

# Professional development in conservation: an effectiveness framework

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SUPPLEMENTARY MATERIAL 1 Interview Guide (those parts applicable to the current study; additional questions were asked during the interview, as part of a larger study).

1. According to your experiences, observations and views, what are the characteristics and capabilities of a conservation professional?
  - 1.1. Which skills and competences do professionals need, especially in countries that have high biodiversity and limited informational, human and financial resources?
2. According to your experience, observations and views, how would you define professional development?
  - 2.1. What types of professional development are there?
3. According to your experience, observations and views, who needs professional development in the field of conservation?
4. According to your experience, observations and views, what types of professional development are currently offered for conservation professionals working in countries with high biodiversity and limited informational, human and financial resources?
5. According to your experience, observations and views, what types of professional development are needed?
  - 5.1. Which gaps exist in current professional development in countries with high biodiversity and limited informational, human and financial resources?
6. According to your experience, observations and views, what are the barriers to professional development in countries with high biodiversity and limited informational, human and financial resources?
  - 6.1. What are the challenges when implementing professional development for conservation professionals in countries with high biodiversity and limited informational, human and financial resources?
  - 6.2. What are the promoters of professional development?
7. According to your experience, observations and views, when is professional development considered effective?

SUPPLEMENTARY TABLE 1 Checklist of consolidated criteria for reporting qualitative research (Tong et al. 2007).

Topic	Item No.	Guide Questions/Description	Reported on Page No.
<b>Domain 1: Research team and reflexivity</b>			
<i>Personal characteristics</i>			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	4
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	N/A
Occupation	3	What was their occupation at the time of the study?	N/A
Gender	4	Was the researcher male or female?	N/A
Experience and training	5	What experience or training did the researcher have?	N/A
<i>Relationship with participants</i>			
Relationship established	6	Was a relationship established prior to study commencement?	4-5
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	4-5
Interviewer characteristics	8	What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	N/A
<b>Domain 2: Study design</b>			
<i>Theoretical framework</i>			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	4-5
<i>Participant selection</i>			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	4
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	4

Sample size	12	How many participants were in the study?	4
Non-participation	13	How many people refused to participate or dropped out? Reasons?	4
<i>Setting</i>			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	4-5
Presence of nonparticipants	15	Was anyone else present besides the participants and researchers?	4-5
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	4-6
<i>Data collection</i>			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	4-5
Repeat interviews	18	Were repeat interviews carried out? If yes, how many?	N/A
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	5
Field notes	20	Were field notes made during and/or after the interview or focus group?	N/A
Duration	21	What was the duration of the interviews or focus group?	5
Data saturation	22	Was data saturation discussed?	5
Transcripts returned	23	Were transcripts returned to participants for comment and/or correction?	N/A
<b>Domain 3: Analysis and findings</b>			
<i>Data analysis</i>			
Number of data coders	24	How many data coders coded the data?	5
Description of the coding tree	25	Did authors provide a description of the coding tree?	N/A
Derivation of themes	26	Were themes identified in advance or derived from the data?	5
Software	27	What software, if applicable, was used to manage the data?	5

Participant checking	28	Did participants provide feedback on the findings?	N/A
<i>Reporting</i>			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	7-12
Data and findings consistent	30	Was there consistency between the data presented and the findings?	7-16
Clarity of major themes	31	Were major themes clearly presented in the findings?	7-16
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	7-12, Table S3

SUPPLEMENTARY TABLE 2 Overview of competences needed by conservation professionals according to 22 interviewees with a background in the conservation profession. The number of respondents mentioning a certain competence are indicated in brackets, followed by an example quote from one of those respondents.

Competence	Example quote
<b>A. Task competences: competences with which an individual performs the core or technical tasks central to their job (Campbell et al., 1990; Koopmans, 2014).</b>	
1 Monitoring and controlling resources (included [field]work safety, attaining, monitoring and managing financial resources adequately) (13)	[you have] “to be able to report to your funding, you've got to be able to manage your budget.” (Respondent 18)
2 Job knowledge & skills (included conservation expertise, research skills, language skills, local relevant knowledge) (10)	“We must understand forestry, we must understand biodiversity, we must understand wildlife issues, we must understand social issues, so these are very important parts from our side. Unless we understand people, nothing will work.” (Respondent 5)
3 Work quality (included setting up and managing administrative processes to improve outputs and control processes such as monitoring and evaluation) (8)	“You are presented with a problem statement and then you find a solution. Then you implement the solution [to] see whether it works and then you refine it [..]. It kind of [..] a loop: [..] refinement and alterations.” (Respondent 10)
4 Planning and organising (included development of clear goals and vision, scenario-thinking and adapting to context, logistical management) (8)	“Scenario thinking. Till I was not doing that, we had a lot of programmes and we came back and we said ‘omg, we did so badly’. And after we succeeded we said we have to think of the worst possible situations.” (Respondent 8)
5 Work quantity and productivity (included literacy, working across roles, working efficiently, computer skills) (6)	“In small organisations, everyone is multipurpose. You have to be able to do more than just the one thing in your profession.” (Respondent 2)
6 Time Management (included prioritising, work-life balance and off-work recovery) (4)	“We work in such a dynamic environment and it involves lots of traveling. I guess it depends on how you manage your time as well. If you can't manage your time wisely, you will be burned out.” (Respondent 3)

7 Critical thinking and problem-solving skills (3)	“Sometimes you go to these workshops at these conferences and it’s just the same, people just saying the same things all the time, [...] very few people come up with new ideas [...] people that do come up with those interesting ideas, I think, those are the people that have the critical thinking skills and creative skills when it comes to problem-solving. Because then, at the end of the day, conservation is a problem at the moment, and it requires some problem-solving, so I think that is a really important skill to have.” (Respondent 6)
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**B. Contextual competences: competences relevant to support the psychological, social and organisational environment (Motowidlo and Van Scotter, 1994; Koopmans, 2014).**

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8 Prosociality (i.e. helping others) (18)	“I really think that if people are putting so much effort [in] studying something, that thing better really helps the others, other people or biodiversity but also people. [...] I wouldn't just study, for example only elephant behaviour [...] If my national park, my people, really need something more useful.” (Respondent 14)
9 Communication skills (included active listening and writing skills, effective negotiation, presentation and public speaking skills) (13)	“I think it is about being a good listener, I think it is about bringing everybody to the table, being perceived as a neutral convenor, somebody not motivated primarily by politics or personal gain.” (Respondent 16)
10 Interpersonal skills (including teamwork, cross-cultural skills, conflict management, self-awareness and accountability) (13)	“They don’t train you in the success of group work and how you work together; they train you as an individual all along the way. And then your success is actually about working in groups. And all these tools and techniques are what I call process skills that you need to be effective in conservation [...] they fall through the cracks everywhere.” (Respondent 1)
11 Proactivity (9) (i.e. self-initiated, future-oriented behavior to change a situation)	“I keep telling them: you guys have to find your own opportunities. I can’t be searching the web to say this is coming or that is coming. You have to be proactive and go out there.”( Respondent 7)
12 Creativity and innovation (9)	“In [region] things are done by rote learning* in schools. It's not by innovation [...] Thinking beyond the box is not really done, it's very hierarchically structured. So breaking down those barriers is one of the ways forward.” (Respondent 19) [* <i>memorization technique based on repetition</i> ]

13 Supervision and management (included promoting diversity and inclusion) (9)	“My own experience in running an environmental NGO was that people came and wanted to contribute, but everyone had different levels of commitment and different abilities and different amounts of time they had available [...] Everyone had a different contribution to make and the important thing was to make them feel needed and a part of the group and make a contribution even if it was different from everyone else's.” (Respondent 20)
14 Capacity building - facilitating learning for others (6)	“I shouldn't just think that my field staff want to be field staff forever [...] Maybe they want to live near family [...] they may not want to live in a remote forest for their lives. And field work is repetitive and I think it can get boring. So if you want to keep these good staff, maybe think about whether or not they're going to be happy in that position for a long time or whether you need to build their skill sets so they can move to a different position so they remain with the organisation.” (Respondent 17)
15 Leadership skills (included the ability to inspire and systems-thinking or ‘bigger-picture’ thinking) (4)	“You need somebody who is constantly kind of looking out, looking at the bigger picture, looking around and seeing if what is going on is working.” (Respondent 11)
16 Self-motivation (2)	“For example in the area where I work [...] [there are] many tropical diseases and every time armed militant forces. All this creates disturbance to you, you cannot work, [...] unless you have self-motivation.” (Respondent 21)

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**C. Adaptive competences: an employee’s proficiency in adapting to changes in work roles or work environment (Griffin et al., 2007; Koopmans, 2014).**

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17 Adaptability (included flexibility) (15)	“There is this element of adaptability, and he was successful in many systems. [...] Because time and time again we see that, the people that are kind of the best able to make change are the people who can work within those limitations of their organisation and yet still move things forward.” (Respondent 13)
18 Keeping knowledge and skills up to date (6)	“Every year, I had to think about what I was going to develop. [...] I can say that I was someone who took advantage of this in the organisation. I have employees that didn’t care too much about this. [...] I realised that this is something that is really related to my profile of, like, I always wanted to learn

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something new and I am excited about new things.”  
(Respondent 9)

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19 Resilience (5)

“Bouncing back from, defeats, bad news, challenges. Being able to suffer really bad news and go back to work with similar enthusiasm next week. So resilience. [...] I think a ‘never say die’ attitude is really important in a lot of conservation.”  
(Respondent 15)

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