SUPPLEMENTARY INFORMATION 1

Questionnaire concerning water management as part of a doctoral project on the biology and protection of damselflies at waterbodies

Dear Sir or Madam,

Thank you for taking the time to complete this questionnaire. Please fill it out as completely and precisely as possible. Due to the subject matter, there are no "right/wrong" answers. With your statements you provide an important contribution to the compatibility of necessary water management actions and nature conservation concerns.

The background: In the context of my PhD project at the Federal Agency for Nature Conservation in cooperation with the University of Education Karlsruhe, I am dealing with the topic of water management and protection concepts of the damselfly *Coenagrion mercuriale*. The project is about the performed actions of water management, and, as already mentioned above, the compatibility with conservation concerns. In this regard, I am interested in performed actions, the reasons as well as information about the waterbodies. The main goal is to develop a guideline for water management in the context of nature conservation that is not only based on theory, but that is practical and can actually be implemented.

The use of your statements for my research requires your consent. Your data will only be treated/published anonymously and confidentially to ensure data protection. Furthermore, your data will not be passed on to third parties. Participation is voluntary. Of course, the processing of the questionnaire can be interrupted at any time.

Thank you for your time and for completing the questionnaire. The questionnaire should take about 20-30 minutes to complete.

If you agree with the above, please	e sign here:
Place, date	Signature

If you have any further questions, even after filling it out, please feel free to contact me. Isabelle Immerschitt

Federal Agency for Nature Conservation

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PERSONAL QUESTIONS

Question 1:
Which working structure do you belong to?
Independent company (e.g. limited liability company, planning office):
Governing authority (e.g. building authority of the municipality):
Association (e.g. landscape maintenance/biological station):
Other:
Question 2:
How many employees are in your working environment?
g
< 5
5-10
11-15
<u> </u>
> 30

Question 3:

what are the reasons for performing water management and now relevant are they?	
– multiple responses are possible –	relevance
- multiple responses are possible -	high moderate minor
Preservation of the water bed, as well as protection of water runoff	
(e.g. drainage ditches, road side ditches)	
Flood control	
(Prevention of flood damage)	
Preservation of the littoral site, especially due to preservation and new planting of a riparian	
vegetation appropriate to the site, keeping the banks free for water runoff	
Preservation and furthering of the ecological viability of the waterbody, especially as habitat for	
fauna and flora	
Legal site protection (e.g. Natura 2000/nature conservation areas)	
Degat site protection (e.g. Pattura 2000/ nature conservation areas)	
Preservation of the waterbody in a water-management way	
(with regard to the discharge or retention of water, bedload, suspended solids and ice)	
Other:	
Question 4:	
Is an (ecological) examination of the flora and fauna of the waterbodies carried out by you or a	third party (also "look into the waterbody": recording of <i>Eloded</i>
spp., Iris spp)?	
Yes	
Yes, with regard to certain species:	
No No	

SPECIFIC QUESTIONS ABOUT WATER MANAGEMENT

Note on questions 5-7: For the frequency of specific water management actions, tick the frequency that applies to most of the waterbody reaches you manage. A distinction is made between "rarely/close-to-nature" and "frequently/far-from-nature" water management. Use your best judgement to decide which reaches you consider to be managed in a close-to-nature or far-from-nature way. Example: A waterbody reach that is only managed to achieve a good ecological status may be managed less frequently than one that is managed to maintain continuity.

Depending on the size of the area of responsibility, a bed may be cleared every year, only from different waterbodies. However, these questions and answers are intended to be ticked in relation to individual reaches of waterbodies and <u>not</u> the entire area of responsibility.

Question 5:		
Which actions on the <u>bed</u> are carried out by your company/your authority/		
your association on a single reach of waterbody (not related to the entire area) and how often?	rarely/close-to-nature management	frequently/far-from-nature management
	frequency	frequency
 Distinction between reaches with rarely/close-to-nature management and Frequently/far-from-nature management – 	every every >3 2-3 1x 2x >2x	every every >3 2-3 1x 2x >2x
	never years years /year /year /year	never years years /year /year /year
cleaning of bed		
clearing of local runoff obstacles (e.g. dead wood)		
weeding		
mowing of water vegetation (e.g. with mowing boat)		
stabilization measures of bed: which?		
removal of litter and refuse		
other		

Question 6:		
Which actions on the <u>bank</u> are carried out by your company/your authority/		
your association on a single reach of waterbody (not related to the entire area)	rarely/close-to-nature management	frequently/far-from-nature managemen
and how often?	<u>frequency</u>	frequency
 Distinction between reaches with rarely/close-to-nature management and frequently/far-from-nature management – 	every every >3 2-3 1x 2x >2x never years years /year /year /year	every every >3 2-3 1x 2x >2x never years years /year /year /year
mowing of the bank		
pruning		
leaving of torrent slope slides/deterioration of shoreline stabilization		
conservation of close-to-nature structural elements (e.g. root plates)		
maintenance and development of native plant species		
neophytes control		
grazing (e.g. sheeps, cows, horses), p.r.n. by third parties		
other:		
Question 7: Which actions on the <u>environment</u> are carried out by your company/your authority/ your association on a single reach of waterbody (not related to the entire area) and how often?	rarely/close-to-nature management frequency	frequently/far-from-nature managemen frequency
 Distinction between reaches with rarely/close-to-nature management and frequently/far-from-nature management – 	every every >3 2-3 1x 2x >2x never years years /year /year /year	every every >3 2-3 1x 2x >2x never years years /year /year /year
maintaining a riparian strip		
extensification of the use		
development/creation of cutoff meander/trough/side channels/floodplain		
other:		

Question 8:

Which equipment is used for water management?

– M	ultiple responses are possible –
	Actions in the bed
	mowing bucket
	wheel trencher
	manual (e.g. shovel, spade, scythe, pitchfork)
	ditch cleaning bucket
	mowing boat
	shovel excavator
	above ticked off equipment: bar spacer (if necessary)
	other:
	Actions on the bank
	hand-guided: scythe
	hand-guided (motorized): bar mower
	hand-guided (motorized): string trimmer
	rotary mower: several blades
	mowing bucket
	flail mower
	three-wheel mower
	rotary mower: one blade
	bar mower
	other:

Question 9:

When are the water management actions performed?

– Multiple responses are possible –	
If certain methods essentially (do not) take place at a certain time of the year, feel free to note this next only pruning in the winter).	to the answer (e.g., no cleaning of the bed in the fall
spring:	
summer:	
autumn:	
winter:	
Question 10:	
How is the destination of the accruing material from the actions regulated? Briefly explain	
– Multiple responses are possible –	
mowing material:	-
dug-out material:	-
weeding material:	_
pruning material:	_
other:	_

Question 11:

What type of water management in terms of weeding (water vegetation) and mowing (bank) do you essentially perform in one operation?

The following schemes describe different types of water management. Please tick the scheme (box to the left) which is most likely to be performed by you. Again, feel free to check off two schemes and note which is most likely to be used for close-to-nature management, and which is most likely to be used for far-from-nature management. Examples: Scheme below-left: The mowing of one bank takes place in one operation (alternate mowing) as well as the complete weeding of the bed, but here with the omission of refugial zones.

right bank		right bank	right bank	
bed		bed	weeding of a channel	
left bank		left bank	left bank	
right bank		right bank	ri ght ban k	mowing/weeding
bed		bed	bed	bank
left bank		left bank	left bank	bed
right bank		right bank	right bank	
bed		bed	bed	
left bank		left bank	left bank	
estion 12: performed: In which direction are	wee	ding actions carried out?		
with the current				
against the current				
other:				

BIOLOGICAL BACKGROUND

Question 13:
Are any of the waterbodies you manage located in one or more of the following protected area(s)? - Your statements will be treated confidentially, as
already mentioned on page 1.
SAC (special area of conservation) according to the Habitats Directive
nature conservation area
other:
Question 14
If known: Do chemical/biological water analyses take place at specific waterbodies you manage?
yes
yes, chemical
yes, biological
no
Question 15:
Is the distribution of strongly/especially protected species clarified at managed waterbodies?
notifications of the lower nature conservation authority
commissioned ecological opinion
other:

Question 16:	
Are you familiar with the damselfly species Coenagrion m	vercuriale?
yes	
yes, furthermore I know its habitat requirements	
no	
Question 17:	
Are nature conservation concerns considered in the appli	cation and selection of water management actions?
yes	
yes, with regard to specific species:	
no, p.r.n. give reasons:	
	CONCERNING THE CLIENT
Question 18:	
For which client are you working? (e.g. municipality)	
Quarties 10:	
Question 19: Since when are you working for the named client?	
0-2 years	
3-5 years	
6-10 years	
11-15 years	
> 15 years	

Question 20:
If known: Are there any larger Coenagrion mercuriale populations (>10 individuals seen) in the managed area?
yes
ono no
Question 21:
Would you be willing to review and, if necessary, implement a new water management concept for individual reaches with regard to the protection of
the damselfly Coenagrion mercuriale and subsequently other species? An impact control will then be carried out by my side.
Yes, review and implementation if necessary
Yes, only review
ono no
other:
Question 22:
In case of any queries on my part, what is the best way to reach you (phone, email)?
Thank you very much for your time. You have been very helpful to me. If you have any questions or suggestions, please feel free to contact me.
Isabelle Immerschitt