for the entire Dutch population. On the other hand,

within the constraints of public areas, both in case of the pilot study as well as in the main study it was strived for to find a research population that was as diverse as possible. This means that people from various ages, gender, denomination and education agreed to participate. Thus, within the limits of what was possible and available in public areas, the maximum diversity was sought after. Future research might, however, opt for a more representative sampling technique, for instance by mailed questionnaires. This could result in more diverse data and consequently could have an effect on the influence of the objective vicinity and urbanity variables on risk perception and acceptance.

A limitation to the questionnaire of the main study was that the self-reported urbanity question may not have been a valid measurement of people's actual living condition. It has been argued above that this can be solved by asking respondents for their full postal code rather than only the first to digits, in consequent studies. Moreover, the question on immediacy was possibly misunderstood by some respondents, resulting in deviating responses. Future questionnaire designs may focus on specifically these questions and try to rephrase them more clearly and understandable.

Strong points and limitations of using APA formatting. In writing this paper it was attempted to adhere strictly to the rules of APA style and format. A strength of using APA is a strict adherence to the formulation and investigation of Hypotheses, and thus avoidance of cherry-picking results from the available data. Use of the APA style and format therefore promotes scientific rigour and replicability of the study and stimulates the writing of short and concise papers. But this strict adherence to Hypothesis-testing also prevents the researcher from investigating other findings that emerge from the data unexpectedly, though not covered in a Hypothesis. To alleviate this omission slightly, the section 'supplementary analyses' was created for those findings that were not part of a specific Hypothesis, but which were nonetheless so relevant to the topic at hand that they merited being mentioned. Despite this section, however, many other interesting findings that could have been mentioned were omitted for the sake of conciseness of the paper. In Appendix D some additional analyses can be found for interested readers. Yet, if the paper would not be so strictly

focused on Hypothesis testing, there might have been room available for the appendixed analyses and findings to be reported in the paper itself.

This choice for APA style and format, and strict Hypothesis testing, has made the paper readable for a select audience – scientists who are familiar in the field of risk perception and acceptance – but less readable for outsiders who might be interested in the findings – such as nature managers. Such a choice is legitimate, as long as it has been made purposively, which is the argument of this paragraph; despite the drawbacks for readability for lay-people, the benefits of scientific rigour and replicability make APA the preferred style for this paper. For nature managers, a short and simplified version of the most relevant and applicable results could be written afterwards.

Three possible future research orientations. Apart from these technical and editorial issues, this paper also showed that there is still much more to be discovered about risk perception and acceptance concerning wildlife than could be covered in this study. Several things that remained unanswered in the main study beg further investigation, three of which are mentioned here.

First of all, the possible mediating role of experience with wildlife between subjective vicinity on the one hand, and risk perception and acceptance on the other hand begs for further investigation. The study indicated that experience mediated between subjective vicinity and acceptance of wild boar risks, but the exact working mechanism behind this is still unclear, as is the potential of experience to also mediate between subjective vicinity and risk perception and acceptance concerning wolf-related risks. In the main study the relationships between these constructs were too weak to give conclusive findings on such mediating connections, but further studies with clearer measures on experiences and subjective vicinity may shed more light onto the interaction between experience, vicinity and risk perception and acceptance. Moreover, the connection between experience valence and the other constructs needs to be further investigated in order to know whether influencing valence can be a good entry point for communication plans aimed at the public's risk perceptions or acceptance. Also related to investigating the mediation of factors is the effects of the personality trait 'interest in nature' to risk perception and acceptance,

which could have been a mediator via for instance experience or subjective vicinity. Although the results did suggest that such mediated effects could be present, future studies should formulate clear hypotheses concerning the construct 'interest in nature', maybe even elaborate upon the construct itself and investigate further how the mediating effects work from this construct, via prior experience, vicinity to risk perception and acceptance.

It was suggested that experiences need not be experienced directly, but risks from familiar others or even 'hear-say' – vicarious experience – can be influential as well. Even TV influence and casual talks with friends may be influential to people's knowledge of wolves (Hook & Robinson, 1982) and their attitudes towards these animals (Karlsson & Sjöström, 2007). Whether this also goes for risk perceptions concerning risks with wildlife encounters remains unanswered in current scientific literature. To find out, an experimental design could be applied where particular groups experience an actual encounter with a particular species, whereas other groups are either told about an experience by a friend, or from a stranger or news article. Differences in risk perceptions after these procedures could be ascribed to the level of directness of experiences (whether they were experienced personally, by familiars or by complete strangers). Finding out whether and to what extent indirect experiences are effective in influencing people's risk perception can greatly facilitate nature managers' communication planning. It makes rather a difference whether people have to be approached and guided into an experience with wildlife individually and personally, or whether they can also learn by hearing from others' experiences.

Finally, an interesting future investigation could focus on cross-country comparisons, for instance with German citizens. In Eastern Germany, wolves are re-emerging and currently there are more than 11 packs roaming the East German country-side. Moreover, they are moving from East to West, and only recently a wolf was found – and illegally shot – in the Rhineland, very close to the Dutch-German border ("First Wolf in Rhineland", 2012)How are risk perceptions of Germans concerning these risks and how do they accept it? And how do the factors investigated in this study, vicinity and experience, influence Germans' risk perceptions and acceptance? Is the effect of

experience or vicinity bigger, or smaller? Of course, a comparison with a country where residents always had to deal with dangerous wildlife species could be added to such a cross-national set-up.

CONCLUSION

This study showed that risk perceptions and acceptance of wildlife in the Netherlands can be partially explained by the experience people have with wildlife and the way they value these experiences, and that experience mediates between vicinity towards wildlife and risk acceptance. These insights expand current scientific understanding of risk perception and acceptance, and factors influencing these. Practically, the insights could be used by nature managers to further their communication with the Dutch public. Of particular interest to them can be the potential of values people ascribe to wildlife experiences, and their effect on risk perception and acceptance. For instance, by using either positive or negative experiences as means to reduce or increase people's risk perception concerning wildlife species, by either directly or indirectly offering such experiences. Directly, nature managers could offer nature excursions, and indirectly, they could use experiences of others to vicariously teach people either to have more or less risk perceptions and acceptance concerning particular wildlife species. The most important finding from this study is that in order to understand people's risk perceptions and acceptance concerning wildlife risks or other risks, it is very important to consider the effects of amount, impact and valence of prior experiences with the risk topic. Positively judged experiences reduce risk perception and increase acceptance of such risks, whereas high impact can potentially reduce risk perceptions. Moreover, experience can be a mediator to other variables, such as perceived closeness to wildlife habitats. In any case, people seem to infer – parts of – their risk perceptions and acceptance on their prior experiences with the risk in question. In order to communicate with the public about wildlife related risks and influence their risk perceptions and acceptance, therefore, nature managers could use people´s experiences with such wildlife as an entry point and tailor their communication to consider these experiences and its influence.

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TABLES & FIGURES

Table 1: *Results of Regression Analyses (Pilot study; N = 1024)*

	Risk perception		Risk acceptance	
Step and Variables	1	2	1	2
1. Gender	-.05	.04	-.10**	-.09**
Age	.18***	.14***	-.22***	-.19***
Education	.02	.02	-.09**	-.09**
Religious	.05†	.05	-.05	-.05
Innovativeness	-.09**	-.09**	.00	.00
Knowledge	.07*	.07*	.13***	.11***
2. Experience – amount		.06		.06
Experience - impact		.12**		-.07†
Experience - valence		-.24***		.22***
ΔR^2	.05	.12	.08	.14
Adjusted R^2	**.05**	**.12**	**.07**	**.13**

Note to Table 1. Standardized regression coefficients are reported for the respective regression steps.

Step 1 including socio-demographics, Step 2 including socio-demographics and three questions on experience. † $p < .05$ (one-tailed test); * $p < .05$ (two-tailed test); ** $p < .01$ (two-tailed test); *** $p < .001$ (two-tailed test).

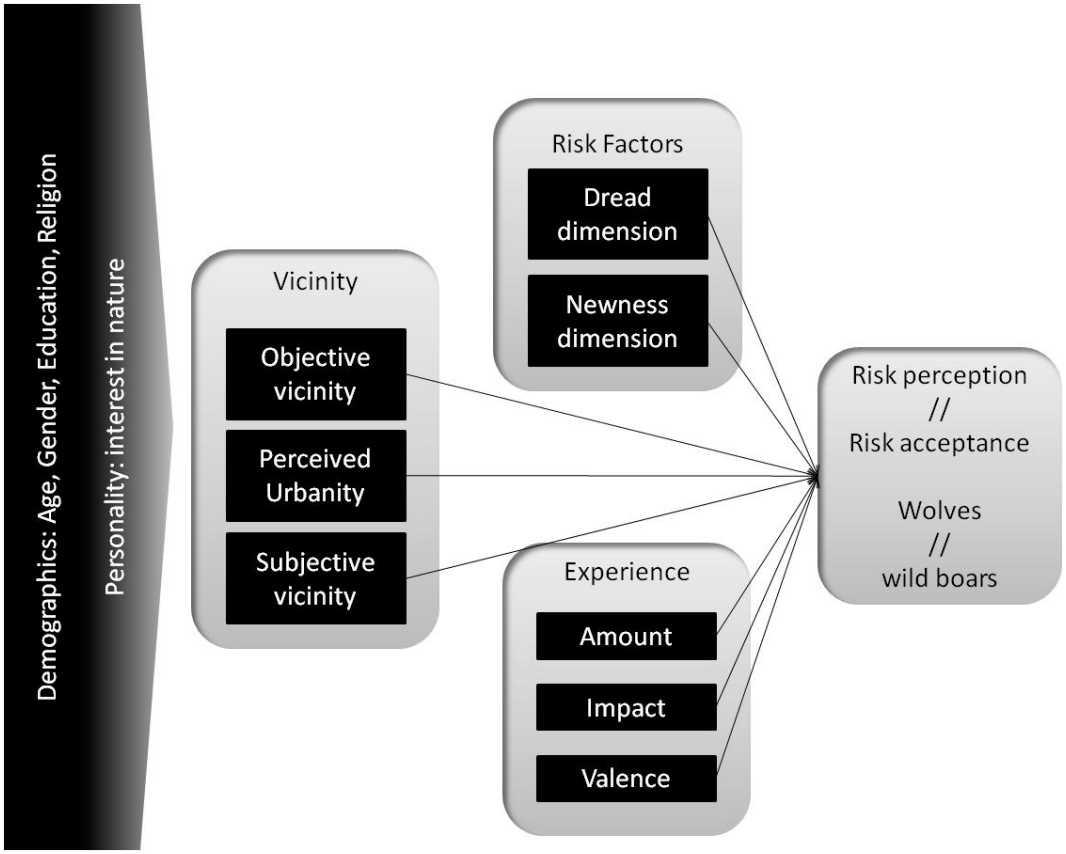


Figure 1: Schematic overview of proposed Model of this study.

Table 2: *Pearson Correlations Among variables measured in the Main Study (N = 214)*

		Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Gender	.51	.50															
2	Age	39.06	18.80	.08														
3	Education	3.42	.69	.11	-.18**													
4	Religious	.49	.50	-.13	.29***	-.23**												
5	Interest in nature	4.87	1.48	.10	.14*	.15*	-.03											
6	Objective vicinity	.51	.50	-.06	-.06	-.05	.01	.15*										
7	Urbanity	.59	.49	-.05	-.20**	.20**	-.15*	-.13	-.38***									
8	Subjective vicinity – wolf	4.00	2.05	.10	.01	-.06	.06	.24**	.53***	-.43***								
9	Subjective vicinity – wild boar	4.17	2.06	.09	-.01	-.12	.06	.29***	.53***	-.41***	.88***							
10	Experience – amount	3.21	2.04	.18**	-.12	.06	.02	.43***	.15*	-.13	-.28***	-.36***						
11	Experience – impact	3.87	1.72	.05	-.01	-.01	-.06	.32***	-.03	.01	-.04	-.07	.47***					
12	Experience - valence	4.70	1.49	.20**	-.19*	.14*	-.17*	.37***	.12	.00	.19**	.18**	.52***	.33***				
13	Risk perception - wolf	4.91	1.13	-.23**	.15*	-.16*	.17*	-.24***	-.07	.00	-.08	-.04	-.22**	-.10	-.31***			
14	Risk acceptance – wolf	3.83	1.39	.25***	-.28***	.21**	-.23**	.34***	.20**	.00	.20**	.20**	.34***	.10	.42***	-.66***		
15	Risk perception – wild boar	4.32	1.28	-.18**	.04	.01	-.03	-.18*	-.23**	.12	-.19**	-.19**	-.24***	-.03	-.30***	.44***	-.46***	
16	Risk acceptance – wild boar	4.39	1.47	.23	-.18	.09	-.12	.28***	.18**	-.03	.22**	.25***	.40***	.11	.44***	-.38***	.74***	-.70***

Note to Table 2. * $p < .05$; ** $p < .01$, *** $p < .001$ (2-tailed), SD means Standard Deviation

Table 3: *Pattern Matrix of Factor Analysis concerning wolves and wild boars*

	Components for wolves		Components for wild boars	
	1	2	1	2
Voluntariness	.41	-.45	.62	
Immediacy of consequences		.84		.91
Knowledge of exposed	.67		.67	
Knowledge of science	.58		.61	
Control	.70		.78	
Newness		-.46	.46	
Catastrophic potential	.69		.43	
Dread	.50	-.42	.56	
Severity of consequences	.55		.64	

Note to Table 3: Rotation method: Direct Oblimin, Eigenvalues > 1. Loadings > 0.364 are noted.

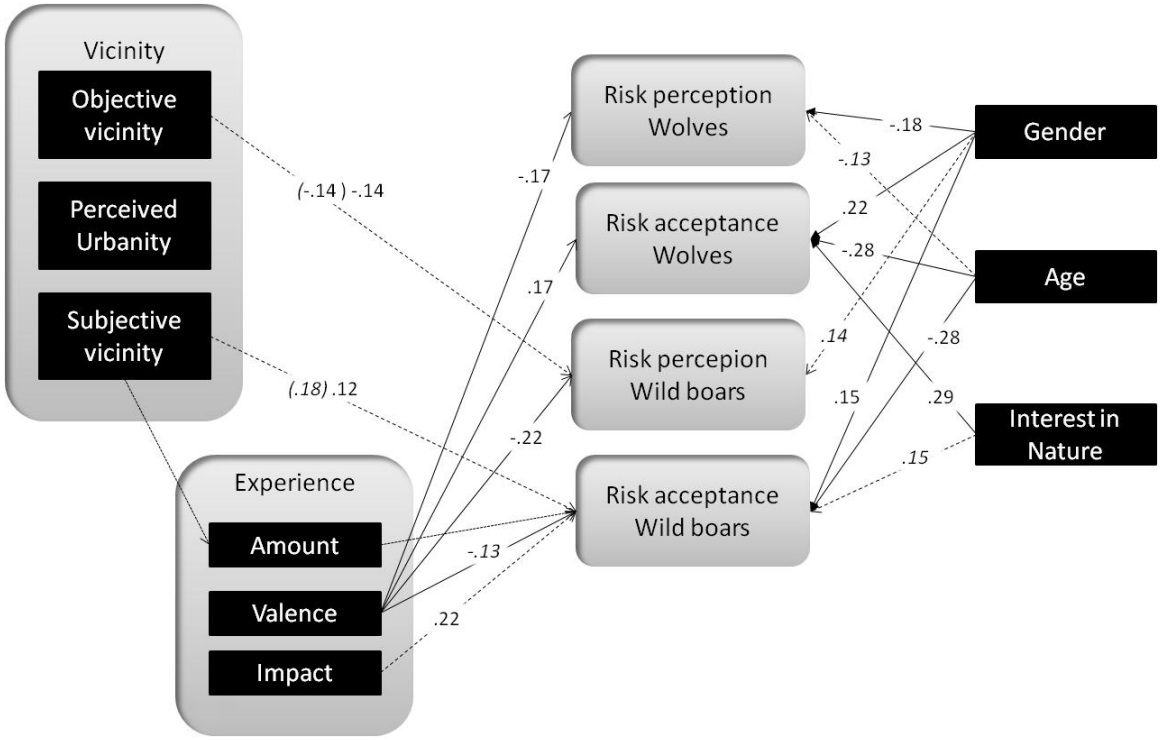


Figure 2: Schematic overview with beta coefficients from the regression analyses. Solid arrows are significant ($p < 0.05$), dashed arrows marginally significant ($p < 0.10$).

Table 4: *Hierarchical Regression Analyses on Risk perception and acceptance concerning wolves and wild boars*

	Risk perception - Wolf			Risk acceptance - Wolf			Risk perception - Wild boar			Risk acceptance - Wild boar		
Step & Variables	1	2	3	1	2	3	1	2	3	1	2	3
1. Gender	-.22**	-.22**	-.18*	.25***	.25***	.22***	-.20**	-.20**	-.14†	.23**	.20**	.15*
Age	.19**	.19*	.13†	-.36***	-.33***	-.28***	.12	.10	.02	-.27***	-.24**	-.15*
Education	-.04	-.04	-.04	.04	.05	.04	.06	.03	.05	-.03	-.01	-.03
Religious	.09	.10	.10	-.06	-.07	-.07	-.10	-.09	-.07	.03	.02	.00
Interest in nature	-.21**	-.20**	-.12	.38***	.35***	.29***	-.19*	-.14†	-.04	.30***	.25**	.15†
2. Objective vicinity		.00	.00		.09	.09		-.14†	-.14†		.04	.03
Subjective vicinity		-.02	.00		.07	.05		.02	03		.18*	.12
Urbanity		.03	.03		.05	.05		.07	.07		.06	.06
3. Experience - amount			-.05			.04			-.14			.15
Experience - impact			.03			-.08			.12			-.13†
Experience -valence			-.17*			.17*			-.22**			.22**
ΔR^2	.148	.149	.176	.326	.341	.364	.079	.113	.169	.177	.205	.265
Adjusted R^2	**.125**	**.112**	**.125**	**.308**	**.312**	**.325**	**.054**	**.074**	**.118**	**.155**	**.170**	**.219**

Note to Table 4. Standardized regression coefficients are reported for the respective regression steps.

Step 1 including socio-demographics, Step 2: "…" and 3 questions on vicinity, step 3: "…" and 3 questions on experience

† $p < .05$ (one-tailed test); * $p < .05$ (two-tailed test); ** $p < .01$ (two-tailed test); *** $p < .001$ (two-tailed test).

APPENDIX

APPENDIX A: QUESTIONNAIRE

VRAGENLIJST

Aan de Universiteit van Wageningen wordt een onderzoek gedaan naar de natuurbeleving van Nederlanders. Daarom wil ik u graag verzoeken de volgende vragennlijst in te vullen. Deelname duurt 10 tot 15 minuten en onder deelnemers worden 10 boekenbonnen ter waarde van 5 Euro verloot.

Het onderzoek is uitsluitend voor academische doeleinden bedoeld, en er zijn geen commerciële bedrijven bij betrokken. De gegevens die u verstrekt worden derhalve enkel gebruikt voor een wetenschappelijke rapportage. Alle gegevens zullen daarbij anoniem behandeld worden.

Indien u nu of tijdens het invullen verdere vragen heeft, kunt u mij deze altijd stellen.

Door middel van het tekenen van deze verklaring geeft u aan voldoende geïnformeerd te zijn over dit onderzoek en geeft u toestemming voor het anoniem gebruik van de gegevens uit deze vragenlijst.

Datum: Plaats:

Handtekening:

INTRODUCTIE

In sommige plekken in Nederland lopen er in de natuur grote wilde dieren rond. Hierbij kunt u denken aan bijvoorbeeld reeën, herten, Heckrunderen en Konikpaarden, maar ook bijvoorbeeld wilde zwijnen. Daarnaast is er een kans dat in de toekomst wolven en lynxen in Nederlandse natuurgebieden zullen rondlopen.

Ik ben geïntereseerd in de natuurbeleving van Nederlanders en één aspect daarvan is de beleving van bepaalde diersoorten. Deze vragenlijst concentreert zich op **twee diersoorten**, het wilde zwijn en de wolf. Hieronder volgt een korte beschrijving per diersoort.

Het **wilde zwijn** leeft in veel natuurgebieden in Nederland, bijvoorbeeld op de Veluwe, maar óók buiten grote (beschermde) natuurgebieden. Er zijn berichten van wilde zwijnen die bebouwde gebieden binnentreden, op zoek naar voedsel. Boeren zijn vaak tegenstander van de terugkeer van wilde zwijnen, vanwege de schade aan akkers. Andere mensen vinden het juist een goede ontwikkeling want deze dieren geven aan dat het de goede kant op gaat met de Nederlandse natuur. Niet iedereen weet dat wilde zwijnen gevaarlijk kunnen zijn voor mensen, als ze zich in het nauw gedreven of bedreigd voelen. Een aanvallend wild zwijn kan veel letsel veroorzaken. Overigens vallen ze bijna nooit aan. Ze zijn van nature mensenschuw. Die schuwheid zou kunnen afnemen als ze vaak positief contact met mensen hebben, bijvoorbeeld door bijvoeren.

Wolven zijn nog niet 'officieel' woonachtig in Nederland, maar in het oosten van Nederland zijn al herhaalde mogelijke wolf-waarnemingen gedaan. Die wolven kunnen vanuit Duitsland de grens zijn overgestoken. Daar neemt het aantal roedels gestaag toe, momenteel zijn er wel 11 wolvenroedels. Wolven zijn van nature trekkers die grote afstanden afleggen in korte perioden. Het is goed mogelijk dat in de toekomst een wolvenpak zich vestigt in Nederland, bijvoorbeeld op de Veluwe. Aan voedsel, zoals reeën, herten en wilde zwijnen, geen gebrek! Net als wilde zwijnen zijn wolven moeilijk in te perken tot enkel beschermde natuurgebieden. Op zoek naar eten kunnen ze dorpen en zelfs voorsteden binnensluipen. Ook wolven zijn van nature mensenschuw en zullen vaak alleen in de schemer of nacht in de buurt van steden komen. Confrontaties tussen mensen en wolven zijn daarom tot nu toe nog zeldzame gebeurtenissen.

In deze vragenlijst zullen een aantal '**scenario's**' worden beschreven, waarin een bepaalde risicovolle gebeurtenis geschetst wordt. Deze scenario's worden gevolgd door vragen. Ik wil u verzoeken om u het beschreven scenario zo goed mogelijk voor te stellen, '*alsof het werkelijk gebeurt*', en vervolgens de vragen te beantwoorden vanuit dat perspectief.

Hieronder volgt een **voorbeeld** van twee vragen, die direct volgen op een scenario. De bedoeling is dat u het bolletje aanvinkt of inkleurt dat het meest bij uw mening past. De vragen geven een schaal tussen twee extreme standpunten, maar u kunt natuurlijk ook ergens 'in het midden' zitten. Stel u heeft het scenario gelezen en vindt de situatie extreem onveilig, bovendien best wel riskant (sommige mensen zien hier een nuance-verschil tussen). U vindt dat het risico niet echt acceptabel is en vindt het absoluut onaanvaardbaar. U kunt dan het volgende invullen:

Voorbeeld 1: Zou u het risico in deze situatie inschatten als...

Extreem veilig	O	O	O	O	O	O	X	Extreem onveilig
Totaal niet riskant	O	O	O	O	O	X	O	Erg riskant

Voorbeeld 2: Vindt u het risico in deze situatie

Compleet acceptabel	O	O	O	O	O	X	O	Compleet onacceptabel
Absoluut aanvaardbaar	O	O	O	O	O	O	X	Absoluut onaanvaardbaar

VRAGEN

Scenario 1: De achtertuinervaring

Stel u voor dat u door uw eigen tuin of het park in de buurt wandelt. Plotseling hoort u geritsel in een struikje. U loopt richting het geluid, en ineens staat u oog in oog met een wolf. U verstrakt (wat moet u doen?), en de wolf staart u aan, terwijl hij stokstijf stil blijft staan, net als uzelf.

1. Zou u het risico in deze situatie inschatten als...

Extreem veilig	O	O	O	O	O	O	O	Extreem onveilig
Totaal niet riskant	O	O	O	O	O	O	O	Erg riskant

2. Vindt u het risico in deze situatie ...

Compleet acceptabel	O	O	O	O	O	O	O	Compleet onacceptabel
Absoluut aanvaardbaar	O	O	O	O	O	O	O	Absoluut onaanvaardbaar

Scenario 2: De botsing

Stel u voor dat u met uw auto over een landweg rijdt. Het schemert en uw koplampen zijn al aan. Opeens ziet u iets schitteren aan de zijkant van de weg. Instinctief rijdt u iets langzamer; misschien hoopt u wel om een ree of edelhert te kunnen zien. Plotseling springt er een grijze schaduw vlak vóór uw auto, u hoort een knal en stopt onmiddelijk. U wilt uit uw auto stappen om te zien wat u geraakt heeft, maar bedenkt op het laatste moment dat de grijze schim verdacht veel op een wolf leek. In de schemer meent u glinsterende tanden te hebben gezien. Maar dat zou natuurlijk ook uw verbeelding kunnen zijn. U zou graag uit willen stappen en nader inspecteren, maar de gedachte aan een wolf houdt u tegen of brengt u aan het twijfelen...

3. Zou u het risico in deze situatie inschatten als...

Extreem veilig	O	O	O	O	O	O	O	Extreem onveilig
Totaal niet riskant	O	O	O	O	O	O	O	Erg riskant

4. Vindt u het risico in deze situatie ...

Compleet acceptabel	O	O	O	O	O	O	O	Compleet onacceptabel
Absoluut aanvaardbaar	O	O	O	O	O	O	O	Absoluut onaanvaardbaar

Scenario 3: Ervaring tijdens het wandelen

Stel u voor dat u op een mooie dag door een nabijgelegen natuurgebied wandelt, of fietst. U geniet van de natuur, de geluiden en de geuren, als u plotseling beweging van een groot iets waarneemt vanuit uw ooghoeken. U remt af en staat stil, en tuurt door de bosjes wat het kan zijn geweest. Plotseling realiseert u zich dat u oog in oog staat met een wolf. U verstrakt (wat moet u doen?), en de wolf staart u aan, terwijl hij stokstijf stil blijft staan, net als uzelf.

5. Zou u het risico in deze situatie inschatten als...

Extreem veilig	O	O	O	O	O	O	O	Extreem onveilig
Totaal niet riskant	O	O	O	O	O	O	O	Erg riskant

6. Vindt u het risico in deze situatie ...

Compleet acceptabel	O	O	O	O	O	O	O	Compleet onacceptabel
Absoluut aanvaardbaar	O	O	O	O	O	O	O	Absoluut onaanvaardbaar

De kans die men loopt op ontmoetingen met wilde dieren, zoals in de scenario's, noemt men ook wel een 'risico'. De volgende vragen gaan over dit risico van een '**mogelijke ontmoeting met de wolf'.**

7. Heeft u het gevoel dat u vrijwillig aan dit risico wordt blootgesteld?

Geheel vrijwillig	O	O	O	O	O	O	O	Geheel onvrijwillig

8. Heeft u het gevoel dat u zeer directe de gevolgen van het risico zult ervaren?

Zeer direct	O	O	O	O	O	O	O	Veel later

9. Denkt u dat u zelf genoeg weet over het risico dat u loopt?

Weet ik precies	O	O	O	O	O	O	O	Weet ik (bijna) niets van

10. Denkt u dat de wetenschap genoeg weet over het risico dat gelopen wordt door mensen?

Wetenschap weet genoeg	O	O	O	O	O	O	O	Wetenschap weet veel te weinig

11. Heeft u het gevoel dat u veel controle heeft over hoeveel risico u loopt?

Veel controle	O	O	O	O	O	O	O	Weinig controle

12. Is dit risico nieuw voor u of is het iets waar u al langer aan blootgesteld voelt?

Compleet nieuw	O	O	O	O	O	O	O	Totaal niet nieuw

13. Is het risico iets dat slechts enkele mensen kan schaden, of het iets dat grootschalige schade kan aanrichten aan veel mensen tegelijkerijd?

Enkele mensen	O	O	O	O	O	O	O	Grote groep mensen

14. Wanneer u aan dit risico denkt, kunt u er dan redelijk kalm onder blijven, of voelt u grote angst in u opkomen?

Kalm over te denken	O	O	O	O	O	O	O	Paniek/angst komt op

15. Hoe fataal denkt u dat de gevolgen kunnen zijn van dit risico?

Zeker niet fataal	O	O	O	O	O	O	O	Zeker wel fataal

16. Heeft u het idee dat u dichter bij een gebied woont waar in de toekomst wolven zouden kunnen rondlopen, in vergelijking met de gemiddelde Nederlander?

Veel dichter bij	O	O	O	O	O	O	O	Veel verder weg

Op de volgende pagina worden *dezelfde scenario's* die u eerder heeft gelezen herhaald, maar ditmaal gaan de vragen over een ontmoeting met het wilde zwijn.

Scenario 4: De achtertuinervaring deel II

Stel u voor dat u door uw eigen tuin of het park in de buurt wandelt. Plotseling hoort u geritsel in een struikje. U loopt richting het geluid, en ineens staat u oog in oog met een wild zwijn. U verstrakt (wat moet u doen?), en het wilde zwijn staart u aan, terwijl hij stokstijf stil blijft staan, net als uzelf.

17. Zou u het risico in deze situatie inschatten als...

Extreem veilig	O	O	O	O	O	O	O	Extreem onveilig
Totaal niet riskant	O	O	O	O	O	O	O	Erg riskant

18. Vindt u het risico in deze situatie ...

Compleet acceptabel	O	O	O	O	O	O	O	Compleet onacceptabel
Absoluut aanvaardbaar	O	O	O	O	O	O	O	Absoluut onaanvaardbaar

Scenario 5: De botsing, deel II

Stel u voor dat u met uw auto over een landweg rijdt. Het schemert en uw koplampen zijn al aan. Opeens ziet u iets schitteren aan de zijkant van de weg. Instinctief rijdt u iets langzamer; misschien hoopt u wel om een ree of edelhert te kunnen zien. Plotseling springt er een grijze schaduw vlak vóór uw auto, u hoort een knal en stopt onmiddelijk. U wilt uit uw auto stappen om te zien wat u geraakt heeft, maar bedenkt op het laatste moment dat de grijze schim verdacht veel op een wild zwijn leek. In de schemer meent u glinsterende hoektanden te hebben gezien. Maar dat zou natuurlijk ook uw verbeelding kunnen zijn. U zou graag uit willen stappen en nader inspecteren wat het was dat uw auto raakte, maar de gedachte aan een wild zwijn houdt u tegen of brengt u aan het twijfelen...

19. Zou u het risico in deze situatie inschatten als...

Extreem veilig	O	O	O	O	O	O	O	Extreem onveilig
Totaal niet riskant	O	O	O	O	O	O	O	Erg riskant

20. Vindt u het risico in deze situatie ...

Compleet acceptabel	O	O	O	O	O	O	O	Compleet onacceptabel
Absoluut aanvaardbaar	O	O	O	O	O	O	O	Absoluut onaanvaardbaar

Scenario 6: Ervaring tijdens het wandelen, deel II

Stel u voor dat u op een mooie dag door een nabijgelegen natuurgebied wandelt, of fietst. U geniet van de natuur, de geluiden en de geuren, als u plotseling beweging van een groot iets waarneemt vanuit uw ooghoeken. U remt af en staat stil, en tuurt door de bosjes wat het kan zijn geweest. Plotseling realiseert u zich dat u oog in oog staat met een wild zwijn. U verstrakt (wat moet u doen?), en het wilde zwijn staart u aan, terwijl hij stokstijf stil blijft staan, net als uzelf.

21. Zou u het risico in deze situatie inschatten als...

Extreem veilig	O	O	O	O	O	O	O	Extreem onveilig
Totaal niet riskant	O	O	O	O	O	O	O	Erg riskant

22. Vindt u het risico in deze situatie ...

Compleet acceptabel	O	O	O	O	O	O	O	Compleet onacceptabel
Absoluut aanvaardbaar	O	O	O	O	O	O	O	Absoluut onaanvaardbaar

De kans die men loopt op ontmoetingen met wilde dieren, zoals in de scenario's, noemt men ook wel een 'risico'. De volgende vragen gaan over dit risico van een '**mogelijke ontmoeting met het wilde zwijn**.

23. Heeft u het gevoel dat u vrijwillig aan dit risico wordt blootgesteld?

Geheel vrijwillig	O	O	O	O	O	O	O	Geheel onvrijwillig

24. Heeft u het gevoel dat u zeer directe de gevolgen van het risico zult ervaren?

Zeer direct	O	O	O	O	O	O	O	Veel later

25. Denkt u dat u zelf genoeg weet over het risico dat u loopt?

Weet ik precies	O	O	O	O	O	O	O	Weet ik (bijna) niets van

26. Denkt u dat de wetenschap genoeg weet over het risico dat gelopen wordt door mensen?

Wetenschap weet genoeg	O	O	O	O	O	O	O	Wetenschap weet veel te weinig

27. Heeft u het gevoel dat u veel controle heeft over hoeveel risico u loopt?

Veel controle	O	O	O	O	O	O	O	Weinig controle

28. Is dit risico nieuw voor u of is het iets waar u al langer aan blootgesteld voelt?

Compleet nieuw	O	O	O	O	O	O	O	Totaal niet nieuw

29. Is het risico iets dat slechts enkele mensen kan schaden, of het iets dat grootschalige schade kan aanrichten aan veel mensen tegelijkerijd?

Enkele mensen	O	O	O	O	O	O	O	Grote groep mensen

30. Wanneer u aan dit risico denkt, kunt u er dan redelijk kalm onder blijven, of voelt u grote angst in u opkomen?

Kalm over te denken	O	O	O	O	O	O	O	Paniek/angst komt op

31. Hoe fataal denkt u dat de gevolgen kunnen zijn van dit risico?

Zeker niet fataal	O	O	O	O	O	O	O	Zeker wel fataal

32. Heeft u het idee dat u dichter bij een gebied woont waar wilde zwijnen zouden kunnen rondlopen, in vergelijking met de gemiddelde Nederlander?

Veel dichter bij	O	O	O	O	O	O	O	Veel verder weg

Ervaringen

33. Deze vraag gaat over of u of iemand in uw naaste omgeving of familie, ervaring heeft in het verleden, met grote dieren in het wild in Nederland, en welke indruk deze ervaring heeft gehad, en of die indruk negatief dan wel positief was. Het gaat hier niet om specifiek wolven, maar om grote wilde dieren in het algemeen.

Geen ervaring met groot wild	O	O	O	O	O	O	O	Veel ervaring met groot wild
Ervaring heeft weinig indruk gemaakt	O	O	O	O	O	O	O	Ervaring heeft veel indruk gemaakt
Ervaring was zeer negatief	O	O	O	O	O	O	O	Ervaring was zeer positief

34. Hoe is uw interesse in wilde dieren en natuur?

Ik ben helemaal niet geïnteresseerd in wilde diersoorten	O	O	O	O	O	O	O	Ik ben heel erg geïnteresseerd in wilde diersoorten
Ik ga helemaal niet graag naar natuur-gebieden om wilde dieren te zien	O	O	O	O	O	O	O	Ik ga erg graag naar natuurgebieden om wilde dieren te zien
Ik bezoek zelden natuurgebieden	O	O	O	O	O	O	O	Ik bezoek vaak natuurgebieden

Tot slot nog een paar korte vragen over uzelf.

35. Geslacht:

Man	O
Vrouw	O

36. Leeftijd: _____ jaar

37. Woonachtig in:

Landelijk gebied	O
Stedelijk gebied	O

38. Eerste twee nummers van uw postcode: _ _

39. Hoogst voltooide opleiding:
    - Geen opleiding/lager onderwijs
    - Lager beroepsonderwijs/middelbaar bvoortgezet ondewijs (LBO, VMBO, MAVO)
    - Middelbaar beroepsonderwijs/hoger voortgezet ondertwijs (MBO, HAVO, VWO)
    - Hoger beroepsonderwijs/wetenschappelijk onderwijs (GBO, universiteit)

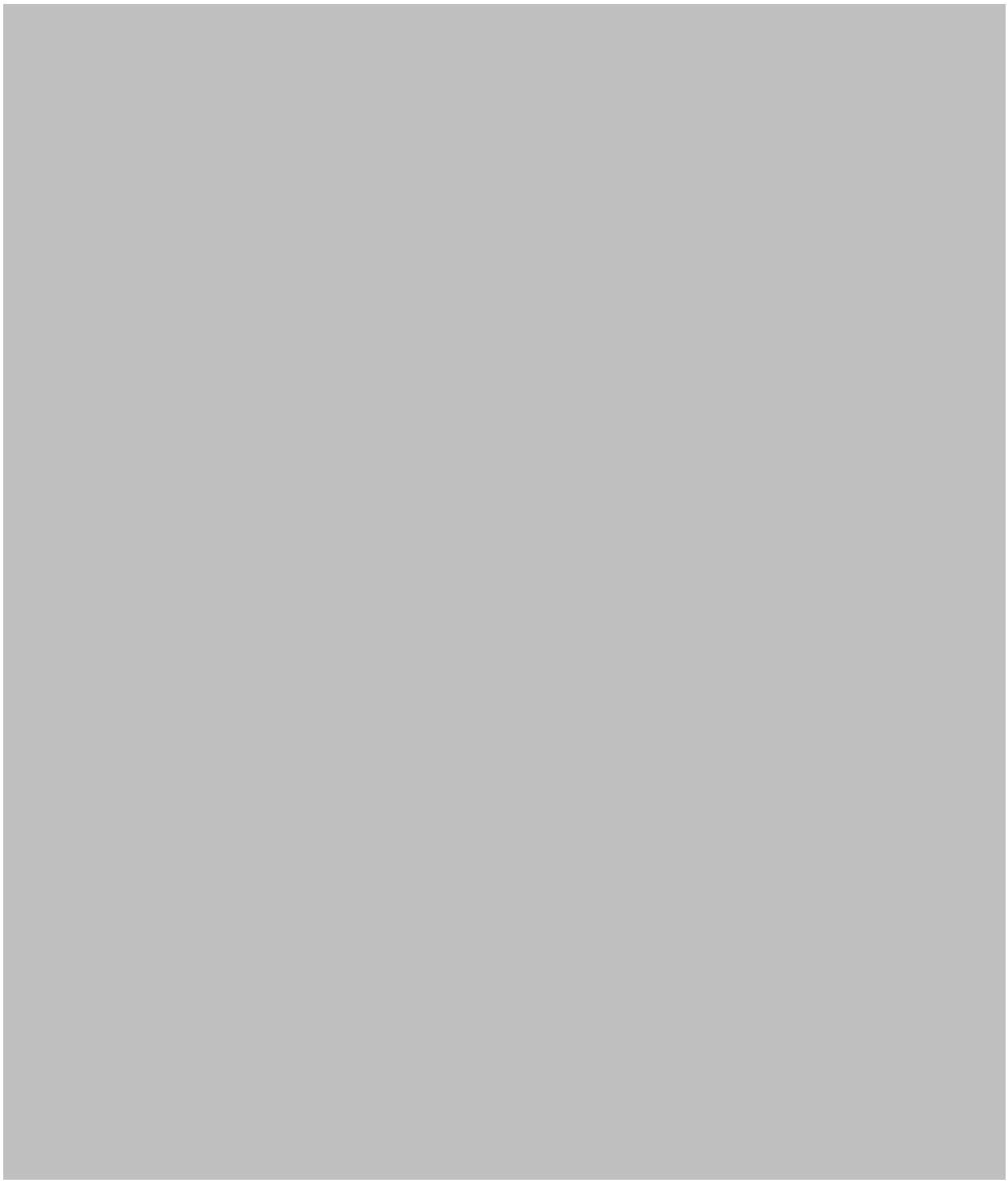
40. Geloof:
    - Katholiek
    - Protestant
    - Moslim
    - Spirituaeel/anderszins
    - Niet gelovig

Als u wilt **kansmaken op één van de 10 boekenbonnen**, zou u dan uw email-adres hieronder op de stippellijn willen noteren?

Emailadres:.....

Hartelijk bedankt voor het beantwoorden van deze vragenlijst.

APPENDIX B: MAP OF OBJECTIVE VICINITY DISTINCTION

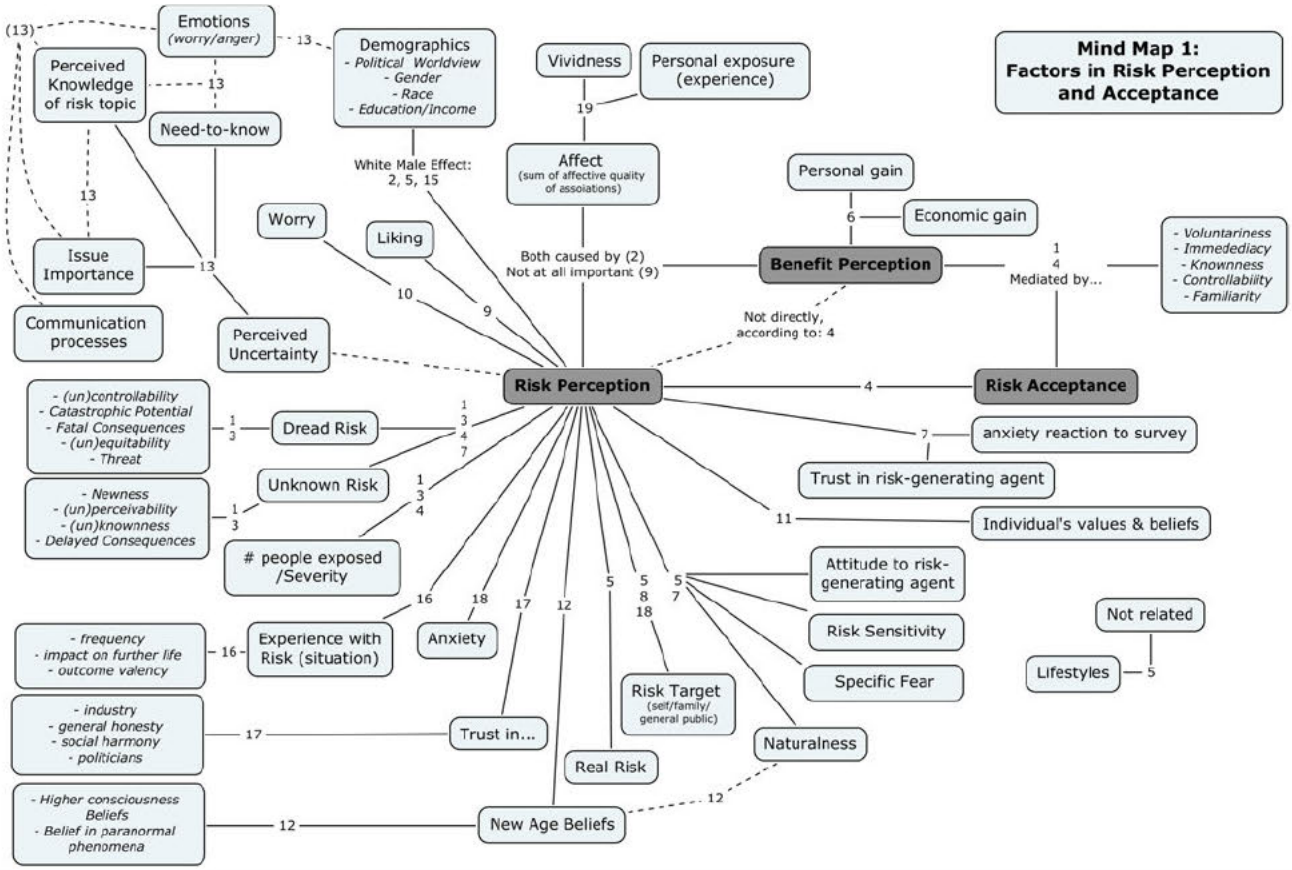


APPENDIX C: RESULTS OF LITERATURE STUDY IN MIND MAPS

Note to Mind Maps: The below Mind Maps were created as a result of an extensive literature study preceding the questionnaire studies reported in the above paper. These Mind Maps served as assisting visualisations for the author in order to clarify the many factors influencing risk perceptions, and attitudes towards wildlife. They were not meant as material to present in an article, but for the purpose of showing the depth and vigour of this thesis, they have been appended here. They therefore serve as an illustration of the multitude of factors that were investigated in the literature-study.

In Mind Map 1 and 3 the numbers represent studies – mentioned in the Tables below the Mind Maps – that measured and reported the relationship between the two mentioned items. For Mind Map 2, moreover, the (+) and (-) respectively show whether such relationships were found to be positive or negative.

Mind Map 1: Factors in Risk Perception and Acceptance



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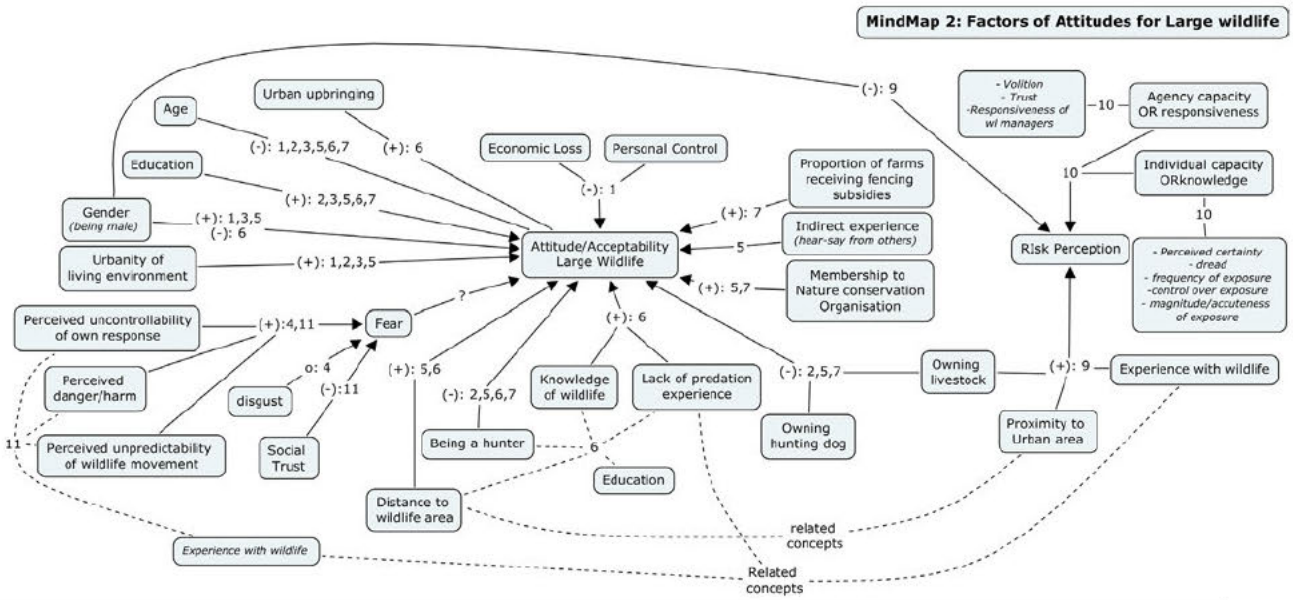
10	Rundmo, T., (2002). Associations between affect and risk perception, Journal of Risk research, 5(2), 119-135
11	Slimak, M. W., & Dietz, T. (2006). Personal values, beliefs, and ecological risk perception. Risk Analysis, 26 (6), 1689–1705. doi:10.1111/j.1539-6924.2006.00832.x see also MM3 # 1

Mind Map 2: Factors of Attitudes on Large Wildlife



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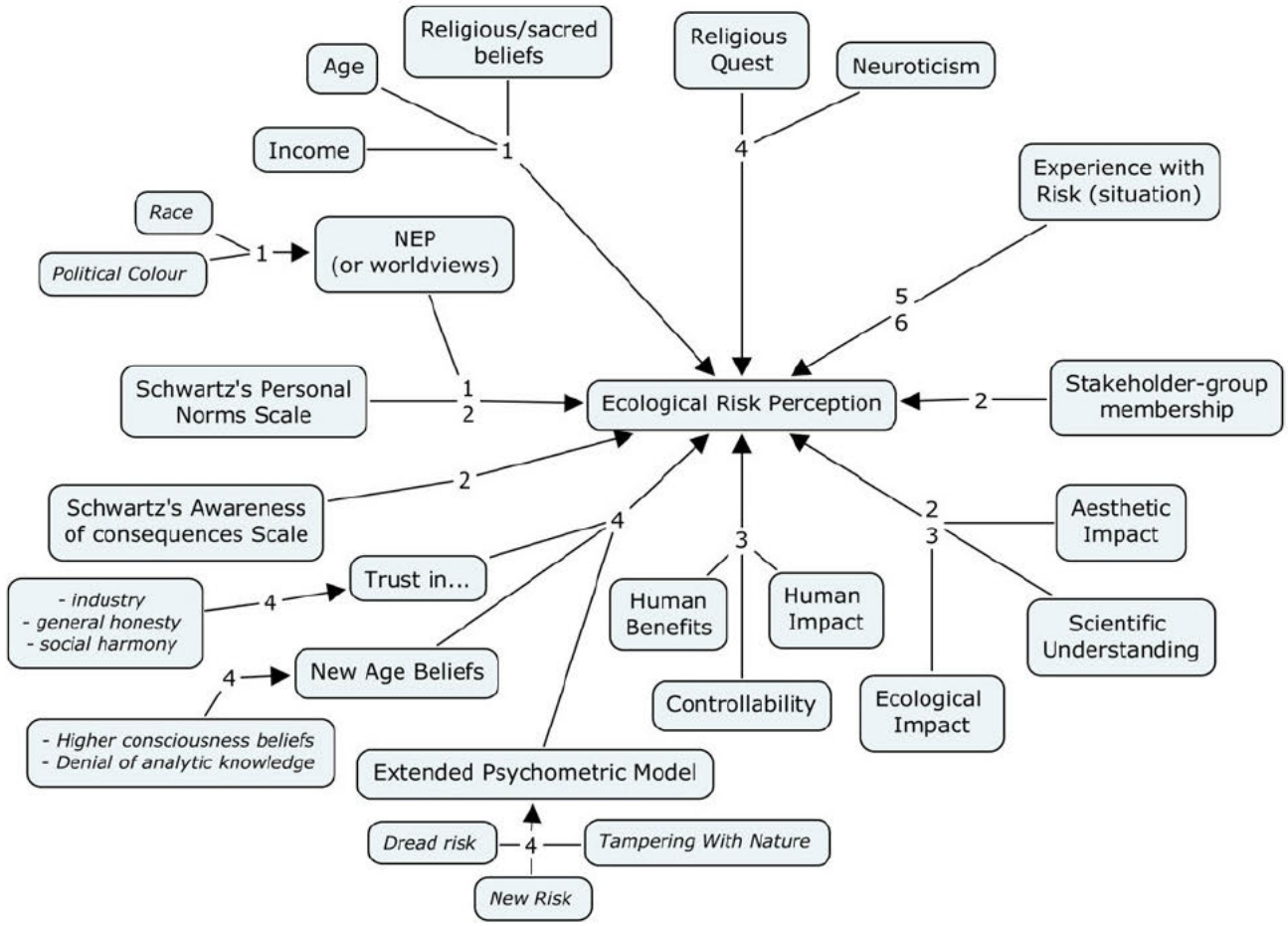
10	Gore, M. L., Knuth, B. A., Curtis, P. D., & Shanahan, J. E. (2006). Stakeholder perceptions of risk associated with human–black bear conflicts in New York's Adirondack park campgrounds: Implications for theory and practice. Wildlife Society Bulletin, 34(1), 36–43. doi:10.2193/0091-7648(2006)34[36:SPORAW]2.0.CO;2 Gore, M. L., Knuth, B. A., Curtis, P. D., & Shanahan, J. E. (2007a). Campground manager and user perceptions of risk associated with negative human–black bear interactions. Human Dimensions of Wildlife, 12(1), 31–43. doi:10.1080/10871200601107882 Gore, M. L., Knuth, B. A., Curtis, P. D., & Shanahan, J. E. (2007b). Factors influencing risk perception associated with human–black bear conflict. Human Dimensions of Wildlife, 12(2), 133–136. doi:10.1080/10871200701195985
11	Johansson, M., Karlsson, J., Pedersen, E., & Flykt, A. (2012). Factors governing human fear of brown bear and wolf. Human Dimensions of Wildlife, 17(1), 58–74. doi:10.1080/10871209.2012.619001

Mind Map 3: Environmental/ecological Risk Perceptions



1	Slimak, M. W., & Dietz, T. (2006). Personal values, beliefs, and ecological risk perception. Risk Analysis, 26 (6), 1689–1705. doi:10.1111/j.1539-6924.2006.00832.x See also MM1 # 11
2	Willis, H. H., & DeKay, M. L. (2007). The roles of group membership, beliefs, and norms in ecological risk perception. Risk Analysis, 27(5), 1365–1380. doi:10.1111/j.1539-6924.2007.00958.x
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APPENDIX D: ADDITIONAL ANALYSES

Interesting findings not related to Hypotheses.

Differences in Risk Perception and Acceptance between Species. Whether Dutch citizens actually perceive risks concerning wolves as higher compared to those concerning wild boars, and accept these risks less, was not part of any hypothesis, and consequently not reported in the paper above. Yet, for nature managers this can be interesting, thus it is reported here. Independent t-tests show that risk perceptions concerning wolves (M = 4.91; SD = 1.13) were significantly higher than risk perceptions concerning wild boars (M = 4.32; SD = 1.28; $t(211) = 6.70$, $p < 0.001$). Additionally, risk acceptance concerning wolves (M = 3.83; SD = 1.40) was significantly lower than risk perceptions concerning wild boars (M = 4.41; SD = 1.46; $t(208) = -8.15$, $p < 0.001$). In other words, Dutch citizens perceive wolves to be more risky than wild boars, and they accept the risks concerning wild boars more than risks surrounding wolves.

Differences in Risk Perception and Acceptance between situations. In the questionnaire, risk perception and acceptance were measured for three situations, one situation located in one's own backyard, one during a car-trip and a third one during a nature hike/excursion. In order to see whether risk perceptions and acceptance differed for these three situations, the means of the scenario's were compared with each other, two-by two. Thus, scenario 1 was compared to scenario 2, and consequently to scenario 3, and then scenario 2 was compared to scenario 3. This was done for both risk perception and acceptance, and for the scenarios pertaining to wolf-risks and to those relating to wild boar risks. Note that the scenarios for both species were identical, apart from the 'main risk' which was either a wolf or a wild boar. Table 5 below presents the means and standard deviations for each scenario.

The means of scenario 2 and 3 – the car collision and nature excursion respectively – did not significantly differ, but the first scenario of a backyard encounter did differ significantly from the other scenarios in all scenarios (in case of both species, and for both risk perception and acceptance). Risk perceptions concerning wolves and wild boars were all higher in the first scenario, and risk

acceptance was in both species' cases higher in the first scenario. This means that people thought the risks of wildlife encounters to be considerably higher when they imagined this to occur in their backyards than elsewhere. Yet, despite this higher risk perception, they also thought it to be more acceptable to encounter these species in their backyards. This can perhaps be explained by the idea that people feel more 'safety' in their own backyards. Such a suggestion, however, merits further investigation into whether this 'perceived safety or familiarity with surroundings' is indeed a factor that can influence risk perception and acceptance.

Table 5: *Means & standard deviations for risk perception & acceptance per scenarios per species.*

			Mean	SD
Risk perception	wolf	Sc1	5.23	1.33
		Sc2	4.58[a]	1.42
		Sc3	4.91 [a, c]	1.40
	wild boar	Sc1	4.49	1.44
		Sc2	4.18[b]	1.47
		Sc3	4.28 [b]	1.59
Risk acceptance	wolf	Sc1	4.74	1.65
		Sc2	3.87 [a]	1.60
		Sc3	3.90 [a]	1.69
	wild boar	Sc1	4.02	1.60
		Sc2	3.44 [a]	1.61
		Sc3	3.36 [a]	1.73

Note to Table 5: [a] Scenario differs from scenario 1 with $p < .001$ *; [b] scenario differs from scenario 1 with $p < .01$; [c] scenario differs from scenario 2 with $p < .01$.

Sc1-3 are respectively: encounter with animal in own garden; in a car collision and during a nature excursion. SD means Standard Deviation.

Risk Factor Analyses. In the general discussion it was mentioned that the question for the risk factor 'immediacy of consequences' might have been difficult to understand for respondents. Two additional factor analyses – excluding the factor on immediacy from the analyses – were done to see what the effects were on the found components/dimensions. Table 6 below presents the factor loadings of the Pattern Matrix of these findings.

Table 6: *Pattern Matrix of Factor Analysis on wolves &wild boars without 'immediacy of consequences'*

	Components for wolves		Components for wild boars	
	1	2	1	2
Voluntariness	.59		.53	
Knowledge of exposed	.55		.77	
Knowledge of science	.63		.47	.44
Control	.72		.75	
Newness		.85	.69	-.47
Catastrophic potential	.67	.37		.80
Dread	.55	.38	.50	
Severity of consequences	.59		.60	

Note to Table 6: Rotation method: Direct Oblimin, Eigenvalues > 1. Loadings > 0.364 are noted.

Quite similar to the previous findings, in both the case of the wolves and wild boars, two components/dimensions are identified. This means that even despite the fact that the second question might have been misunderstood, the two-component results stand firmly for this study. Even though not exactly replicating the Dread and Newness dimensions of Slovic (1987), the notion of more than one 'overarching' dimension to risk is supported by this additional analysis.

In the case of risk factors to wolf-related risks, the factor loadings on the second dimension are only just above the cut-off point for the factor dread and catastrophic potential. When considering the factor 'newness' as the only convincing factor on this dimension, the second dimension can thus be named 'Newness' (although not exactly the same as Slovic's dimension on Newness, because the latter also contained the risk factors knowledge – of exposed and science). The first dimension is a collection of all other risk factors – excluding immediacy and newness – and no specific name can therefore be given; it contains many different factors in one dimension.

A peculiarity in the factor analysis for wild boars is that whereas in the initial analysis the factor immediacy of consequences was assigned to the second dimension separately from all the other factors (see Table 3), but in the new factor analysis – taking immediacy out of the equation –

the second dimension was ‘filled’ with other factors, such as knowledge of science, newness and catastrophic potential. This suggests that this separation into two dimensions in the first factor analysis (Table 3) was obscured by the dramatic factor loading of immediacy. After deleting immediacy from the analysis more subtle differences in the risk factors could be detected, resulting in the first dimension containing nearly all the risk factors – similar to the wolf risk factors – and a second dimension containing to a high degree the catastrophic potential, and to a lesser degree knowledge of the scientific community and newness (the latter inversely so).

Whereas the analyses on the wolf risk factors above did show some resemblance to – although not an exact replication of – Slovic’s dimensions, the results of the factor analysis on wild boars has no resemblance whatsoever to Slovic’s dimensions. A reason for this might be that in the case of wild boar risks, questions related to newness and knowledge of the scientific community may have been found irrelevant by respondents, because most people simply do not see the ‘risk’ in encountering a wild boar. On the other hand, it may also be the case that the risk dimensions of prior psychometric research, such as Slovic’s, is just not applicable to all risks equally. It could be the case that for natural-born risks such as wildlife encounters, very different dimensions are relevant indeed than in other more human-induced risks. Or it could be that risk dimensions are not so much dependent on the aspects of a risk (whether it is human-induced or natural-born) but more dependent o a culture, whether it is measured in the Netherlands, or in the USA. Such questions, however, cannot be answered with the data gathered in this study. If answers to these questions are found relevant and needed, further studies ought to be set-up to further investigate this. For now, this Appendix concludes with the insight that risks can be explained by a multitude of factors, and that often these factors will be highly related to one another, often in one or a few clusters or ‘dimensions’.

Cognitive and emotional drivers for wolf management interventions

Cognitive and emotional predictors of future wolf management

Commented [ts2]: We are allowed to use only 8 words in the title! Hence, it is so short... Feel free to add any other suggestions.

Commented [ ]: We are allowed to use only 8 words in the title! Hence, it is so short... Feel free to add any other suggestions.

[1] Leibniz Institute for Zoo and Wildlife Research, Evolutionary Ecology, Berlin, Germany

[2] Deakin University, School of Life and Environmental Sciences, Melbourne, Australia

[3] Wageningen University, Cultural Geography, Wageningen, The Netherlands

Wolves are recolonizing previous habitat in Germany since the beginning of this millenium and starting to explore the Netherlands in recent years. Management strategies are required in both countries to protect wolves as required by the European Union nature legislation but also to mitigate potential human-wolf conflicts. However, management interventions are often controversial and their support varies among stakeholder groups. Given that young generations will be the future wildlife policy makers, managers, and opinion leaders, their views on wolf management interventions are highly relevant. Furthermore, at the end of the formative years, beliefs systems have matured and tend to be stable. In a quantitative survey, we tested the i) acceptability of management interventions in different scenarios with wolves ii) predictive potential of wildlife value orientations and emotions (valence and arousal) for the acceptability of wolf management interventions as well as iii) discrete emotions towards wolves. Our samples were students from the natural, environmental and social sciences from the Netherlands (n= 369) and Germany (n = 229). The questionnaire included four sections testing students' wildlife value orientations, their acceptability for three wolf management interventions (do nothing, educate the public, lethal control) in different scenarios (wolf is seen, wolf kills sheep, wolf kills human), dimensions of emotions (valence and arousal) as well as discrete emotions towards wolves. We found in both countries that acceptability of wolf management interventions varied across the three different scenarios; depending on the severity of the situation. Lethal control was very unacceptable (in the scenario ‚wolf is seen') to moderately unacceptable (‚wolf kills human'). Educating the public was moderatly acceptable (‚wolf kills sheep') to very acceptable (‚wolf is seen' and ‚wolf kills human'). Doing

nothing was not acceptable in all three situations. Wildlife value orientations had predictive potential for the acceptability of lethal control (R^2 = .25), with domination (R^2 = .36) having a larger predictive value than mutualism (R^2 = -.21). The emotion dimension ‚valence' showed a stronger predictive value for the acceptability of lethal control (R^2 = -.25) than mutualism and was the only significant predictor for the acceptability of doing nothing (R^2 = .23). In both countries, negative emotions of anger, sadness and disgust were hardly felt towards wolves while positive emotions of joy and interest, as well as surprise, were moderately to strongly felt. Fear was the only negative emotion that was moderately felt, yet less strong than the positive emotions. Our results show that management interventions are clearly desired among future wildlife decision and opinions makers, especially in problem situations. Further, emotions (valence) add to understand the acceptability of management interventions. Lastly, while managers and policy makers tend to predominantly address negative emotions in relation to wolves, positive emotions are often overlooked which calls for critical reflection as these results show.

Three topics/themes: Acceptability, emotion & values, wolf management

Habitat requirements assessment and Habitat Suitability Analysis of the golden jackal (*Canis aureus*) for the Netherlands

[redacted]

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Date of submission: 04-06-2018

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Abstract

Background: The golden jackal (*Canis aureus*) is expanding its range towards north and west Europe. In these parts, there is a lack of substantial knowledge about this animal or what its habitat requirements are.

Aim: Determine where potential territories are located and how many potential territories exist in the Netherlands.

Organisms: Golden jackal (*Canis aureus*)

Place of research: The Netherlands.

Methodology: The habitat requirements of the golden jackal were assessed by means of a literature study. Factors such as diet, roads, habitat size, land use and potential wolf territories were taken into account to assess the habitat quality of potential habitat for golden jackal in the Habitat Suitability Analysis (HSA). This study utilized a basemap with a spatial resolution of 25*25 metres. Maps of the Netherlands were created to visualize possible core areas, highly suitable areas and suitable areas.

Principal findings: The main factors limiting establishment of the golden jackal seem to be urban areas and the presence of wolves. The results show that core areas can support more than 100 family groups, while the highly suitable areas can potentially support an additional 150 family groups. The remaining suitable areas were found to be able to support up to around 1200 more family groups.

Conclusion: In total, the Netherlands could support around 1450 golden jackal family groups. Re-establishment of wolves could decrease these numbers to around 800 golden jackal family groups. This study considered the most important parameters and used conservative parameter settings, it is likely that suitable habitat numbers were underestimated.

Keywords: Golden jackal, Habitat suitability analysis, habitat requirements, the Netherlands

Introduction

The golden jackal (*Canis aureus*) is a canid species with a widespread range. Up to the year 1950 their habitat ranged from Indochina (Sillero-Zubiri et al., 2004), in the east, to the Balkans in the northwest (Jahla & Moehlman, 2008). Since 1980, the species is expanding north-westward in Europe, which resulted in a genetic founder effect (Zachos et al., 2009). Since 1980, the golden jackal has established a thriving population in Hungary with an estimated population of more than 1500 individuals in 2007 (Toth et al., 2009). The first sighting in Germany was in 2000 (Möckel, 2000). Reproduction of the golden jackal was confirmed in Italy in 2007 (Lapini et al., 2009) and in Czech Republic in 2017 (Jirku et al., 2018). Factors that seem to drive the recent expansion of the golden jackal are land use change (Šálek et al., 2014), climate change (Arnold et al., 2012) and the persecution of wolves (*Canis lupus*), which eliminated mesopredator control (Krofel, 2017).

Historically, the golden jackal did not occur in these parts of Europe and therefore has not received as much as attention from ecologists or jurists compared to other terrestrial carnivores such as the wolf (Trouwborst et al., 2015; Chapron et al., 2014). The golden jackal is lesser legally protected compared to the wolf as the species is included in the Annex V of the Habitats Directive of the European Union (European Commision, 1992). This indicates that Member States must ensure that their exploitation and taking in the wild is compatible with maintaining a favourable conservation status of the golden jackal. This law requires States to anticipate what kind of management decisions will have to be taken for the golden jackal population in their State. To ensure the Netherlands can live up to these standards, if the golden jackal were to settle here, it is vital to know where the golden jackal will find suitable habitat.

The first sighting of a golden jackal in the Netherlands was documented in February 2016 on the Veluwe by means of a camera trap (WUR, 2016). These pictures have been verified by international experts on carnivores (pers. comm. G. Lelieveld). The apparent northwestwardly expansion of this species combined with this first sighting makes the arrival of the golden jackal in the Netherlands almost a certainty. Therefore, this study will review literature on the habitat requirements of the golden jackal and perform a Habitat Suitability Analysis (HSA) in order to answer the following questions: (I) Where would this species find suitable habitat in the Netherlands? (II) How large are the areas with different classes of quality of suitable habitat?

The literature review on the habitat requirements will focus on the behaviour of the golden jackal, its diet and habitat selection including how they deal with competitors such as the red fox (*Vulpus vulpus*) and grey wolf. The conclusions of the literature review will be used in the HSA when assessing suitable habitat for the golden jackal.

Biology of the golden jackal

Taxonomy

Despite its name, the golden jackal is more related to the grey wolf (*Canis lupus*) than the black backed jackal (*Canis mesomelas*) and the side-striped jackal (*Canis adustus)* in southern Africa (Lindblad-Toh et al., 2005). An important note is that recently, all golden

jackals that occurred in northern Africa are now classified as the golden wolf (Rueness, 2011) instead, due to DNA analyses. They are placed in the grey wolf cluster together with the Holarctic wolf, the Indian wolf and the Himalayan wolf (Waters, 2015; Rueness, 2011).

Appearance

The golden jackal is a medium-sized canid weighing approximately around 13 kg, slightly larger than a red fox, which weights around 6 kg (Lanszki et al., 2016). Its coat is brown to tawny and sometimes has a darker saddle, similar to the black-backed jackal. The belly is lighter and the breast can have unique lighter markers. The tail can be described bushy and often has a darker tip. Its legs are relatively long with small pads (Sillero-Zubir et al., 2004).

Social and hunting behaviour

The behaviour of the golden jackal is very similar to that of the wolf. The species lives in packs consisting of a breeding pair and the cubs of previous years which assist their parents by providing food for the litter of this year. There are cases known of jackal families hunting together, but this only occurs at a high density of golden jackal in an area (Markov, 2012). Usually, the golden jackal hunts solitary (Sillero-Zubir et al., 2004). This affects the prey size they can handle, the largest wild prey in Europe are red deer calves (*Cervus elaphus*; Boskovic et al., 2013). The rest of its diet is rather flexible and differs per season. A study showed that the primary food of the golden jackal in winter consisted of livestock carcasses, while small mammals were viewed as a secondary food choice (Ciroviv et al., 2014). Plant materials were rarely eaten in this study. In contrast, a study on their diet over the whole year, conducted by Radovic & Plan (2010), shows a more varied diet. Meat was still the primary food source, but also fruits, seeds and vegetables filled a third of the diet of these golden jackals. A third study on their diet, in summer in an agricultural area, found that their main food source consisted of small mammals (Markov & Lanszki, 2012). Hence, most land use types in the Netherlands provide some kind of food source the golden jackal can use (Appendix I).

The fact that they can thrive on a wide food range indicates a high flexibility in habitat selection. Apart from forests, they can colonize agricultural areas where they hunt small rodents (Šálek et al., 2014). But even urban areas are visited at night where they forage for garbage (Jahla & Moehlman, 2008; Giannatos, 2004; Sillero-Zubir et al., 2004). A study conducted in Greece found that the mean distance of observed jackal groups to the nearest human settlement was 2.61 km (0.1 – 4.5 km; n = 112; Giannatos, 2004).

The habitat size and population densities (Boyce et al., 2015; Salek et al., 2014) of the golden jackal correlates with the amount of food resources present in the area. For example, in Israel jackal densities became very high at a garbage dump (Reichmann, 2013). Giannatos (2004) found 1 group within 12 km^2 in poor quality habitat while he also found 1 group/1 km^2 in high quality habitat. The average number of groups that he found were 2 – 3 groups/10 –12 km^2.

Habitat preference

Giannatos (2004) also found that the golden jackal does not occur on high elevations or mountainous terrain due to winters with extended periods of snow cover. The Netherlands

does not have mountains and lacks cold winters with long periods of snow cover. These factors were therefore no limitation to the golden jackal and excluded from this study. The golden jackal prefers small forests with open canopies (Giannatos, 2004). They have a tendency to settle in dense parts of small forest patches near human settlements (Markov, 2012). A study performed by Lanszki et al. (2018) tracked a young female while she was dispersing to start her own territory. She overcame two highways and found her own territory about 230 km away from her parents' den. Her new territory had a significant lower density of golden jackal and confirms a high dispersal ability in this species. This implies that roads are viewed as a potential threat but will not halt the ongoing range expansion of the golden jackal.

Interaction with wolf and fox

Their flexibility also becomes evident in their interaction with the red fox. The golden jackal and the fox have an overlap in their food sources and feeding habits. When food sources are abundant, both species will consume small rodents (Lanszki & Heltai, 2010). When food sources are less abundant, both canids seem to diverge in food preferences. A study conducted by Lanszki et al. (2016) showed that this divergence leads to long term coexistence of the two canids despite their apparent niche overlap. Another study found similar results in the behaviour of the two species. Red foxes did not alter their behaviour when presented with the smell of the golden jackal but avoided an area where a golden jackal was present at that moment (Scheinin et al., 2006). This indicates that avoidance seems to lead to temporal divergence while their territories still have spatial overlap.

The interaction between the golden jackal and the grey wolf seems to be different, although little research has been conducted on this interaction. A study conducted by Mohammadi et al., (2017) observed a grey wolf kill a golden jackal in an agricultural area. Observations of an established golden jackal population in Greece, which disappeared the moment a wolf pack of four individuals claimed the area (Giannatos, 2004), indicate the same. These authors also observed that wolves were drawn to jackal sounds, presumably to chase them off.

To summarize, previous literature shows that diet is not a limiting factor for the golden jackal due to its flexibility. The presence of foxes in their habitat is also no limitation to the golden jackal. However, presence of wolves can be fatal. The golden jackal prefers forested areas with clearings and near human settlements but can also thrive in agricultural areas. Urban areas can be visited but do not provide rest areas and are therefore not permanently used by the golden jackal.

Method

Choice of habitat suitability analysis

The Habitat Suitability Analysis will be rule based due to the flexibility of the species and lack of sufficient literature on the golden jackal to do any kind of powerful statistical analysis. Based on the literature on the biology of the golden jackal, an expectation is made on the factors that will limit the habitat of golden jackals in the Netherlands (Table 1).

Table 1: Habitat requirement rules. Their numbers, rules and explanation is stated.

Number	Rule	Explanation
1	Diet is not a limiting factor.	Previous literature indicated that the golden jackal is extremely adaptable in its diet. The animal can adapt to changes such as the seasons (Markov & Lanszki, 2012), presence of the red fox (Lanszki & Heltai, 2010) and availability of food sources in the area (Šálek et al., 2014).
2	Urban areas are not used as resting spots but will be visited during the night for foraging purposes.	Previous literature indicated that the golden jackal does not stay in prime urban areas. However, it will enter urban areas at night in search for garbage (Jahla & Moehlman, 2008; Giannatos, 2004; Sillero-Zubir et al., 2004).
3	The territory of a family group in highly suitable areas is 6 km^2 and in suitable areas is 12 km^2.	Previous literature indicated the smallest habitat size is 6 km^2 under natural conditions (Salek et al., 2014; Giannatos, 2004).
4	Roads are barriers but these are not insurmountable.	Previous literature indicated that roads pose a threat to the golden jackal but is able to overcome those (Lanszki et al., 2018).
5	Presence of wolves makes an area uninhabitable for the golden jackal.	Previous literature indicated that the golden jackal avoids wolves (Mohammadi et al., 2017; Giannatos, 2004).

Study area and origin of data

The Habitat Suitability Analysis (HSA; Boyce & McDonald, 1999) of the golden jackal in the Netherlands utilized the most recent land cover map of the Netherlands; "Landelijk Grondgebruiksbestand Nederland versie 7 (LGN7)" as a basemap (Hazeu et al., 2014). Data regarding roads were retrieved from the Top10NL (Hazeu et al., 2014), this is the most recent and complete map of roads in the Netherlands. Potential wolf territories were derived from Lelieveld, (2012). Lelieveld, (2012) found that the Netherlands can support at least 14 wolf packs of which the territories are at least 225 km^2. The software QGIS and R version 3.4.0 were used to perform the HSA.

Modelling strategy

<u>Creating a basemap</u>

The first step was to create a base map with data on all relevant factors. Due to detailed data on land use (LGN7), a resolution of 25x25 meters was chosen. In this base map, each of the 39 land use types was assigned a class based on habitat suitability from 0 to 5 in which 5 was considered the highest suitability (0-5; Table 2; Figure 1). Appendix I contains

the argumentation behind the assigned suitability index classes. Table 2 depicts an explanation and estimated population density for each of the habitat suitability classes. The second step was to conduct a Focal Window Analysis. The goal of this analysis is to soften and reduce small spikes in the data. For example, a building in an otherwise suitable environment had a reduced negative effect on the area. However, primary and secondary roads should not have their negative impact reduced and where therefore added to the map after the Focal Window Analysis. Based on the resulting map, four different types of areas could be identified; core areas, highly suitable areas, suitable areas and all areas excluding wolf territories.

Identifying the 4 area types

The core areas consisted of all areas that were assigned suitability class 4 and 5, which were a single consecutive area based on Rook connectivity, larger than 6 km^2 and without any primary or secondary roads, in an attempt to reach a low disturbance level (Salek et al., 2014; Giannatos, 2004). An area size of 6 km^2 is conservative considering that several studies often found multiple golden jackal groups within 6 km^2(Salek et al., 2014; Giannatos, 2004). However, 6 km^2 was chosen because the Netherlands has a higher human population density which increases the disturbance levels. The only difference in assessment criteria between highly suitable habitats and core areas was that the latter could not contain any roads. In case core areas and highly suitable areas overlapped, core areas were considered a priority. To be conservative, any remaining highly suitable areas after this subtraction, that were smaller than 6 km^2, were excluded from the analysis. The third area type was low quality areas. These areas consisted of areas which were assigned class 3 to 5, and were a single consecutive area based on Rook connectivity and larger than 12 km^2. In case suitable areas and highly suitable areas or core areas overlapped, suitable areas were considered to be least important. To be conservative, any remaining suitable areas after this subtraction, that were smaller than 12 km^2, were excluded from the analysis. The fourth type consisted of all the areas combined minus potential wolf territories from Lelieveld, (2012) that were 225 km^2 or larger.

After the 4 area types were created, their total surface area and mean area size per polygon were calculated. Then a possible population density was estimated based on both surface areas. The total surface area was multiplied with the corresponding population density (Table 2). The mean area size was divided by the corresponding territory size (6 km^2 for core and highly suitable areas and 12 km^2 for suitable areas) and then the rounded down number was multiplied by the number of areas.

Table 2: Summary of the used basemap including an definition of the six suitability classes, population density and the corresponding ID codes from the LGN7.
*Population density is based on the studies from Giannatos, (2004) and Salek et al., (2014).

Basemap			
Suitability class	**Definition**	**Population density (family groups /km^2)***	**ID codes from the LGN7**
0	The golden jackal cannot live here.	0	8, 16, 17, 18, 20, 25.
1	The golden jackal cannot find	0	19,24,31,35.

	food here but the area itself poses no limitation.		
2	The golden jackal is able to forage for food here but this is of low quality and there are usually no resting areas present.	0.01	3,4,6,10,26,22,23,28,32,34,36.
3	The golden jackal is able to forage for food here, resting areas can be present.	0.08	1,2,5,61,9,30,33,37,38.
4	The golden jackal is able to forage for food here, this is of good quality. There are resting areas.	0.16	62,42.
5	The golden jackal is able to forage for high quality food here and resting areas are abundant.	0.16	11,12,39,40,41,43,45.

Results

The HSA showed that large parts of the Netherlands are suitable habitat for the golden jackal (Figure 1). The central, eastern and northern part of the Netherlands stand out in the amount and quality compared to the rest of the Netherlands (Appendix II). The distribution of the area sizes per area type shows that most of the areas are smaller than 100 km^2 (Figure 2). The Pearson Chi-Square test for the core areas (X=240, df=225, P=0.235), highly suitable areas (X=1332, df=1296, P=0.238) and the suitable areas (X=3080, df=3025, P=-.238) showed that no significant differences were found whether wolves were present or not.

The maximum amount of suitable habitat calculated per area and calculated from total area size show that the Netherlands can support 1432 to 1476 family groups. The first number was calculated with the minimum territory size in mind while the latter was calculated from the total suitable area size. If wolves were to re-established themselves in the Netherlands these numbers drop down to 781 and 851 family groups respectively (Table 3). Roughly half of the potential golden jackal population disappears while only a rough third of the total area disappears as mostly core areas disappear when wolves re-establish themselves in these areas.

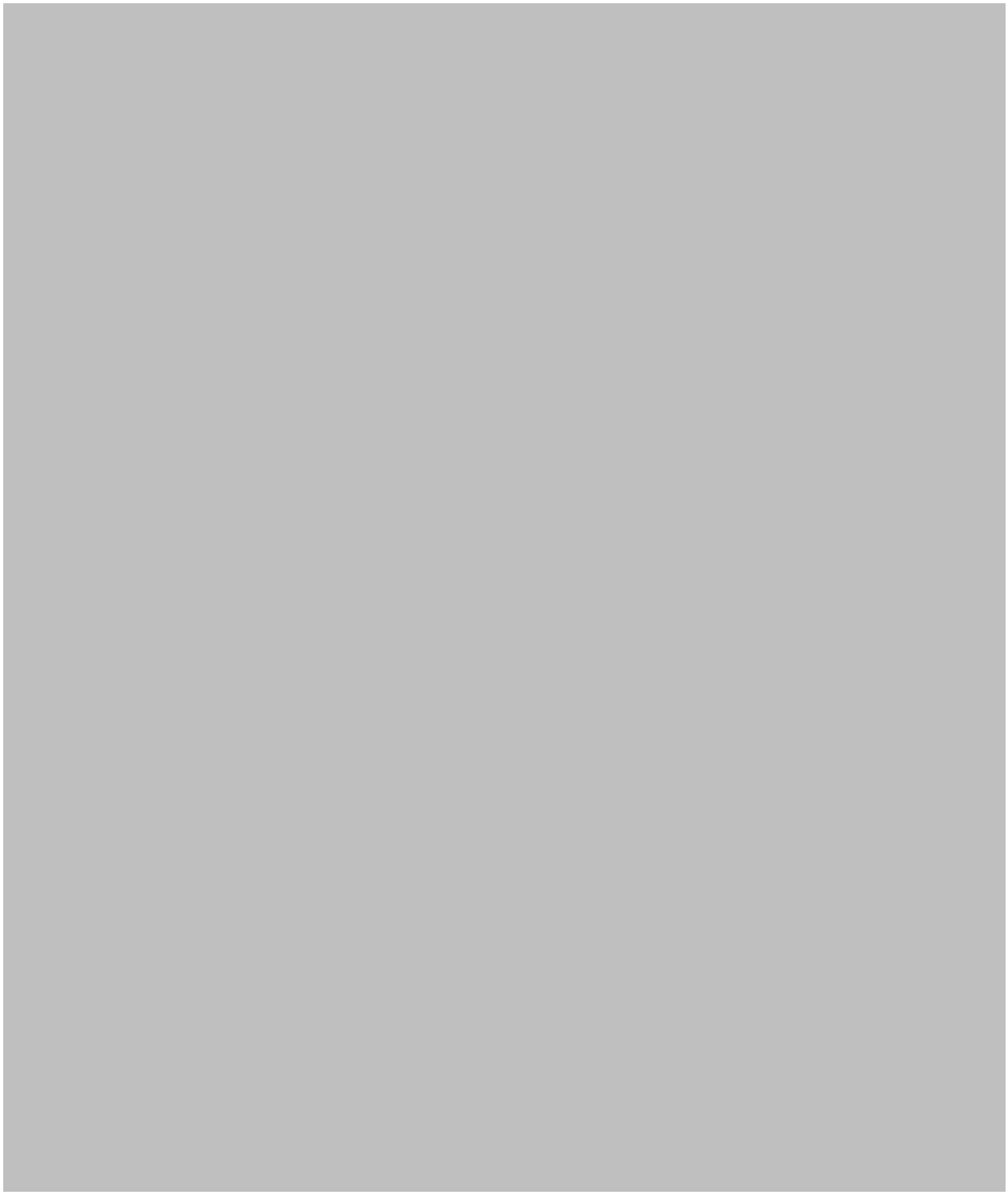

Figure 1: 3 maps of potential golden jackal habitat A. The Netherlands mapped based on habitat suitability. **B.** The Netherlands mapped based on habitat suitability including core areas, highly suitable areas and suitable areas. **C.** The Netherlands mapped as B but excluding potential wolf territories.

Table 3: Possible golden jackal population density per area and accounted for potential wolve presence in the Netherlands.

	No wolf presence				**Including wolf presence**			
	Core areas	Highly suitable areas	Suitable areas	Total	Core areas	Highly suitable areas	Suitable areas	Total
Number of areas	58	78	58	194	16	37	56	109
Average area size (km^2)	14.38	12.31	243.69	270.38	10.80	10.07	163.20	184.08
Total area size (km^2)	843.47	959.97	14133.81	15928.25	172.87	372.69	9139.15	9684.71
Potential number of family groups based on								
Average area size	116	156	1160	1432	16	37	728	781
Total area size	139	160	1177	1476	28	62	761	851

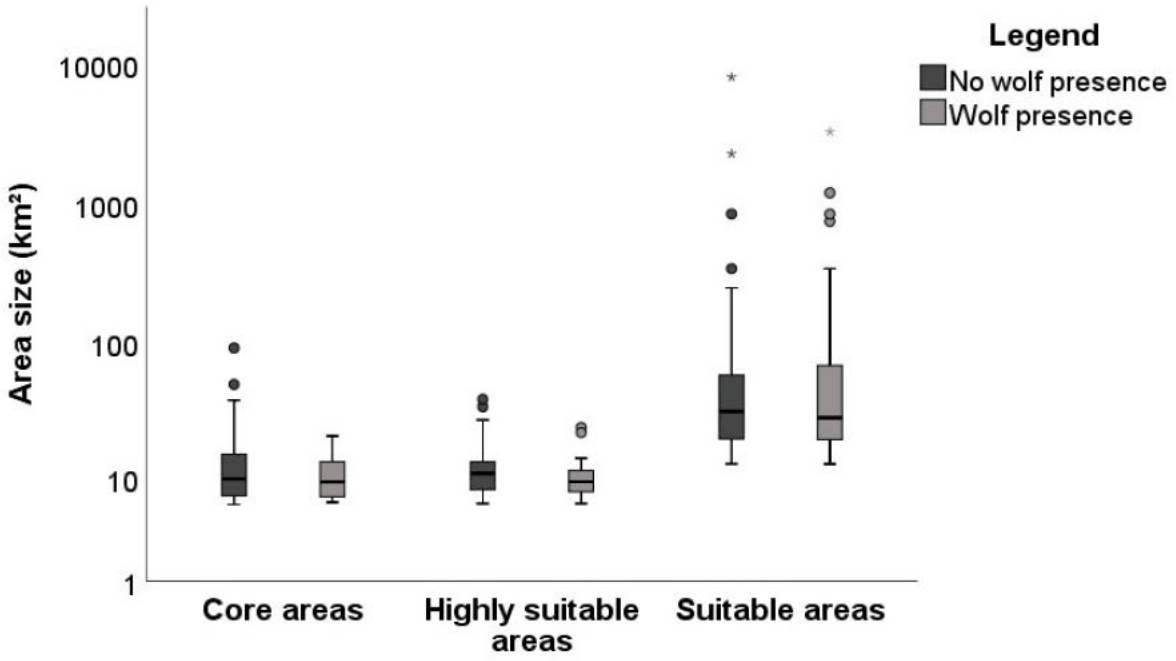

Figure 2: Boxplots of area size per area type. Core areas (n=58), Core areas with wolf presence (16), highly suitable areas (n=78), highly suitable areas with wolf presence (37), suitable areas (n=58) and suitable areas with wolf presence (56). The Y axis is on logarithmic scale. Outliers are depicted as a * and ° are suspected outliers. The middle line is the median, the two lines next to the median are the first and third quartile. The outermost lines depict the maximum and minimum.

Discussion

This study investigated where the golden jackal could settle (I) and how large the areas with different suitability classes are (II). Quality factors such as diet, roads, habitat size, land use and potential wolf territories were taken into account. The results show that north and eastern part of the Netherlands, together with the Veluwe in the center, seem to be the best areas for the golden jackal (Figure 1). Potential reestablishment of wolves however, would reduce the suitable golden jackal areas with 6243 km^2. These disappeared areas mainly consist of core areas for the golden jackal.

Even though this study applied conservative methods when assessing areas on quality in the HSA, the results showed that the Netherlands has around 7000 km^2 suitable habitat which could support at least 1432 family groups (Table 3). Such groups on average consist of 4 adults; one breeding pair and cubs of last year (Markov, 2012). This results in a possible population size of up to 5728 individuals of golden jackal in the Netherlands. The number of family groups calculated from mean area size and total area size only differ by 44 family groups. This shows that most of the suitable habitats are large enough to hold at least 1 family group and that excluding areas of insufficient size worked. In addition, Figure 2 shows that the area sizes mostly fit within a 100 km^2 range, there are two very large outliers in terms of size within the suitable areas, respectively 8053 and 2279 km^2. These outliers cover most of the north and eastern part of the Netherlands, which indicates a large area of well-connected suitable habitat there. Some areas, that provide suitable habitat, are hard to reach due to large surrounding water bodies, like Zeeland, or large urban areas, like north of the Amsterdam metropolitan region (Salek et al., 2014; Giannatos, 2004). Apart from this, most of the areas deemed suitable are reachable but time and future research is needed to be conclusive on this. However, potential reestablishment of wolves would reduce the 1432 possible golden jackal family groups to around 781 family groups.

All results combined show that the Netherlands has enough suitable habitat for a thriving population of golden jackal. Despite the high human and road density, there are enough sheltered areas and food sources. Also the fact that Lanszki et al. (2018) tracked a young migrating female, which easily crossed highways in a cultural landscape, suggests a high flexibility in the dispersal of the species. The main reason why the Netherlands might become less suitable for the golden jackal is the reestablishment of wolves in the country (Mohammadi et al., 2017; Giannatos, 2004).

All rules used for the HSA were supported by literature. However, there is a serious lack on literature on the golden jackal in general, which makes this study not as well supported as what would have been preferable. Therefore, this study tried to be as conservative as possible when assigning suitability classes to certain habitats. For instance, when there was any doubt about which suitability class should be chosen, the lower class was taken. This conservative method was also applied when assigning population density to a certain suitability class. Therefore there is a strong possibility that the potential population size of the golden jackal in the Netherlands was underestimated and could exceed estimated numbers. Especially when the adaptivity of this species is taken into account when it comes down to habitat requirements such as diet and resting areas (Šálek et al., 2014; Markov & Lanszki, 2012; Lanszki & Heltai, 2010). Other possible competitors such as the Eurasian lynx (*Lynx lynx*) and brown bear (*Ursus arctos*) were not included because this study deemed it unlikely that these predators will reproduce sooner than the wolf or golden jackal in the Netherlands. Furthermore, the border areas of the Netherlands are overlooked and

excluded by the HSA, since golden jackal territories can be part in neighbouring countries and part in the Netherlands.

Settlement of the golden jackal has implications for the Dutch society. The golden jackal is only slightly larger than a fox and therefore most likely too small to be of a direct threat towards humans. However, it could be a potential threat towards sheep (Lanszki et al., 2006). Most literature on this topic is from eastern Europe, where herds are housed indoor during the night, protected by sheepdogs or electric fencing to keep the cattle save from wolves (Lanszki et al., 2006). This also prevents golden jackal from hunting sheep. However, sheep in the Netherlands are not protected and are therefore potential prey, potentially leading to high costs for farmers.

Further research could expand this study to the whole of Europe since the expansion of the golden jackal is still going on. Then, factors such as elevation and cold winters will be necessary to take into account. Also studies on potential diet composition, specified for the Netherlands, could add value to the conclusions found in this study. Findings from these kind of studies could strengthen the argumentation behind the assignment of suitability classes to certain habitats.

The main conclusions from this conservative study are that potential golden jackal habitats are indeed present in the Netherlands which could support at least 1432 family groups. This leads to an estimated population size of at least 5728 individuals. The center, north and eastern part of the Netherlands is deemed the most suitable for this new species. However, potential reestablishment of wolves in the Netherlands would reduce available habitat for the golden jackal and thereby reducing the number of possible family groups from 1432 to 781. This reduces the potential population size to around 3124 individuals. This study considered as many parameters as possible and used conservative parameter settings, therefore it is likely that suitable habitat numbers were underestimated.

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Appendix I - Description of the classes in the basemap and explanation of the assigned suitability

The LGN7 was used as a basemap for this study. Each of the 39 land use types were classified based on their suitability for the golden jackal.

Code 1 - Agricultural grass
Grass that is utilized by farmers. This includes pastures for cattle and areas which are used to grow hay, including dikes, road sides and other grass covered areas. Also graveyards which are outside urban areas are included in this class.

The golden jackal can utilize these areas by hunting small mammals (Markov & Lanszki, 2012) and thus reducing pests (Cirovic et al., 2016). Therefore the assigned suitability class is 3.

Code 2 - Corn
All areas that are utilized by farmers to grow corn.

The golden jackal can utilize these areas by hunting small mammals (Markov & Lanszki, 2012) and thus reducing pests (Cirovic et al., 2016). Therefore the assigned suitability class is 3.

Code 3 - Potatoes
All areas that are utilized by farmers to grow potatoes.

The golden jackal can utilize these areas by hunting small mammals (Markov & Lanszki, 2012) and thus reducing pests (Cirovic et al., 2016). Therefore the assigned suitability class is 3.

Code 4 - Beets
All areas that are utilized by farmers to grow beets.

The golden jackal can utilize these areas by hunting small mammals (Markov & Lanszki, 2012). But the rodent density is lower compared to other crops. Therefore the assigned suitability class is 2.

Code 5 - Crop plants
All areas that are utilized by farmers to grow crop plants. This includes wheat, barley, have, rye, etcetera.

The golden jackal can utilize these areas by hunting small mammals (Markov & Lanszki, 2012) and thus reducing pests (Cirovic et al., 2016). Therefore the assigned suitability class is 3.

Code 6 - Other crops
All areas with agricultural crops that do not fall within the previous classes and are not in the class of flower bulbs. Examples of other crops are horticultural crops, cabbage crops, hemp, oilseed rape, etcetera.

The golden jackal can utilize these areas by hunting small mammals (Markov & Lanszki, 2012). The rodent density of these areas is difficult to determine. Therefore the assigned suitability class is a conservative 2.

Code 61 - Orchard (tree)
All areas which are utilized by farmers to grow trees.

The golden jackal can utilize these areas by hunting small mammals (Markov & Lanszki, 2012). Therefore the assigned suitability class is 3.

Code 62 - Orchard (fruit)
All areas which are utilized by farmers to grow low growing fruit trees. No distinction between different kinds of fruit are made.

The golden jackal can utilize these areas by hunting small mammals (Markov & Lanszki, 2012) and eating fallen fruit (Radovic & Plan, 2010). Therefore the assigned suitability class is 4.

Code 8 - Greenhouses
All areas which are utilized by farmers by growing crops in greenhouses.

Assumed is that the golden jackal cannot enter these buildings and is therefore unable to utilize these areas. Assigned suitability class for this habitat is 0.

Code 9 - Orchard
All areas which are utilized by farmers to grow high growing fruit trees. No distinction between different kinds of fruit are made.

The golden jackal can utilize these areas by hunting rodents (Markov & Lanszki, 2012) and eating fallen fruit (Radovic & Plan, 2010). Therefore the assigned suitability class is 3.

Code 10 - Flower bulb fields
All areas which are utilized by farmers by growing flower bulbs.

The golden jackal can utilize these areas by hunting small mammals (Markov & Lanszki, 2012) and thus reducing pests (Cirovic et al., 2016). Therefore the assigned suitability class is 2.

Code 26 - Construction in rural area
All buildings within the classes agriculture, forest and nature.

The golden jackal can utilize these areas by feeding on garbage but will not rest here (Giannatos, 2004). Assigned suitability class for this habitat is 2.

Code 11 - Deciduous forest
This concerns deciduous forests outside urban areas. Forests in marshland and peat moor areas have gotten their own classes. Deciduous forest can have the function of nature but not per sé.

The golden jackal can utilize these areas by hunting small mammals (Markov & Lanszki, 2012), larger mammals (Boskovic et al., 2013) and foraging for fruits and seeds (Radovic & Plan, 2010). In addition this habitat can provide resting spots which consist of dense vegetation and thereby difficult to penetrate by humans and domestic animals (Giannatos, 2004). Therefore the assigned suitability class is 5.

Code 12- Coniferous forest
This concerns coniferous forests outside urban areas. Forests in marshland and peat moor areas have gotten their own classes. Deciduous forest can have the function of nature but not per sé.

The golden jackal can utilize these areas by hunting small mammals (Markov & Lanszki, 2012), larger mammals (Boskovic et al., 2013) and foraging for fruits and seeds (Radovic & Plan, 2010). In addition this habitat can provide resting spots which consist of dense vegetation and thereby difficult to penetrate by humans and domestic animals (Giannatos, 2004). Therefore the assigned suitability class is 5.

Code 16 - Fresh water
All inland areas covered with fresh water such as rivers, lakes, ditches, etcetera.

The golden jackal will drink from these areas but cannot live here. It is a land mammal. Therefore the assigned suitability class is 0.

Code 17 - Salt water
All areas covered with salt water such as the North Sea, Wadden Sea, Oosterschelde, Westerschelde, etcetera.

The golden jackal cannot live here because it is a land mammal. Therefore the assigned suitability class is 0.

Code 18 - Buildings in prime urban areas
All buildings within prime urban areas. Prime urban areas are shops, restaurants, company and industrial sites. These are typically located in the center of urban areas.

These areas generally have a high number of human population. Therefore the golden jackal will not enter these areas (Giannatos, 2004). Therefore the assigned suitability class is 0.

Code 19 - Buildings in secundair urban areas
All buildings within secundair urban areas. Secundair urban areas are. These are typically located at the edge of urban areas or not connected to cities. Examples are airports, campings, buildings within military zones, buildings for electricity, etc.

These areas have a fluctuating number of human population. The golden jackal will enter these areas if the number is low to forage for garbage (Jahla & Moehlman, 2008; Giannatos, 2004; Sillero-Zubir et al., 2004). Therefore the assigned suitability class is 1.

Code 20 - Forest in prime urban areas
All forests located within prime urban areas.

The golden jackal will not enter these areas due to the high human population (Giannatos, 2004). Therefore the assigned suitability class is 0.

Code 22 - Forest in secundair urban areas
All forests located within secundair urban areas.

The golden jackal will enter these areas to hunt for small rodents (Markov & Lanszki, 2012) and forage for fruits and seeds (Radovic & Plan, 2010). The quality of these areas are difficult to determine. However, if these habitats do have potency to be of high quality. Therefore the assigned suitability class is 2.

Code 23 - Grass in prime urban areas
All grass areas within prime urban areas. These areas are construction sites, parks and sports facilities.

The golden jackal will visit these places at night, when there are less people around, to forage for garbage (Jahla & Moehlman, 2008; Giannatos, 2004; Sillero-Zubir et al., 2004) and hunt small rodents (Markov & Lanszki, 2012). Therefore the assigned suitability class is 2.

Code 24 - Bare soil in urban outskirts
All areas covered with bare soil in urban areas.

The golden jackal will not be able to forage for food in these areas. However, it is also not a limiting factor to them. Therefore the assigned suitability class is 1.

Code 28 - Grass in secundair urban areas
All grass areas within prime urban areas. These areas are sports facilities, recreation areas, golf courts and garbage dumps.

The golden jackal will visit these places at night, when there are less people around (Giannatos, 2004) to forage for garbage (Reichmann, 2013) and hunt small rodents (Markov & Lanszki, 2012). Some of these areas can be of high quality while others of lower quality. Therefore the assigned suitability class is 2.

Code 25 - Infrastructure
This includes all major roads and train tracks. Highways, major roads and all roads broader than 7 meters are included. All roads are buffered with 12.5, the train tracks have different buffers depending on the type of train track. The golden jackal can profit from roads by feeding on roadkills like the red fox (Douglas et al., 2011). However, roads can be lethal, therefore the assigned suitability class is 0.

Code 30 - Saltmarsh
All grass areas outside the dikes.

The golden jackal can hunt for small rodents (Markov & Lanszki, 2012) and seabirds in these areas (Lanszki et al., 2009). Therefore the assigned suitability class is 3.

Code 31 - Open sand
All areas along the coast without any vegetation such as beaches and open dunes.

The golden jackal will not find any food here but is also not a limitation since human population is low (Giannatos, 2004). Therefore the assigned suitability class is 1.

Code 32 - Dunes with low vegetation (<1m)
Dunes in coastal areas with low vegetation <1m.

The golden jackal can hunt for small rodents (Markov & Lanszki, 2012) and birds (Lanszki et al., 2009). Therefore the assigned suitability classification is 2.

Code 33 - Dunes with high vegetation (>1m)
Dunes in coastal areas with high vegetation >1m.

The golden jackal can hunt for more rodents here compared to the dunes with low vegetation (Markov & Lanszki, 2012). Therefore the assigned suitability classification is 3.

Code 34 - Dunes with heathland
Dunes covered with heath.

The golden jackal can hunt for rodents here (Markov & Lanszki, 2012). However, heathland is has a low production speed. Therefore the assigned suitability classification is 2.

Code 35 - Open sand (drift/ river sand)
All areas covered with open sand with almost no to none vegetation, not situated in coastal dunes. Mostly drift planes but also beaches along rivers.

The golden jackal cannot forage for food in these areas but they are not limiting since human population is low (Giannatos, 2004). In addition, beaches along rivers can provide carrion. However, the basemap did not differentiate between drift sands and beaches along rivers. Therefore the assigned suitability class is 1.

Code 36 - Heathland
All areas covered with heathland with less than 25% grass.

The golden jackal can hunt for small rodents but heathland is of poor quality (Markov & Lanszki, 2012). Therefore the assigned suitability class is 2.

Code 37 - Moderate grassy heath
All areas covered with heathland with grassy elements between 25-75%.

The golden jackal can hunt small for rodents. However heathland is of poor quality but grassland is not (Markov & Lanszki, 2012). Therefore the assigned suitability class is 3.

Code 38 - Grassy heath
All areas covered with heathland with grassy elements more than 80%.

The golden jackal can hunt for rodents. However heathland is of poor quality but grassland is not (Markov & Lanszki, 2012). It is difficult to determine whether the slight increase in grass will affect the hunting possibilities of the golden jackal. Therefore the assigned suitability class is 3.

Code 39 - Peat moor
All areas covered with peat moor.

The jackal can hunt for rodents (Markov & Lanszki, 2012), birds (Lanszki et al., 2009) and forage for fruits and seeds (Corlett, 2017). In addition, this habitat can provide resting spots which consist of dense vegetation and thereby difficult to penetrate by humans and domestic animals (Giannatos, 2004). Therefore the assigned suitability class for this habitat is 5.

Code 40 - Forest on peat moor
All areas covered with forest, situated on peat moor.

The jackal can hunt for rodents (Markov & Lanszki, 2012), birds (Lanszki et al., 2009) and forage for fruits and seeds (Corlett, 2017; Radovic & Plan, 2010). In addition, this habitat can provide resting spots which consist of dense vegetation and thereby difficult to penetrate by humans and domestic animals (Giannatos, 2004). Therefore the assigned suitability class for this habitat is 5.

Code 41 - Other marsh vegetation
All areas covered in vegetation that is not forest or reed. These vegetation types mainly consist of grasslands within marsland.

The jackal can hunt for rodents (Markov & Lanszki, 2012), birds, water fauna, (Lanszki et al., 2009) and forage for fruits and seeds (Radovic & Plan, 2010). In addition, this habitat can provide resting spots which consist of dense vegetation and thereby difficult to penetrate by humans and domestic animals (Giannatos, 2004). Therefore the assigned suitability class for this habitat is 5.

Code 42 - Reed vegetation
All areas covered with reed, situated in marshland.

In several countries the nickname of the golden jackal is reed wolf (Toth et al., 2009). The jackal can hunt for rodents (Markov & Lanszki, 2012), birds, water fauna, (Lanszki et al., 2009) and forage for fruits and seeds (Radovic & Plan, 2010). However, resting spots are less abundant due to the usually wet ground. Therefore the assigned suitability class for this habitat is 4.

Code 43 - Forest in marshland
All areas covered in forest, situated in marshland.

The jackal can hunt for rodents (Markov & Lanszki, 2012), birds (Lanszki et al., 2009) and forage for fruits and seeds (Radovic & Plan, 2010). In addition, this habitat can provide resting spots which consist of dense vegetation and thereby difficult to penetrate by humans and domestic animals (Giannatos, 2004). Therefore the assigned suitability class for this habitat is 5.

Code 45 - Nature grasslands
Nature areas covered with grass. These areas are not managed intensively.

The jackal can hunt for rodents (Markov & Lanszki, 2012) and forage for fruits and seeds (Radovic & Plan, 2010). In addition, this habitat can provide resting spots which consist of dense vegetation and thereby difficult to penetrate by humans and domestic animals (Giannatos, 2004). Therefore the assigned suitability class for this habitat is 5.

Appendix II - Detailed maps

The Netherlands mapped according to habitat suitability

The Netherlands mapped according to habitat suitability including core areas, highly suitable areas and suitable areas

The Netherlands mapped according to habitat suitability minus potential wolf territories.

Goudjakhals komt naar Nederland

Huilende goudjakhals (Bron:)

De afgelopen maanden is er veel in de pers geweest over het feit dat Duitse wolven steeds vaker Nederland bezoeken, in hun zoektocht naar nieuwe territoria. Minder bekend is dat ook het kleine neefje van de wolf, de goudjakhals (*Canis aureus*), naar Nederland komt om precies dezelfde reden. De Nederlandse natuur heeft mogelijk genoeg potentie voor roofdieren en is daarmee geschikt voor beide soorten om zich hier te vestigen. Waar precies goudjakhalzen zich kunnen vestigen, wordt nu door de Zoogdiervereniging uitgezocht.

Terwijl de wolf hier in Nederland gedurende de middeleeuwen van nature zijn leefgebied had, is voor de goudjakhals Nederland een compleet nieuw gebied. Deze soort had van oorsprong zijn habitat van de Balkan en het Midden-Oosten helemaal tot in Bangladesh. Sinds de jaren '80 is de jakhals zich, vanuit de Balkan, op natuurlijke wijze gaan verspreiden. Waarom dit precies toen is gebeurd is niet duidelijk, maar er wordt aangenomen dat veranderingen van landgebruik (Šálek e.a., 2014) en klimaatverandering (Arnold e.a., 2012) hier een rol in spelen.

De verspreiding van de goudjakhals gaat erg snel. Inmiddels zijn er populaties in Tsjechië, Kroatië en Slovenië. Deze populaties groeien zo hard dat ze nu actief worden bejaagd. Dit is in beperkte mate toegestaan, want de goudjakhals valt onder Bijlage V van de

Habitatrichtlijn. Sinds 2000 komt de goudjakhals ook voor in Duitsland en Italië. De populaties daar doen het goed. De eerste goudjakhals in Nederland werd gezien op de Veluwe in 2016.

Goudjakhals bij nacht (Foto:)

De manier van leven van de goudjakhals lijkt erg op die van wolven. Ze leven ook in roedels waarbij de jongen van vorige jaren hun ouders helpen met het grootbrengen van de nieuwe generatie. Als de jongen ongeveer twee jaar oud zijn, gaan ze op zoek naar nieuwe territoria. Het is de verwachting dat Nederland geschikt leefgebied heeft voor de goudjakhals, maar waar dit precies ligt en hoe de goudjakhals om zal gaan met de (potentiële) vestiging van de wolf is nog onduidelijk. Juist deze vraag gaat studente van de Wageningen Universiteit voor de Zoogdiervereniging onderzoeken.

Tekst: , Zoogdiervereniging
Foto:

Assessment internship Wageningen University

Complete the single lined fields (use decimal point or comma, depending on the language setting)

Name chairgroup (three letter code)	REG
Name student	[redacted]
Registration number	[redacted]
MSc programme	FNP
Specialisation	
Course code internship	REG70424
Short title internship	Habitat suitability analysis of the golden jackal in the netherlands
Date internship contract	27-2-2018
Date examination	11-7-2018
Name supervisor chair group	[redacted]
Name supervisor internship provider	[redacted]
Name and address internship provider	Zoogdiervereniging
Name and signature examinor internship	[redacted]

Learning Outcomes

	Grading Mark 1-10	Relative weight *
A Professional skills (20-50%)*		35%
1 Initiative and creativity	8	
2 Insight in functioning of another organisation	8.5	
3 Adaptation capacity	9	
4 Commitment and perseverance	9	
5 Independence	8	8.4
6 Handling supervisor's comments and development skills	7.7	
7 Time management	8.5	
B Report internship (20-50%) *		35%
1 Formulation goals, frame work project	9	
2 Theoretical underpinning, use of literature	8	
3 Use of methods and processing data	8	8.0
4 Reflection on results	7	
5 Conclusions and discussion	8	
6 Fluency of language and writing skills	8	
C Self reflection on internship (10-30%)*		20%
1 Report on self reflection	8	8.0
D Presentation (5%) *		5%
1 Presentation: graphs, powerpoint	8	
2 Oral presentation and defence	8.5	8.3
E Examination (5%) *		5%
1 Defence of the report	8	
2 Reflection on the internship	8	8.0

* Choose rel. weights to a total of 100%

FINAL GRADE 8.1

Comments internship provider

Geweldig uitgevoerde stage. Erg goede projectmanagement-vaardigheden. Had aan het einde iets meer theoretische diepgang ingemogen, maar zeker MSc waardig resultaat vanwege het uitstekende gebruik van het beperkte aanbod aan literatuur tijdens de ontw kkeling van de methodiek. Dit onderzoek gaat nog veel gebruikt worden en nog heel veel media-ervaring opleveren voor [redacted] . Ze kan goed overweg met de pers en leert ook hierin erg snel. Ze is inmiddels een zeer waardevolle en gewaardeerde aanvulling binnen Wolven in Nederland en k jk ernaar uit om met haar het werk te presenteren op het [redacted] eind oktober/begin november 2018.

Comments examinor

Studying emotions and cognitions to the acceptability of management actions

[redacted] and [redacted]

*current affiliation: Leibniz Institute for Zoo and Wildlife Research, Berlin

Background

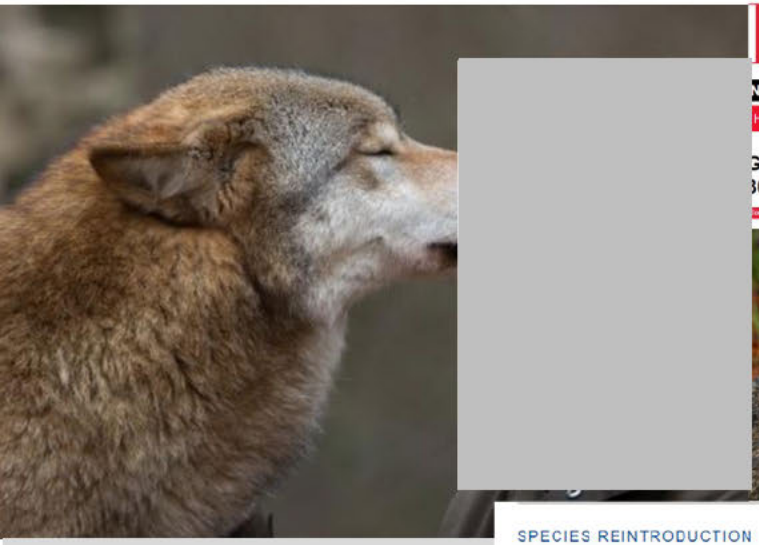
European Gray Wolf (*Canis lupus*)

Recolonizing Germany since start of millennium and exploring Netherlands since 2011 (‚Wanderwolf' in 2015).

European Gray Wolf (*Canis lupus*)

- Strictly protected under the Habitat Directive (1992, Annexes II and IV) and Bern Convention (1979).
- Wolf management plans (Federal States in Germany and Dutch Government) and education programs in both countries.

However, while European wolves are strictly protected ….



Peaceful co-existence?

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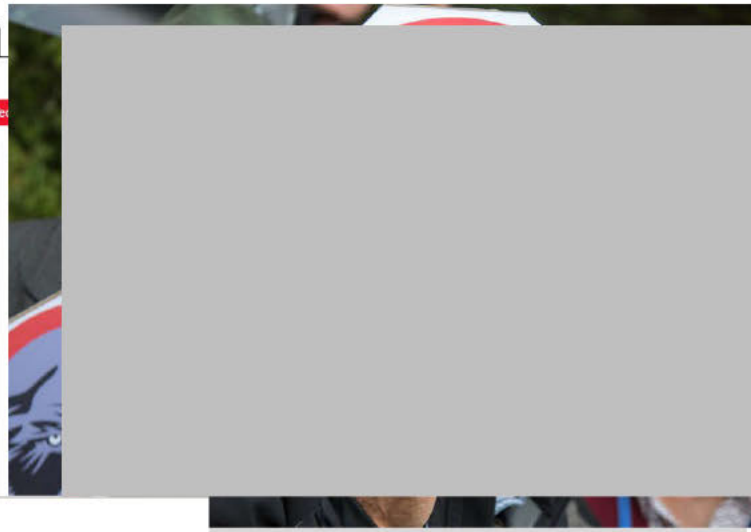
Groningen farmer cries wolf, twice, as over 30 sheep are killed in the north

SPECIES REINTRODUCTION

Germans divided over return of the wolves

Wolves have been making a comeback, with a few dozen packs already roaming Germany's forests. But the return of a predator feared since ancient times has the human population fiercely divided.



Lethal control?

- … people have their own views about how wolves should be managed.
- Public acceptability of management strategies is crucial to the success of wildlife conservation and management outcomes (Manfredo, 2008; Teel and Manfredo, 2010).

Acceptability of Management Actions

Depending on the severity of the scenario with wildlife people are more likely to accept severe management actions, such as lethal control (Martinez-Espineira 2006; Jacobs, Vaske and Sijtsma, 2014; Mormile and Hill 2017).

Acceptability of Management Actions

Theoretical Background

- Acceptability of wildlife management actions are influenced by people's emotions and cognitions (Jacobs, Vaske & Sijtsma et al. 2014, Jacobs et al. 2014).
- However, previous studies either measured (mostly) cognitions or emotions to predict responses to management actions.

Cognitions (e.g. values or beliefs)

Emotions about wildlife

Acceptability of Wildlife Management Actions

Study Aims

To investigate:

i) the acceptability of wolf management actions in scenarios varying in their severity.

ii) the predictive potential of cognitions *and* emotions on the acceptability of wolf management actions.

Methods

Methods

- Quantiative survey: 5-paged questionnaire distributed to students* in the Netherlands (n = 368 students; average age = 20.6) and Germany (n = 229 students; average age = 24.2).

- Four sections in questionnaire:
  1. Wildlife value orientations
  2. Emotions (valence and arousal)
  3. Acceptability of management actions
  4. Demographics (e.g. gender, age)

*students were enrolled in courses in social, natural and environmental sciences at the Wageningen University and Ludwig Maximilian University of Munich.

Wildlife Value Orientations

- Psychometric scale to measure basic beliefs about wildlife.
- Two ideologies: Domination and Mutualism (Manfredo *et al.* 2009).

Ideology	*Dimension (# of items)*	*Items* (examples)*
Domination	Hunting (4)	*Hunting is cruel and inhumane to the animals*
		Hunting does not respect the lives of animals
	Use beliefs (6)	*It is acceptable for people to kill wildlife if they think it poses a threat to their life*
		The needs of humans should take priority over fish and wildlife protection
Mutualism	Social affiliation (4)	*I view all living things as part of one big family*
		Animals should have rights similar to the rights of humans
	Caring (5)	*I care about animals as much as I do other people*
		I feel a strong emotional bond with animals

*Measured on a 7- point Likert scale

Emotions

- Dimensional perspectives (bipolar scales) on valence and arousal (Jacobs *et al*. 2014).
- Valence (*grey*) = pleasure or displeasure of emotional states when an animal is encountered.
- Arousal (*white*) = feelings that are activated when an animal is seen.

For each statement below, please indicate your feelings when you think about the <u>wolf</u>. *Please circle one number for each statement.*								
1. Don't like	1	2	3	4	5	6	7	**Like**
2. Passive	1	2	3	4	5	6	7	**Active**
3. Unpleasant	1	2	3	4	5	6	7	**Pleasant**
4. Relaxation	1	2	3	4	5	6	7	**Tension**
5. Negative	1	2	3	4	5	6	7	**Positive**
6. Without energy	1	2	3	4	5	6	7	**Energetic**
7. Not enjoyable	1	2	3	4	5	6	7	**Enjoyable**
8. Not calm	1	2	3	4	5	6	7	**Calm**

Acceptability of Management Actions

Situation 1: A pack of wolves lives in a large nature area. There's a chance that **hikers see** them.
Situation 2: Wolves living in a large nature area have **attacked several lambs** on a nearby farm.
Situation 3: Wolves living in a large nature area have **attacked and killed a hiker**.

How unacceptable or acceptable is it if responsible authorities:	**Very unacceptable**			**Neutral**			**Very acceptable**
1. Do nothing	-3	-2	-1	0	1	2	3
2. Educate the public	-3	-2	-1	0	1	2	3
3. Kill the wolves	-3	-2	-1	0	1	2	3

Results

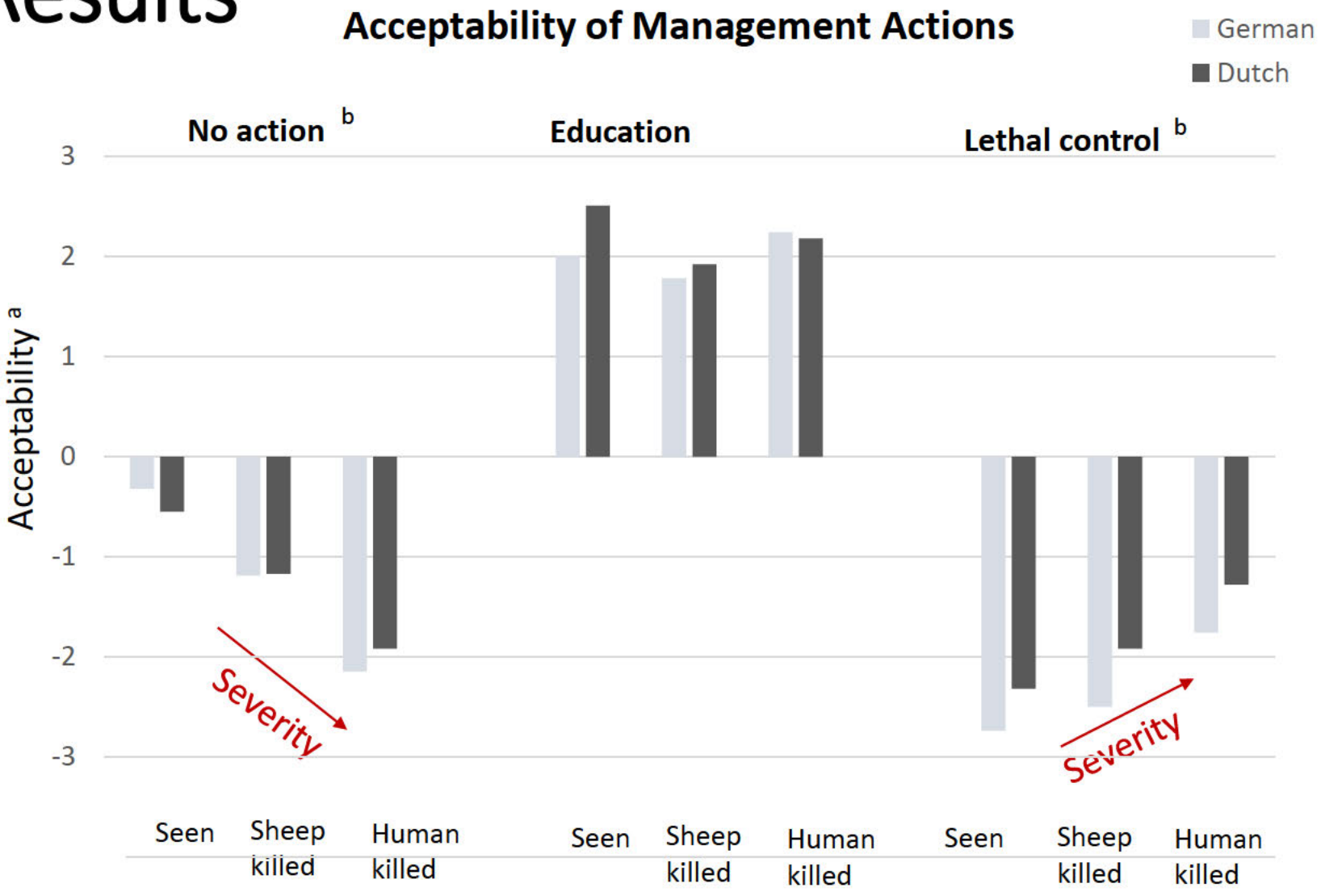
Results

- Scales showed an acceptable reliability* (Cronbach's alpha; cut-off point of .70), except for arousal.

Construct	Cronbach's Alpha
Wildlife value orientations	
Use (6 items)	.75
Hunting (4 items)	.70
Domination (use and hunting items combined)	.80
Social affiliation (4 items)	.81
Caring (5 items)	.86
Mutualism (affiliation and caring items combined)	.87
Emotions	
Valence towards wolves (4 items)	.90
~~Arousal towards wolves (4 items)~~	~~.56~~
Acceptability of management actions	
Acceptability doing nothing (3 items)	.80
Acceptability educating public (3 items)	.79
Acceptability lethal control (3 items)	.83

*Combined data set; scale reliability was similar in both countries.

Results



[a] Measured on a 7-point scale from -3 (very unacceptable) to +3 (very acceptable) with 0 as a neutral point

[b] Significantly different across problem levels (paired-sample *t*-tests, p<.001)

Results *(Option 1)*

- Both *Wildlife Value Orientation* ideologies had significant predictive potential for the acceptability of lethal control; mutualism for education.
- *Valence* had significant additional predictive potential for the acceptability of all three management actions (LRT: No action: $F = 28.8$, p = < .001; Education: $F = 20.5$, p = < .001; Lethal control: $F = 46.6$, p = < .001).

	No action		Education		Lethal control	
	Beta	**Adjusted R^2**	**Beta**	**Adjusted R^2**	**Beta**	**Adjusted R^2**
Model 1: WVOs		.00		.01		.25***
Domination	.05		.04		**.46****	
Mutualism	.07		**.11***		**-.21*****	
Model 2: WVOs and valence		.05***		.04***		.30***
Domination	.06		.04		**.44*****	
Mutualism	-.01		.05		**-.13****	
Valence	**.26*****		**.16*****		**-.24*****	

Results *(Option 2)*

- Domination was a strong positive predictor and mutualism a strong negative one for lethal control.
- Valence had additional predictive potential for lethal control and was the only significant positive predictor for taking no action

Table 3: Acceptability of management actions no action and lethal control explained by WVOs and valence (German and Dutch Data set combined). Linear regression analysis with beta coefficients and adjusted R^2. P-*values* represented as $p \leq .001^{***}$, $p \leq .01^{**}$, $p \leq .05^{*}$.

	No action			Lethal control		
Model **Variables**	**Beta**	**Adjusted R^2**	**R^2 change**	**Beta**	**Adjusted R^2**	**R^2 change**
Model 1: WVOs		.00			$.25^{***}$	
Domination	.03			$.36^{***}$		
Mutualism	.07			$-.21^{***}$		
Model 2: WVOs and valence		$.05^{***}$	$.05^{***}$		$.31^{***}$	$.06^{***}$
Domination	.04			$.35^{***}$		
Mutualism	.00			$-.13^{**}$		
Valence	$.23^{***}$			$-.25^{***}$		

Conclusions

Conclusions

Acceptability of Management Actions among Students

- Lethal control and no action were no accepted management actions (however, lethal control *more* and doing nothing *less* accepted in sever situation).
- In contrast, educating the public was a clearly accepted management action in both countries.

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Conclusions

- While wildlife value orientations showed predictive potential for lethal control and education (mutualism)…
- …valence added significant predictive potential to the acceptability of all management actions.
- Research on human dimensions of wildlife may benefit to address emotional responses to wildlife next to cognitions.

Thank you!

- … for your attention
- Students and lecturers who took part in the survey

Contact:

Photo: dpa

Supplement material

Full title

Dietary nutrient profiles of wild wolves: insights for optimal dog nutrition?

Running title

Nutrient intake in wild wolves

Authors

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1 Materials and methods

The wolf's foraging ecology was reviewed and nutrient composition data of the different dietary items, and in the case of large prey species, their body tissues were obtained from the literature. Data on diet compositions and nutrient composition of consumed dietary items were combined to calculate the nutrient profile of diets of wild wolves reported in the literature. All data were collected by manual electronic literature searches conducted in Scopus, Web of Science and Google Scholar. These initial searches were supplemented by reference and citation tracking. The review of literature ended in October 2012.

1.1 Diet composition

Potential eligible studies reporting diet compositions of wolves, whole-body nutrient composition of non-ungulate prey species and organ nutrient composition for ungulates were collected. As opposed to our previous study in wild cats[1], studies reporting frequency of occurrence of dietary items were not used as mean values for weight classes of young ungulates and weighted values on the population structure of adult ungulates[2] required for conversion to percentage of weight (PW) were generally not available. As such only studies expressing each dietary item consumed as PW of the total biomass consumed by wolves were considered eligible. When studies reported details on age classes (i.e. fawns/calves/piglets and (sub)adults), these were taken into account in further calculations (see below) but these details are not presented in the summarising table on diet compositions. If age class was not specified in a study, an assumed age class distribution was applied to take differences in body composition and extent of consumption (see below) into account. Based on diet composition data, the average age class composition in summer for caribou or reindeer (*Rangifer tarandus*)[3,4], moose or elk in Europe (*Alces alces*)[3-11], and white-tailed deer (*Odocoileus virginianus*)[5,10,12] was approximately 85% adults and 15% calves/fawns and for wild boar (*Sus scrofa*)[3,13] 50% adults and 50% piglets throughout the year. Wagner *et al*.[14] presented the average percentage adults and juveniles of roe deer (*Capreolus capreolus*), red deer (*Cervus elaphus*) and wild boar over 8 years, and these percentages were applied for diet composition of each year of the study. The distribution between adults and juveniles in fallow deer (*Dama dama*) was calculated as the average of that in roe and red deer, i.e. 68% adults and 32% juveniles. Furthermore, it was assumed that during the winter period the ungulates have a body composition resembling that of an adult and are consumed by wolves as such. For studies reporting year-round data, the average age class distribution for summer and winter was used. Studies on the diet compositions of wild wolves most often estimated the PW of various dietary items (animals and vegetation) based on stomach or scat analyses. Dietary items were identified by bone, hair, feather

remains and other undigested material in collected stomachs or scats according to described taxonomic keys and/or own reference material of the researchers. Studies with a stomach or scat sample size lower than 94 stomachs or scats were not included in the present study (see Trites & Joy[15]). To guarantee the 'wild' and 'human-independent' feeding behaviour of the wolves, studies in which human-linked foods (e.g., food scraps, garbage, livestock) contributed more than 5% of the consumed biomass were excluded[1].

1.2 Ungulate body composition

Data on the weights of main body tissues included muscle, heart, liver, lungs, spleen, kidneys, pancreas, separable fat, bones, bone marrow, blood, empty stomach (rumen, reticulum, omasum, and abomasum), empty intestines (small and large), brain, hide, and hooves as a percentage of total body mass of ungulates were collected. As data on the diet composition in literature are most often relatively general in nature (e.g. PW for adult ungulate or fawn of unknown gender), studies reporting more specific data on ungulate body composition according to gender were averaged and data on specific ages of animals were averaged by the age classes young fawns/calves/piglets and (sub)adults (>12 months). Data on specific ages within these classes and data from multiple studies on the same animal species were averaged and presented as such. Ingesta-free body composition data for white-tailed deer presented by McCullough & Ullrey[16] were corrected for weight of digesta accounting for 13.95% of BW in adults and 4.85% of BW in fawns[17]. The body compositions of caribou, muskox, red deer, white-tailed deer, and wild boar are shown in the Table S1. Where data for body tissues within age class were missing, data from the other ruminant ungulate species were used. Ruminant ungulates were classified according to Hofmann[18] and Bodmer[19] as concentrate selectors and intermediate types. Concentrate selectors were white-tailed deer, black-tailed deer (*O. h. columbianus*), roe deer, moose, and fallow deer and intermediate ruminant type ungulates were red deer or elk, caribou, chamois (*Rupicapra rupicapra*), mountain goats (*Oreamnos americanus*), mouflon (*Ovis aries orientalis*), and muskox (*Ovibos moschatus*). Concentrate selectors were assumed to have a similar body composition as white-tailed deer. For intermediate types, chamois, mountain goats, and mouflon were assumed to be similar in body composition as adult red deer. The body composition of muskox was used to be representative for the European bison (*Bison bonasus*). Body composition of unknown ungulates was taken to be the average of that of caribou (adult), muskox, red deer (adult), and white-tailed deer (adult).

1.3 Prey consumption

As consumption of large ungulates is selective and not complete, the extent of body tissue consumption (in percentage) was based on prey consumption behaviour of wolves as described by Stahler *et al.*[20]. It was assumed that half of the blood is spilled during hunting, killing, and consuming of adult prey animals and the other half of the blood remained in the tissues. The assumed extent of consumption for different body tissues of ungulate prey is presented in Table S2.

1.4 Nutrient composition of dietary items

The nutrient composition of ungulate body tissues required for the calculation of diet composition are shown in the Table S3. No data were found for the micronutrient and trace elements of hair and hooves as well as the K contents of separable fat and marrow and were therefore set at 0. Contents of micronutrients and trace elements of the spinal cord were assumed to be similar as those of the brain. Age classes of ungulates were assumed not to differ in nutrient composition of specific body tissues. Where data for nutrient composition were unavailable, the average composition of other ungulate species was used taking into account feeding strategy (i.e. concentrate selector or intermediate type) where possible. The intermediate types of ungulates (i.e. chamois, mountain goats, mouflon, and muskox), wild boar, European bison, and livestock were assumed to be similar in nutrient composition of body tissues as adult red deer. Nutrient composition of body tissues from unknown ungulates was taken to be equal to the average composition of caribou (adult), muskox, red deer (adult), and white-tailed deer (adult) while European bison and livestock were used for muskox. For beavers, the average composition of rodents and medium-size mammals was used and for cats, dogs, bears, and lynxes the average composition of arctic blue fox (*Alopex lagopus*) and red fox (*Vulpes vulpes*) was used. Vegetable matter and 'other' dietary items were not included as these were not sufficiently specified to allow further calculations. Composition data of berries which are consumed under specific circumstances (see below) is presented in Table S4. The N-free extract (NFE) content was calculated by difference as 100 – CP – ethereal extract (EE) – ash contents. For large ungulates, it was assumed that the liver and muscles were the only body tissues with carbohydrates (i.e. glycogen). The NFE content was only calculated for the liver, estimated to be 1.2 % of DM in muscle (based on average NFE content for available muscle data) and assumed to be 0 for all other body tissues. As the sum of values for CP, EE and Ash derived from literature was generally not 100%, values for each of these parameters were corrected by multiplying by (CP+EE+Ash)/100. The estimated mean metabolisable energy (ME in kJ) content of ungulate body tissues and non-ungulate prey were calculated using modified Atwater factors[21] as (3.5 × CP + 8.5 × EE + 3.5 × NFE) × 4.1868.

1.5 Calculations of nutrient intake

The nutrient composition of study diets and simulated diets was calculated by combining the PW for each dietary item, ungulate body tissue composition, extent of consumption of body tissues, and nutrient compositions of body tissues and non-ungulate preys. Nutrient intake was based on the body tissues actually consumed, by dividing percentage values for consumed body tissues by the sum of percentages of all consumed body tissues and multiplied by 100. Furthermore, for each diet, the PW of each item was corrected for the sum PW of all dietary items excluding the categories 'Vegetation' and 'Other' (together on average 1% of the diets), making the calculated dietary nutrient profiles based on an average of 97.8% of total PW. Data entry, management, and statistical descriptive analyses were conducted using Windows Microsoft Excel 2010 (Microsoft Corp., Seattle, WA, USA).

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254

Table S1. Composition of various tissues of ungulates (in % of total body mass).

Species*	Age class	Body tissue†																Total
		Musc	Hea	Liv	Lun	Sple	Kidn	Panc	SFat	Marr	Bloo	Stom	Inte	Brain	Bone	Hide	Hoov	
Caribou	Fawn	37.27	1.17	2.50	-	-	0.53	-	-	-	-	1.58	3.20	1.40	18.20	-	-	67.77
	Adult	36.00	1.15	1.61	-	-	0.27	-	14.31	-	-	2.98	1.91	0.39	10.98	8.84	-	80.64
Muskox	General‡	37.61	0.53	1.36	-	0.13	0.28	-	3.22	-	-	5.15		-	15.91	-	-	64.19
Red deer	Fawn	45.21	0.99	2.61	2.75	0.18	0.40	0.07	-	-	7.09	1.49	2.80	1.46	17.11	13.94	-	96.10
	Adult	45.52	0.72	1.34	1.37	0.63	0.23	0.07	-	-	7.03	2.42	2.49	0.36	11.69	6.92	-	81.04
White-tailed deer	Fawn	49.12	0.86	1.65	1.20	0.28	0.24	0.11	5.78	0.50	4.93	-	-	0.40	8.40	7.01	0.28	80.76
	Adult	45.11	0.65	1.38	-	0.28	0.24	-	11.07	0.36	5.57	-	-	0.25	6.76	6.81	0.22	78.70
Wild boar	Adult	43.59	0.41	2.17	1.19	0.22	0.38	-	15.81	-	4.17	-	-	-	11.59	17.00	-	96.53

*References caribou: Borch-Iohnson *et al.*[22], Chan-McLeod *et al.*[23], Gerhart *et al.*[24], Knott *et al.*[25], Reimers *et al.*[26], Ringberg *et al.*[27]; muskox: Adamczewski *et al.*[28,29], Knott *et al.*[25]; red deer: Grace *et al.*[30], Houston[31], Meadows & Hakonson[32]; white-tailed deer: McCullough & Ullrey[16], Robinson[33], Verme & Ozoga[34], and Watkins *et al.*[35,36]; wild boar: Müller *et al.*[37], Skewes *et al.*[38].

†Musc, muscle; Hea, heart; Liv, liver; Lun, lungs, Sple, spleen; Kidn, kidneys; Panc, pancreas; SFat, separable fat; Marr, marrow; Bloo, blood; Stom, stomach; Inte, intestines; Hoov, hooves; -, data were not available.

‡Average of calf and adult.

Table S2. Assumed extent of consumption (in % of total) for different body tissues of young and adult ungulate prey.

Animal tissue	Young	Adult
Muscle	100	100
Heart	100	100
Liver	100	100
Lungs	100	100
Spleen	100	100
Kidneys	100	100
Pancreas	100	100
Separable fat	100	100
Marrow	75	30
Blood	50	50
Stomach	100	80
Intestines	100	80
Brain	50	10
Bone	75	30
Spinal cord	5	0
Hide	50	20
Hooves	0	0
Digesta	0	0

265 **Table S3.** Nutrient composition of ungulate body tissues.

Body tissue	Content*													References
	%	g/100 g DM								mg/100 g DM				
	DM	CP	EE	NFE	Ash	Ca	P	Na	K	Mg	Cu	Fe	Zn	
Ungulate														
Muscle														
Bison	25.4	86.9	8.2	1.2	3.8	0.02	0.74	0.21	1.35	98	0.35	10.2	11.01	(39)
Caribou	28.1	82.7	12.4	1.2	3.7	0.03	0.80	0.21	0.97	99	0.92	16.8	15.55	(26,40-43)
Fallow deer	25.2	85.1	12.4	1.2	3.7	0.06	0.88	0.28	1.20	85	0.76	10.3	12.49	(44)
Moose	26.4	86.9	8.2	1.2	3.8	0.07	0.77	0.24	1.36	103	0.37	15.1	16.29	(41-43)
Muskox	25.0	84.5	8.9	1.2	5.3	0.01	0.64	0.20	1.68	100	0.52	18.0	9.60	(40)
Red deer	22.6	90.9	3.5	1.2	4.5	0.05	0.72	0.25	1.33	88	0.77	14.6	15.31	(30,40,44)
Roe deer	25.5	88.0	6.5	1.2	4.3	0.07	0.91	0.23	1.34	85	0.85	10.3	11.35	(44)
White-tailed deer	29.4	75.6	19.6	1.2	3.6	0.03	0.61	0.17	1.33	72	0.66	10.3	12.35	(16)
Wild boar	25.5	84.5	10.3	1.2	4.5	0.05	0.80	0.26	1.20	76	0.63	9.5	14.31	(44,45)
Heart														
Caribou	24.4	78.7	16.8	0.0	4.5	0.02	0.79	0.47	1.71	85	1.84	40.8	7.59	(26,40,46)
Red deer	-	-	-	0.0	-	0.02	1.00	0.34	1.34	107	1.94	23.8	11.10	(30)
White-tailed deer	24.3	80.3	15.3	0.0	4.4	0.03	0.74	0.30	1.35	80	1.80	20.5	7.68	(16)
Liver														
Caribou	28.7	66.8	13.6	14.6	5.0	0.01	1.05	0.28	1.09	68	12.50	96.9	13.21	(26,40,42,43)
Moose	29.5	72.1	9.7	14.3	3.9	0.01	1.18	0.29	0.48	55	6.90	48.3	7.59	(40-42,47)
Red deer	-	-	-	-	-	0.02	1.20	0.37	0.96	55	2.70	48.5	10.30	(30)
White-tailed deer	31.0	69.5	8.1	18.6	3.8	0.01	0.67	0.23	0.88	56	5.91	65.3	8.35	(16)
Lungs														
Caribou	23.0	86.1	9.8	0.0	4.1	0.05	0.99	0.80	-	52	0.87	100.0	6.52	(46)
Moose	21.0	86.1	9.6	0.0	4.3	0.05	0.83	0.70	1.13	48	0.57	85.7	5.71	(39,42)
Red deer	-	-	-	0.0	-	0.04	0.92	0.69	0.07	52	0.46	71.2	6.70	(30)
Spleen														
Beef	22.8	80.6	13.2	0.0	6.2	-	-	-	-	-	-	-	-	(39)
Red deer	-	-	-	0.0	-	0.02	0.47	0.31	1.29	31	0.23	232.8	5.90	(30)
Kidneys														
Moose	21.0	87.2	6.7	0.0	6.2	0.03	-	-	-	81	1.90	27.1	14.29	(40)

Red deer	-	-	-	0.0	-	0.04	1.17	0.91	1.03	69	2.12	6.3	12.30	(30)
Pancreas														
Beef	34.8	44.1	52.2	0.0	3.7	-	-	-	-	-	-	-	-	(39)
Red deer	-	-	-	0.0	-	0.06	1.35	0.38	1.40	89	0.53	24.0	5.40	(30)
Separable fat														
Caribou	95.3	3.2	96.8	0.0	-	0.00	0.05	0.04	-	7	-	3.2	0.42	(40,43,46)
Moose	95.0	2.1	97.8	0.0	0.0	-	-	-	-	-	-	-	-	(40)
White-tailed deer	95.8	1.1	98.9	0.0	0.1	-	-	-	-	-	-	-	-	(16)
Stomach														
Caribou	22.0	78.9	11.0	0.0	10.1	1.09	1.48	0.59	-	177	0.91	109.1	15.91	(46)
Red deer	-	-	-	0.0	-	0.07	1.15	0.62	1.12	79	1.03	63.0	10.00	(30)
Intestine														
Pig	23.9	31.2	67.9	0.0	0.8	-	-	-	-	-	-	-	-	(39)
Red deer	-	-	-	0.0	-	0.06	0.72	0.37	0.96	81	0.44	17.8	9.05	(30)
Blood														
Moose	21.0	94.2	2.2	0.0	3.6	0.01	0.08	0.30	0.84	10	0.14	295.2	0.95	(39)
White-tailed deer	20.2	90.8	5.3	0.0	3.9	-	-	-	-	-	-	-	-	(16)
Brain														
Caribou	22.0	51.5	42.0	0.0	6.5	0.32	1.71	0.69	-	64	0.91	21.4	4.55	(46)
Red deer	-	-	-	0.0	-	0.07	1.34	0.65	1.13	59	0.78	7.2	6.10	(30)
White-tailed deer	22.3	50.1	45.9	0.0	4.1	0.07	0.15	0.70	1.78	70	0.84	13.4	5.12	(16)
Spinal cord														
White-tailed deer	34.1	26.8	71.5	0.0	1.7	-	-	-	-	-	-	-	-	(16)
Bones														
Red deer	-	-	-	0.0	-	14.39	8.65	0.66	0.63	288	0.05	6.0	11.60	(30)
White-tailed deer	71.4	29.8	11.6	0.0	58.6	34.08	15.75	0.77	0.05	634	0.99	11.1	9.27	(16)
Marrow														
Caribou	91.8	7.3	92.2	0.0	0.4	0.00	0.07	0.03	-	2	0.00	3.9	0.11	(41,46)
Moose	56.0	16.8	82.1	0.0	1.1	0.08	-	-	-	45	0.09	3.6	1.79	(40)
White-tailed deer	88.4	1.5	98.2	0.0	0.3	-	-	-	-	-	-	-	-	(16)
Hide														
Caribou†	-	90.7	7.7	0.0	1.6	-	-	-	-	-	-	-	-	(24,26)
Red deer	-	-	-	0.0	-	0.04	0.18	0.39	0.35	19	0.20	6.1	7.80	(30)
White-tailed deer†	68.9	91.2	7.9	0.0	0.9	0.08	0.05	0.08	0.03	12	0.64	4.5	2.72	(16)

Hooves													
White-tailed deer	44.2	98.6	0.9	0.0	0.5	0.00	0.00	0.00	0.00	0	0.00	0.0	0.00 [16]

DM, dry matter; CP, crude protein; EE, ether-extract; NFE, N-free extract.

-, not indicated.

*NFE content was only calculated for the liver, estimated to be 1.2 % of DM in muscle (based on average NFE content for available muscle data) and assumed to be 0 for all other body tissues. As the sum of values for CP, EE and Ash derived from literature was generally not 100%, values for each of these parameters were corrected by multiplying by (CP+EE+Ash)/100.

†Calculated based on a hair to skin ratio of 2.1 to 1 as found for white-tailed deer[16].

273 **Table S4.** Nutrient composition of dietary items of the wild wolf diets.

Dietary item	Content													References
	%	g/100 g DM								mg/100 g DM				
	DM	CP	EE	NFE	Ash	Ca	P	Na	K	Mg	Cu	Fe	Zn	
Ungulates														
Moose adult	38.9	69.9	24.2	1.0	4.8	1.05	1.07	0.26	1.02	95	0.48	29.0	11.98	This study
Moose calf	37.0	73.0	18.0	1.1	7.9	2.88	1.92	0.30	1.04	130	0.55	26.6	12.68	This study
White-tailed deer adult	40.9	62.4	31.8	1.1	4.7	1.02	0.96	0.21	1.02	75	0.65	26.3	9.47	This study
White-tailed deer fawn	39.1	65.5	25.5	1.2	7.8	2.85	1.80	0.26	1.03	109	0.72	24.0	10.16	This study
Red deer adult	39.0	68.9	24.0	1.0	6.1	0.70	0.95	0.26	0.96	76	0.59	28.2	10.92	This study
Red deer fawn	38.7	72.1	14.9	1.1	11.9	2.17	1.82	0.35	0.96	101	0.60	26.9	11.66	This study
Roe deer adult	38.3	70.5	23.3	1.1	5.2	1.05	1.16	0.25	1.02	84	0.78	26.1	8.82	This study
Roe deer fawn	36.5	73.6	17.0	1.1	8.3	2.88	2.00	0.30	1.03	118	0.85	23.7	9.50	This study
Fallow deer adult	38.2	68.6	25.3	1.1	5.0	1.04	1.14	0.28	0.93	84	0.73	26.1	9.55	This study
Fallow deer fawn	36.3	71.8	19.1	1.1	8.1	2.87	1.98	0.32	0.94	118	0.80	23.7	10.24	This study
Caribou adult	44.1	62.1	31.1	1.0	5.8	0.76	1.00	0.25	0.75	82	0.91	35.2	10.63	This study
Caribou calf	43.0	65.8	20.4	1.0	12.7	2.50	2.03	0.34	0.80	111	0.97	32.6	11.53	This study
Wild boars adult	42.5	62.8	30.1	1.1	6.0	0.70	1.00	0.27	0.86	68	0.52	20.4	10.18	This study
European bison	32.5	76.4	15.2	1.1	7.3	0.78	1.10	0.28	1.11	92	0.42	29.9	9.56	This study
Mouflon	39.0	68.9	24.0	1.0	6.1	0.70	0.95	0.26	0.96	76	0.59	28.2	10.92	This study
Mountain goats	39.0	68.9	24.0	1.0	6.1	0.70	0.95	0.26	0.96	76	0.59	28.2	10.92	This study
Livestock	32.2	74.9	16.2	1.1	7.6	0.77	1.03	0.27	1.33	93	0.53	35.1	8.61	This study
Unknown ungulate	39.4	66.8	26.2	1.0	6.0	0.88	1.01	0.25	1.00	83	0.67	31.0	9.96	This study
Non-ungulates														
Beavers	35.5	58.5	24.8	3.9	12.8	2.78	2.08	0.43	1.06	96	1.19	28.9	10.68	This study
Bears, cats, dogs, lynxes	38.8	55.2	28.8	2.4	13.6	2.65	1.95	0.47	1.02	118	1.33	29.4	9.99	This study
Hares or rabbits*	31.9	71.8	6.2	4.9	15.7	2.40	1.70	0.54	0.94	160	1.60	30.2	8.60	(1,48-50)
Insectivora	31.2	61.6	19.0	4.5	14.9	3.44	1.72	0.42	1.05	140	1.18	50.0	12.00	(1)
Medium-size mammals†	38.8	55.2	28.8	2.4	13.6	-	-	-	-	-	-	-	-	(51,52)
Mustelidae‡	38.1	39.6	44.4	5.6	10.4	-	-	-	-	-	-	-	-	(53-55)
Rodents**	32.1	61.8	20.9	5.4	12.0	2.90	2.20	0.39	1.10	75	1.06	28.5	11.38	(1)
Squirrels	31.1	65.5	22.1	0.0	12.4	3.50	1.90	0.83	1.07	140	0.87	25.3	10.20	(1)
Wild boar piglets††	23.2	54.9	24.2	6.9	14.0	-	-	-	-	-	-	-	-	(56)

Birds	31.6	64.6	15.9	8.9	10.6	3.00	2.10	0.38	0.66	100	1.26	49.6	11.50	(1)
Vegetation														
Raspberries	21.0	3.3	3.3	71.4	2.3	0.22	0.17	0.00	0.84	138	0.29	4.8	1.90	(42)
Blueberries	12.8	4.9	11.0	76.0	2.0	0.11	0.11	0.01	0.74	73	0.60	1.8	2.21	(40,42)

DM, dry matter; CP, crude protein; EE, ether-extract; NFE, N-free extract.

-, not indicated.

*Macronutrients from Davison *et al.*[50], Litvaitis & Mautz[48], and Powers *et al.*[49], and micronutrients and trace elements in rabbits from Plantinga *et al.*[1].

†Average of skinned arctic blue fox (*Alopex lagopus*) from Prestrud & Nilssen[52] and ingesta-free red fox (*Vulpes vulpes*) from Lefebvre *et al.*[51].

‡Average of American marten (*Martes Americana*) from Buskirk & Harlow[54], fisher (*Martes pennant*) from Garant & Crête[55], and mink (*Mustela vison*) and polecat (*Mustela purorius*) from Korhonen[53].

**Average composition of mice and voles presented by Plantinga *et al.*[1].

††Calculated as the average of crossbred (Hampshire, Yorkshire, Duroc) piglets of 1.5 kg and 6.4 kg in BW.