

Comment form for 2nd Review Phase of the Deliverable 3a) Thematic assessment of pollinators, pollination and food production

Reviewer	Ch	Pg st	Line st	Pg end	Line end	Reviewer Comment	Author response
Serena Heckler	5	0	0	0	0	The chapter offers many potential approaches to improved NRM based on ILK. It would be good to see this more emphasised in the executive summary, as this is what the policy-makers will be most interested in. I also believe that the authors of Chapter 6 should pick up on these ideas and integrate them more convincingly into their chapter, which frames its whole presentation on a model of industrial agriculture and western-style land management. The lessons that may be derived from small-scale, traditional forestry, agriculture and land management are completely absent from Chapter 6.	The text has been revised to incorporate this suggestion, both in chapter 5 and in chapter 6
Richard Corlett	General	0	0	0	0	This is an excellent SOD. Congratulations to the author team.	Positive feedback is appreciated

Liliana Bravo	5	0	0	0	0	<p>General comments</p> <ul style="list-style-type: none"> · My acknowledgement for the invaluable compilation of experiences which give voice to local communities on different places. · In accordance with time and budget, chapter might be supplemented with more inputs from community dialogues conducted on different locations around the globe e.g. farmers/peasants, afro-descendants communities, local or indigenous peoples who inhabit key/representative landscapes at global and regional scales. · It might be also useful to include photos of (i) workshops with indigenous and local communities; (ii) evidence of local knowledge related to how different communities tackle difficult situations related to pollination services and food security/sovereignty. · In addition to Figure 5 (Page 33), it might be also helpful to include more illustrations related to local names of pollinators, plants, (agro)ecosystems, habitats, etc. · Regarding methodological issues presented in the chapter (2.1 Diversity of sociocultural methods for eliciting values; 2.1.1 context and aims; 2.1.2 socio-cultural valuation methods), it might be practical to include that information on a type of appendix at the end of the report. 	We agree that community dialogues would be helpful but time and budget do not allow. We have incorporated your suggestions about more illustrative material
Natasha Fijn	5	0	0	0	0	Overall a thorough overview of the literature.	Positive feedback is appreciated
Serena Heckler	5	0	0	0	0	This chapter is infinitely improved from the first order draft. There is no comparison. It is an interesting, comprehensive analysis of a diverse literature which, to my knowledge, has never been synthesised before. In general, my comments are minor, referring to small points. There are minor copy-editing errors throughout, but I have only commented when they might make a substantive difference to the text.	Positive feedback is appreciated
Simone Athayde	5	0	0	0	0	Overall comment: Excellent chapter, very comprehensive and well-written. The authors did really a great job on synthesizing and summarizing relevant information on this complex topic. Congratulations, and I look forward to the next draft!	Positive feedback is appreciated

Patricia Balvanera	5	General comment	0	0	0	I would like to congratulate the lead and contributing authors of this chapter for the wonderful work they have done. The new version is extremely relevant and well written. It will certainly be a very high benchmark for the following assessments on top of being an extremely important contribution to the issue of pollinators	Positive feedback is appreciated
Geoff Hicks	5	0	0	0	0	General comment - It is good to see the valuable contribution that this ILK chapter brings to the whole discourse. We note however that despite the chapter having a number of references to bats as pollinators, there is limited analysis of their loss due to disease or habitat loss/conversion. There is also limited if any reference to reptiles and small mammals, which is likely not to have been a high priority when searching databases or questioning of ILK holders. A couple of case studies on these species would be useful	We have incorporated your suggestion and added a bat and a possum case example, and made reference to a lizard.
Simone Athayde	5	0	0	0	0	Additional comment: I think that the authors forgot to include relevant aspects of the legal mechanisms protecting indigenous peoples knowledge about biodiversity, specifically the Convention on Biological Diversity (CBD).	ok
E. Miriam Aldasoro Maya	5	General comments:	0	0	0	I would highly recommend a map of the locations of all the human groups mentioned in the chapter.	Essential
E. Miriam Aldasoro Maya	5	General comments:	0	0	0	Its a shame that in the key words included for the review, the word ethnoentomology was not considered, if there is still some time it would be very good to find more information for example on the socio-cultural value of beetles and otehr insects besides bees and butterflies.	These topics are discussed in sections 2.1 and 2.4.2
Sandra Diaz	5	6	1	6	1	Some of the key messages of this chapter are not mentioend explicitly enough, or sharply enough in the SPM of the whole Assesment: Chapter 5 shows highly conviencing evidence that pollinators are a source of multiple benefits to people, well beyond the direct or indirect provision of food. This is not hihghlighted explicilty enough in the key messages, especially in the case of non-indigenous societies.	The perspective has been incorporated and all the evidence about nature's benefits brought together in a key message for the SPM

Sandra Diaz	5	6	1	6	1	Another key message that should be mentioned more explicitly in the SPM of the whole Assessment: the fact that ILK about pollinators and their benefits and values is important to maintain their diversity, and the fact that ILK, in co-production with science, can be a source of solutions for the present challenges, does not appear with sharp enough focus at the level of the key messages. I suggest making an extra distillation effort to bring more specificity to the way pollinator-relevant ILK is reflected in the key messages.	ok
Liliana Bravo	5	6	2	6	2	Regarding the Executive Summary: It might be helpful to include an introductory paragraph describing/presenting the common thread running through the chapter.	The suggestion has been incorporated in the first key message
Canadian Government	5	6	3	6	3	Insert "Western" before "science" on this line, since ILK also includes science, it's just a different form	The text has been revised and this sentence is no longer included.
Denise Matias	5	6	3	6	4	I'm not exactly sure whether "science" and "ILK" can be pitted against each other. There may be instances when "ILK" can be explained by "science" and may just be a matter of further research. It may be good to qualify "science" here using additional words. Top off my head, "hard science"	The text has been revised so that "science" and "ilk" are no longer pitted against each other
Sandra Diaz	5	6	3	7	42	All the headline sentences of these paragraphs are good and relevant. However, there is too much on examples and details for an executive summary; e.g. lines 18-29 of page 6 do not need to be in such detail here; same with most of the text in lines 35-42 of page 7.	ok
UK Government	5	6	3	6	4	This comment applies throughout the chapter and not only to the page and lines specified. The chapter discusses 'diverse knowledge systems, including those of science and of indigenous and local peoples'. These knowledge systems are crucial, but discussion seems to neglect lay knowledge in developed countries , and non-indigenous knowledge in developing countries	Your suggestion has been incorporated and other knowledge systems recognised in section 5.1.1 and a justification for the focus on science and ILK presented in 1.2

Catherine Robinson	5	6	4	6	4	Pollinators could be usefully defined in first sentence with particular reference to unique and comparable foci of ILK and science contributions to the understanding and management of pollinators globally. For example - "Pollination describes the processes that enable fertilization and reproduction which have understood and managed across the globe using contributions from ILK and science. While science has focused on the agency of insects, animals and wind as pollinators, ILK has also considered the spiritual relationships and agency of people, the species and the country that gives and received life'.	Your suggestion has been incorporated and other knowledge systems recognised in section 5.1.1 and a justification for the focus on science and ILK presented in 1.2
Catherine Robinson	5	6	4	6	4	Not convinced contribution of diverse knowledge systems is 'very well established'. I suggest 'established, but incomplete' because, as this chapter highlights, there are still gaps in knowledge systems built between ILK and science to understand and manage pollinators and the pollination process	The text has been revised so that the statement is now somewhat different and the confidence now assigned to well established
Serena Heckler	5	6	5	6	6	Should be "socio-ecological knowledge"	The more widely-accepted term in the scientific literature is social-ecological, so we have used this throughout.
Samson Gwali	5	6	7	6	13	Try to avoid beginning a new sentence with an abbreviation!	The text has been revised to correct this.
Brondizio	5		12		12	the term "fuzzy logic" is not clear here and not fully explained elsewhere in the text. Perhaps add a parenthesis indicating that it is not a binary system, etc. Consider using an alternative term for the exec summary or explain it more clearly, for instance, instead of 'tatics as fuzzy logic' say 'based on complex ecological associations'[?]	The term is now described in section 5.1.5
Brondizio	5		13		14	This statement reads as contradicting with the statement in line 9; not useful and potentially problematic to stress the idea of separate ontologies; suggest deleting the statement or replacing with a more constructive statement about the possibilities of advancing collaborative knowledge <i>between scientific and ILK</i>	The text has been revised and this statement is no longer included
Serena Heckler	5	6	13	6	14	It is a bit sweeping to suggest that [all] ILK systems are underpinned by different ontologies. More accurate to suggest that "many" ILK systems or that they're "often" underpinned by different ontologies. After all, science itself is underpinned by an ontology grounded in a local knowledge system.	The text has been revised and this statement is no longer included
Simone Athayde	5	6	13	6	13	Suggestion: replace "ideas" by "perspectives" than those of science...	The text has been revised and this statement is no longer included
Canadian Government	5	6	14	6	14	Insert "Western" before "science" on this line, since ILK also includes science, it's just a different form	The text has been revised and this statement is no longer included

Nicolas Cesard	5	6	18		18	Māori	The spelling has been corrected
E. Miriam Aldasoro Maya	5	6	20	6	22	Specify where is from the Indigenous Leader mentioned, is he maori?, its confusing	The text has been revised to include an explanation "A group of Guna people, as representatives of the host people, attended the Global Dialogue Workshop on ILK of pollination and pollinators associated with food production, Panama City, 1-5 December 2014 (Lyver et al. 2015). These quotations are taken from their oral presentations at the Workshop.
Serena Heckler	5	6	20	6	21	Where is Enrico Elmer Gonzalez Lopez from? The way it is worded suggests that he's Maori, but not many Maori people are named Gonzalez Lopez. :-)	The text has been revised to include an explanation "A group of Guna people, as representatives of the host people, attended the Global Dialogue Workshop on ILK of pollination and pollinators associated with food production, Panama City, 1-5 December 2014 (Lyver et al. 2015). These quotations are taken from their oral presentations at the Workshop.
Sandra Diaz	5	7	32	7	34	"ecosystem services and nature's gifts": if these two examples of categories by Western science and other knowledge systems are to be maintained, then make reference to nature's gifts or similar concepts somewhere in the underlying text that now refers almost exclusively to ecosystem services. Otherwise, replace "ecosystem goods and services and nature's gifts" with the more inclusive category "nature's benefits to people" (see more general comment about this above).	ok
Canadian Government	5	7	36	7	47	Are you referring to the same initiative by two different names? Pollinator Pathway and Pollinator Partnership? If yes, best to use the correct name in both cases. The start of the sentence in line 47 is curious, and perhaps you meant to say "Partnerships like the Pollinator Pathway that support..." ?	The text has been revised to clarify that these are two different initiatives
E. Miriam Aldasoro Maya	5	7	40	7	42	The last phrase is too general, the previous ones give concrete examples, I think a concrete example may be included in order to follow the style from the previous phrases.	The text has been revised to incorporate this perspective see executive summary
Brondizio	5		44		47	this statement deserves to be highlighted as a key point in itself; may be it is the intention, but it is not in bold as the others;	ok
Simone Athayde	5	7	46	7	46	Suggestion: replace levels by scales - local, regional, national, etc.	ok
Simon Potts	5	7	47	7	47	State briefly here what the "pollinator partnership" is. Expand on this in the main text as you use a lot of examples from this.	ok

Canadian Government	5	7	48	7	48	"Frames' is not a concept commonly used in the policy and government sector (assuming you are referring to e.g. Tom Crompton's 2010 report that is cited in the biblio but not cited on this line in page 7, where the term first appears). At the moment it's not in the 3d glossary.	ok
Canadian Government	5	7	54	7	54	are mutually constituted? (wording)	The phrasing has been revised to "mutually supportive"
E. Miriam Aldasoro Maya	5	7	54	7	55	Review the phrase, and as already mentioned in the review of the definition of biocultural diversity in the Glosary, the concepts that are included can be more specific and go deeper on the meaning of talking about biocultural diversity.	The text has been rewritten to include the simple definition "The concept of biocultural diversity recognises that culture and nature are integrated through a mutual process of adaptation and co-evolution "
Natasha Fijn	5	7	54		55	Some cultures do not necessarily dichotomise the world into nature versus culture. Nature and culture could be referred to as nature-culture. This is covered later but should perhaps be introduced here too, as the biodiversity literature does tend to slip into these dichotomies.	The text has been revised and this sentence is no longer included
Simone Athayde	5	7	55	7	55	The term "natural diversity" is awkward and non-common sense. I suggest that the authors use biological diversity , which is the correct and widely used term, including its political implications. This echoes my previous comments about " nature services " in the summary for policy-makers.	The text has been revised and this sentence is no longer included
Nicolas Cesard	5	7	59			Kawaiweté people in the Brazilian Amazon	ok
Brondizio	5		63		67	this statement needs elaboration; it is circular; it could be more directly linked to the importance of landscape level interactions (see comment below)	The answer is below
Brondizio	5		69		78	this statement also captures the importance of landscape level interactions (cultural, management, governance, etc), but the word landscape does not appear; given that the term landscape appears throughout the chapter, it deserves a mention in the exec summary, such as talking about the importance of landscape level governance; landscape seems one of the integrative points coming across many of the key messages;	The text has been revised to incorporate "landscape" see Executive summary

Sandra Diaz	5	8	69	8	78	The main point of this paragraph seems to be the fact that the spatial and temporal heterogeneity associated to small land holdings managed according to ILK is good for pollinators and pollination. But it gets lost among an number of (important) issues which are either too general or too specific without being central to pollination. Please rephrase in a simpler, more essential way, to highlight the key message.	ok
Jyothis Sathyapalan	5		72		72	two times use of "83% of farms", "83% of the global population"	The text has been revised and this sentence is no longer included
Sandra Diaz	5	8	80	8	86	I suggest deleting the 286-projects example. First, it is far too specific for this section. Second, in order not to cause misunderstandings, "yield" would have to be specified, which will not serve the purpose of an : executive summary". The message is clear enough without the example, which can be addressed in full detail in the underlying text.	The text has been revised and this sentence is no longer included
Sebebe Demissew	5	8	81	83		"For example, one study project.....an average o 79% yield increase". In which country or Region?	The text has been revised and this sentence is no longer included
Natasha Fijn	5	8	82		83	Where was the location to put these stats into context.	The text has been revised and this sentence is no longer included
Samson Gwali	5	8	82	8	82	Replace "chiefly" with "mainly"	The text has been revised and this sentence is no longer included
Daniela Leite	5	8	83	8	84	It looks like that instead of "food insecurity" it would be more appropriated change for "food security".	The text has been revised and this sentence is no longer included
Serena Heckler	5	8	84	8	84	Should be "increase food security", not "increase food insecurity"	The text has been revised and this sentence is no longer included
UK Government	5	8	84			Reference to 'food <i>in</i> security' should be 'food security'.	The text has been revised and this sentence is no longer included
Brondizio	5		87		96	the key message in bold is really important and perhaps should be moved up; however the text focuses on beekeeping. Perhaps have one example focusing on beekeeping and another one focusing on plant food production for consumption and commercial ends.	The text has been revised to incorporate this perspective with a new message on food consumption and a separate on on beekeeping as an anchor see executive summary
Samson Gwali	5	8	87	8	96	Well taken! Bees are the most important pollinators. It would, however, be prudent to mention how other pollinators, such as beetles, birds, butterflies, wasps, flies, moths! In Uganda, the great diversity of butterflies around Mabira forest reserve is one of the "pull factors" for many tourists to the country	The text has been revised to incorporate this perspective with a new message on food consumption, with a range of pollinators involved, and a separate on on beekeeping as an anchor see executive summary
Sandra Diaz	5	8	87	8	96	I suggest deleting the sentence starting in line 91. Also, I suggest moving this paragraph about livelihoods immedaitely before the one starting in line 31, page 6.	The sentence has been dele as suggested and the livelihoods paragraph moved

Nicolas Cesard	5	8	88		88	Beekeeping and honey harvesting provide	Honey hunting has now been included in this key message
Denise Matias	5	8	88	8	88	How about including wild honey bee hunting and not just beekeeping? In South and Southeast Asia these also greatly contribute to livelihood of indigenous wild honey hunter and gatherers.	Honey hunting has now been included in this key message
Canadian Government	5	8	89	8	89	Re: 'land ownership or rental is usually not necessary' – is this true? In Canada at least many apiaries are part of a farm's mix of activities, based on ownership or rental. Beekeepers also sometimes make agreements with rural landowners to place the hives on their property. No doubt this varies from one part of the world to another, so maybe say 'land ownership or rental is not always necessary'.	The text has been revised and now refers to "diverse forms of ownership support access
P.S. Bhatnagar	5	8	91	8	95	a map with geographical locations and name of innovation and if possible, name of person[s] or community who introduced that innovation related to traditional beekeeping , will convey the idea more strongly.	A map has been included of the case examples in the chapter
Sebsebe Demissew	5	8	94	95		How iare hive products used in mettalurgy? May be referenced but good to know.	The reference to metallurgy remains in the text but not in the executive summary as it is not a significant use in contemporary cultures, but rather of heritage importance
Nicolas Cesard	5	8	98	8	98	... exist for beekeeping and honey harvesting as a sustainable livelihood...	Honey hunting has now been included in this key message
Samson Gwali	5	9	103	9	106	Sentence not clear! It could perhaps be split into two sentences!	ok
Sandra Diaz	5	9	103	9	106	Replace "the diverse socio-cultural values of pollinators are.....and also be the homogenizing effects" with "the diverse benefits and values of pollinators are.... And by the homogenizing effects'	ok
UK Government	5	9	103	9	103	The chapter states 'the diverse socio-cultural values of pollinators are negatively impacted by pollinator declines'. If this relates to the experience of indigenous and local peoples, it would be helpful to make this explicit. In developed societies there may be a more complex relationship between socio-cultural values and pollinator diversity and abundance	ok
Canadian Government	5	9	103	9	114	very good para.	thank you
Samson Gwali	5	9	106	9	106	Sentence should not begin with an abbreviation! This should be done for all sentences where an abbreviation appears at the beginning.	Sentence could be re-written to begin as follows: "Holders of ILK"

UK Government	5	9	110	9	111	The chapter states 'broader socio-cultural impacts of pollinator decline beyond indigenous peoples and local communities have not been well documented'. The current UK Government Department for Environment Food and Rural Affairs (Defra) project on 'Social and cultural values of pollinators' will provide evidence to help fill the gap in this area - see http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=19620&FromSearch=Y&Publisher=1&SearchText=PHO523&SortString=ProjectCode&SortOrder=Asc&Paging=10#Description	We look forward to this publication which unfortunately will not be available in time for this assessment.
Brondizio	5		112		112	why not adding macronutrients too?	ok
Samson Gwali	5	9	113	9	113	Insert the word "as" between "such" and "butterflies"	ok
Sandra Diaz	5	9	116	9	117	Define what is meant by "dimensions", or use a more precise term; replace "pollination services" with "their benefits to people"	ok
Simone Athayde	5	9	116	9	116	Repeating my comment for the policy chapter, I suggest to take out "harmonising". Instead, you could use "combining", inter-relating, coordinating, which imply negotiating knowledges but not necessarily reaching an "harmonic state", since different knowledge systems and the attitudes deriving from them might be quite incompatible and even impossible to be harmonized (e.g. spiritual values and monetary values).	ok
UK Government	5	9	116	9	126	This paragraph makes the case that knowledge co-production and harmonisation can assist in restoring pollinators, pollination services and socio-cultural values. This seems a significant claim and further explanation and examples would be useful - what are the links in the chains envisaged here, and what are the enablers and barriers?	ok
Sandra Diaz	5	9	124	9	354	"the credibility, status, and trust enjoyed by a diverse raange of people" meaning unclear in this specific context.	ok
Syed Md. Zainul Abedin	5	10	128	10	144	"Guna leaders" should be defined either in text or in glossary	Your suggestion has been incorporated, the sentence now reads "A group of Guna people, as representatives of the host people, atended the Global Dialogue Workshop on ILK of pollination and pollinators associated with food production, Panama City, 1-5 December 2014 {Lyver, 2015 #221}. These quotations are taken from their oral presentations at the Workshop."

Charlotte vant Klooster	5	10	128	10	144	Since the chapter is part of the overall publication a preamble might not be correct here? A preamble contains a brief introductory statement that sets out the guiding purpose and principles of the manuscript. The quotes can be added as good illustrations but not as a stand alone for a preamble although it nicely illustrates the cosmovision of the Guna. What is the main objective of the chapter? What are the gaps to be filled in? Please introduce how is the chapter structured as well to make it easier for the reader to follow.	Your suggestion has been incorporated. The "Preamble" has been changed to "Foreword to Chapter 5". The last two sentences of the first paragraph of 5.1.1 briefly summarises the content of the chapter "Assessment of the values of the contribution of pollination and pollinators to nature's benefits to people, and to good quality of life, therefore requires diverse valuation methods. In this chapter, we provide an assessment of these values based on scientific and indigenous and local peoples' knowledge systems, and on socio-cultural and holistic valuation approaches (Figure 5.1). The last paragraph of 5.1.1 now sets out what is in each section of the chapter.
Sebsebe Demissew	5	10	130	130	Maybe is it one word or two words?	We have checked the English standard, in this context maybe is one word. As two separate words the meaning is different.
Canadian Government	5	5	137			circularity in definition of direct drivers as drivers that operate directly. "values" and "well-being" are likely intended to be separate entries.	ok
UK Government	5	10	146	16	349	The Introduction (Part 1) should be more clearly structured. It should make reference to the conceptual framework, and use that to describe and justify the structure of this chapter.	We have revised the introduction to make reference to the CF and restructured the chapter accordingly. Part 2 now addresses nature's benefits to people, and part 3 good quality of life

Stephan Lorenz	5	10	147	14	272	<p>The text starts by addressing the diversity of ‘different groups or societies’ with ‘their own ways of life, knowledge systems, practices and philosophies’ (148f.) that ‘are so different from one place to another, and even from one group to another, even for peoples living in the same type of environment’ (153f.). To explain these differences the text resorts to basic ontologies. Referring to Descola four ontologies are given. (1) These distinctions can be helpful to understand basic cultural differences. However, they reduce the differences and do not provide a sufficient understanding of cultural and social diversity. While we obtain a few abstract categories we lose the diversity within these separated views. To draw a few baselines leaves a gap to understand the addressed diversity. (2) In the following parts the text differentiates mainly between ‘science-based knowledge systems’ and ‘indigenous peoples’ and local communities’s knowledge systems’ (ILK) (255f.). The science view should represent the Western/ ‘Euroamericans’ (193f.) ontology while ILK stands for the diversity of all other ontologies. A) The four-ontologies-conception is reduced to a dual one here – why? B) There is a misunderstanding of the Western naturalist ontology if it is only supposed to be represented by natural science. A clear-cut distance from nature (194f.) is not only the basis of modern scientific thinking and experimentation but also of economic and technological utilization, aesthetic pleasure (e.g. the beauty of landscapes) and moralizing (e.g. romanticism). Thus, the Western nature conception is far more complicated and ambivalent. Just think of pets that are often beloved and far away from the cited machines of Descartes (218). Latour’s book title ‘We have never been modern’ provides a good example: He criticizes modern thinking of nature-culture distinction because this thinking does not represent actual practices. The modernity of the ‘modern’ is characterized by a self-misunderstanding. Paradoxically, the modern are modern because they are not modern but thinking in modern distinctions – they are modern and not modern at the same time. (3) Therefore, the given ontologies need further</p> <p>We have incorporated your suggestions and moved away from using the basic ontologies of Descola. Instead we have focused on diverse knowledge systems (5.1.1), and justified our focus on ILK and science in 5.1.2. These removes the confusion in the other sections referred to. We have included reference to German bee-keeping trends in 5.2.3, citing the Lorena and Stark paper. We have included information about the perspectives of bee-keepers on CCD in section 4.2 "Peoples' experiences of declines" citing the sources provided. Suryanarayanan, Sainath., and Daniel L. Kleinman. 2013. “Be(e)coming experts: The controversy over insecticides in the honey bee colony collapse disorder.” <i>Social Studies of Science</i> 43 (2): 215–40; Suryanarayanan, Sainath., and Daniel L. Kleinman. 2014. “Beekeeper’s collective resistance and the politics of pesticide regulation in France and the United States.” <i>Political Power and Social Theory</i> 27: 89-122; Lorenz, Stephan, and Kerstin Stark 2015: “Saving the honeybees in Berlin? A case study of the urban beekeeping boom.” <i>Environmental Sociology</i> 1 (2): 116-126; Lorenz, Stephan, and Kerstin Stark (Eds.) 2015: <i>Menschen und Bienen. Ein nachhaltiges Miteinander in Gefahr</i>. München: Oekom-Verlag</p>
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Brondizio	5		147		211	<p>this introduction has important points, but comes across as over-stressing ontological differences as a fundamental divide; as the chapter shows, when it comes to knowledge and relationships between people and nature (and pollinators) there are more ontological hybridisms than separations; the section explicitly tries to separate the ontology from culture entering into a domain which it cannot expand; the rich examples in the chapter show much more nuanced and complex relationships than that characterized by an ontological typology; typologies are by nature limited, but can be more or less useful depending on how it is used; in the case of the chapter it seems to be more limiting than productive; Furthermore, by taking one particular approach (mainly Descola's) to represent what is actually a large and diverse area of scholarship related to discussions about culture and nature dualism, it puts itself in a difficult conceptual position (besides stepping into political and disciplinary discussions about ontologies), which do not seem to reflect many of the cases and examples presented in the chapter. While I admire and appreciate and use Descola's categories in particular instances, it is important to understand its limitations to the problem at hand. Other approaches (T. Ingold's for instance see phrase in lines 803 and 804 and related discussion) focus on knowledge, culture (and ontology) as emerging of interaction and experiences associated with place, dynamic and evolving from praxis, while avoiding distinct typologies. In sum, while the discussion is important, this framework is more limiting than productive and could be summarized;</p>	<p>Your suggestion has been incorporated and we have moved away from a focus on the Descola typology to a more nuanced recognition of the connections between knowledge systems, culture (and ontology), and epistemology, as emerging of interaction and experiences associated with place, dynamic and evolving from praxis, while avoiding distinct typologies. See revised 5.1.1 and 5.1.2</p>
Jyothis Sathyapalan	5	10	147	12	211	<p>An eastern perspective may be referred in the subsection "Diversities of ontologies and vision", based on ontology in Indian philosophy ,</p>	<p>Your suggestion has been incorporated and we have moved away from the basic Descola typology to recognition of more dynamic approaches configured around concepts of knowledge systems. This is to get a balance view</p>
Catherine Robinson	5	10	147	10	10	<p>Suggest a few introductory paragraphs that outlines the chapter and explains how it links in with broader volume. This will help prepare the reader to read about an important but I suspect a unique subset of this work</p>	<p>Your suggestion has been incorporated and such a paragraph now appears as the last paragraph of 5.1.1, and also in the last two sentences of the first paragraph of 5.1.1</p>

Canadian Government	5	10	147	12	211	A discussion of cosmology, ontology, and epistemology is definitely warranted in IPBES assessments due to the holism inherent in the conceptual framework.	Your suggestion has been incorporated and we now explicitly refer to epistemology in 5.1.1 as well as ontology. Cosmology and cosmogony appear in several parts of the chapter e.g. case example 21, section 5.3.4.5.4.1.2
Liliana Bravo	5	10	148	10	154	Regarding cultural diversity, it might be useful to include information about how many different indigenous peoples and other local groups are being considered. For instance, at global level or or by continent could be interesting (it could be according to Unesco).	Your suggestion has been incorporated in a map showing the location of all the groups mentioned in the chapter. We have also included a map of linguistic diversity and information about biocultural diversity in 5.1.3
Liliana Bravo	5	10	148	12	211	It might be helpful to include an example of a zone/landscape where different manners of relationship can be illustrated: from an indigenous people viewpoint and from a western society perspective. For instance, a high mountain ecosystem in the Andes of South America can be appreciated as a sacred place where deities inhabit, whereas it is also valued as water source or even as a source of coal/gold mining by western groups.	ok
UK Government	5	10	155	10	155	Chapter refers to western separation of nature and culture - would be good to say this is the dominant view? There is an extensive western social science literature that challenges this separation	The text has been revised and now recognises plurality of views amongst both western and ILK knowledge systems see 1.1

UK Government	5	10	155	11	160	<p>The link between the Cartesian dualism (mind versus body and Nature versus Culture) and the rise of anthropocentric view of Nature is not clear. The idea that human can and should master the environment is rooted in “the scientific revolution of the 17th century and particularly the rise of Newtonian mechanics” when Enlightenment “replaced the previous meaning of nature as a metaphysical order with a divine origin and instead portrayed it as a machine whose behaviour could be predicted by mathematical rules and monitored by command-and-control systems.... It was believed that, by uncovering the secrets of nature through instrumental reason, humans could conquer the clockwork Universe and overcome its material scarcity. By stripping nature from its divinity and symbolic values, science and technology gave humans both the means and the right to exploit it.” (Davoudi S. (2014) Climate change, securitisation of nature, and resilient urbanism, Environment and Planning C: Government and Policy 32(2) 360 – 375)</p> <p>Your suggestion has been clarified and the link between Newtonian mechanics and dualism explained in 5.1.1, including a citation of the source provided. The attribution of dualism to Christianity has been removed, as we agree this introduces unnecessary confusion.</p>
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Liliana Bravo	5	10	155	11	160	<p>It might be of interest for chapter's authors to take into account two suggested references:</p> <p>1) Michel Foucault. The Order of Things - An Archaeology of the Human Sciences. See in particular Chapter V: Classifying. Author describes, inter alia, the period (the 17th century) by which appears the "Natural History". Before that time a plant/animal was described by including a broad spectrum of characteristics: components, organs, virtues, similarities, legends, stories of travellers and people in former times, importance as food, medicinal properties, etc. After cited period, a new manner of representation appears which will have room to the development of Linneo's Classification.</p> <p>2) White, L. (1967). "The historical roots of our ecologic crisis". Science 155 (3767):1203-1207</p> <p>Author describes how religion has promoted a notion of humans as masters of nature with catastrophic environmental consequences to date. However, this article also proposes alternatives as taking account of ideas inspired in San Francisco de Asis. Those are related to the respect for every live being in nature at the same level of importance as humans.</p>	The points you have raised are beyond the scope of this chapter.
Sebsebe Demissew	5	11	159	160	<p>....."good part humanity.....". Does this mean the major part of the world or those thinking in the non-western philodphy?</p>	This section has been rewritten and the claim for a "good part of humanity" no longer appears.	
Liliana Bravo	5	11	161	12	211	<p>This part presents an interesting conceptual framework but it might be useful to use simpler language that facilitates its reading; perhaps by including some examples.</p>	Your suggestion has been incorporated and the section rewritten see 5.1.1
UK Government	5	11	166	11	167	<p>Is it about ontologies or is it indeed about epistemologies (i.e. how we come to know the world)?</p>	Your suggestion has been incorporated and we now explicitly refer to epistemology in 5.1.1 as well as <u>ontology</u> .
Samson Gwali	5	11	173	11	173	<p>Replace "by products" with "by-products"</p>	The quotation from Descola is no longer included.

UK Government	5	11	175	11	176	Add: how we perceive the world and our relation to it.	The quotation from Descola is no longer included.
Charlotte vant Klooster	5	11	180	11	182	Please add reference after multiple cultures. Be careful with comparison Amerindian ontology versus term 'Westerners'. Western philosophy?	Your suggestion has been incorporated in the revised text see 5.1.1
UK Government	5	11	180	11	182	The split between westerners and others is not helpful and can be problematic. Westerners are not a unified block. Used outside their context, these binaries can be misleading. Throughout history, many 'westerners' have believed in and advocated a biocentric view of nature "which considers humans as members of an interconnected 'web of life' ... and an integral part of nature, rather than its master or steward" (Davoudi, 2014). A particularly important example is the Romantic movements in Europe. On the other hand, many of the examples used in the chapter with regard to the values of 'indigenous' population show a great deal of functional and utilitarian perspectives on pollinators (and on Nature). So, although there maybe links between types of cultures and types of values, there is a huge amount of diversity within cultures which makes it difficult to talk about 'westerners' as a unified group and 'indigenous' as another unified group. Davoudi S. (2014) Climate change, securitisation of nature, and resilient urbanism, Environment and Planning C: Government and Policy 32(2) 360 – 375	The text has been revised to move away from presenting a binary towards recognising diversity of knowledge systems and ontologies, including diverse perspectives within western societies and within indigenous peoples and local communities. A citation to the Davoudi source has been included. see 5.1.1
UK Government	5	12	198	12	209	This paragraph is not clear. What does 'ontological foundation of knowledge' mean? The link between ontology and epistemology is not made clear.	The text has been substantially revised and the paragraph largely deleted. We now carefully explain epistemology and ontology in the second and third paragraphs of 5.1.1
Serena Heckler	5	12	199	12	199	Be careful in quoting Frazer--his idea of Totemism was not as Descola describes it and his ethnography is not seen as being particularly credible.	Your suggestion has been incorporated and the reference to Frazer no longer occurs in Chapter 5.
Jyothis Sathyapalan	5	12	213	14	272	Highly philosophical, many technical usages , making it difficult to understand,	We have incorporated your suggestion and revised this material to remove the highly philosophical material and focus more clearly on the IPBES Conceptual Framework
UK Government	5	12	213	14	261	Some fundamental and interesting points are presented here but they are presented in a highly disjointed and vague fashion with little evidence to substantiate some of the claims. A better flow of argument and better ordering of the materials presented are needed.	We have incorporated your suggestion and revised this material to remove the material that is presented without substantiation and focus more clearly on the IPBES Conceptual Framework

Brondizio	5		214		217	Along the same comments above, here is a example of the limitations of framing the whole chapter around ontological differences; One could say that this paragraph on ethics and values is arguably naïve and misleading. Why not also highlight that 'values and ethics' are shaped by historical and political processes, religious institutions, etc..? all these are inter-related; reducing these complexities to a typology of ontologies can not be sustained.	The text has been rewritten to move from a typology of ontologies to a more nuanced recognition of dynamism and diversity in knowledge systems. See 5.1.1 and 5.1.2
Canadian Government	5	12	214	14	283	Yes, ok. Interesting graphic. One could consider that sociocultural values are as defined above, in which case they could be relevant to ILK systems – it may be partly a matter of how one defines sociocultural values. The definition above can be consistent with relational ontologies because it is not instrumentalist, reductionist, or utilitarian and can draw on approaches ranging from phenomenology (experience and perception of the world) to constructivism (creation of the world).	Your suggestion has been incorporated and we have included examples of socio-cultural valuation with ILK-holders in part 2
UK Government	5	12	214	12	217	Chapter states 'Values and ethics are influenced by the specific ontologies and worldviews in which they are grounded. Values do not exist on their own'. The points made in this paragraph seem useful - and are often overlooked	This topic is now address in section 5.1.4, with a further source to support the argument
Nicolas Cesard	5	12	217			... examining the underlying ontologies (and their values ?)	The text has been revised and the statement about 'examining the underlying ontologies' is now longer included
Brondizio	5		233		234	this statement is problematic and symptomatic of the limitations of the approach taken in the chapter. The issue is not about about disappearing ontologies as if they existed statically in the past (which the statement suggests); the key questions are about how "ontologies" (culture; or people-nature interaction) trasform and change!	Your suggestion has been incorporated in section 5.1.1 with the sentence 'Knowledge systems, and their underlying ontologies and epistemologies, are dynamic, transforming and adapting to changing interactions and conditions. '

Catherine Robinson	5	13	233	13	234	I agree that ontologies do not disappear with modernization but they can certainly adapt. It would be useful to include a section on this adaptation as it relates to understanding and managing pollination. For example, many Indigenous communities have had to adapt their ontologies and knowledge systems to consider and manage pollination processes caused by introduced species and this has required new partnerships with scientists (for example see account of Giringun Aboriginal Corporation's response to myrtle rust - Robinson CJ, Maclean K, Hill R, Bock E, Rist P. 2015. Participatory mapping to negotiate Indigenous knowledge used to assess environmental risk. <i>Sustainability Science</i> . DOI:10.1007/s11625-015-0292-x).	Your suggestion has been incorporated into section 5.1.1, including a citation to the source provided.
UK Government	5	13	233	13	234	'Ontologies do not disappear with modernization' - again this is in relation to indigenous communities but is also true in western societies	The text has been revised to recognise that ontologies are dynamic in all societies, see 5.1.1
Liliana Bravo	5	13	235	13	244	For instance, it might be useful to include info about matching areas where indigenous peoples inhabit with biodiversity hotspots. There is a relevant coincidence. Conservation International may have info on this matter. That is also related to Figure 2 on page 17.	ok
Nicolas Cesard	5	13	245			Māori	Your correction has been incorporated
Nicolas Cesard	5	14	251		252	(Césard and Heri 2015)	Your correction to the source has been incorporated
Charlotte vant Klooster	5	14	254	14	272	In this chapter we divide our analysis of socio-cultural values..... => This is part on analysis should be moved to your methodology	The text has been revised and this sentence has been removed; instead we include an introduction to the various sections of the chapter see the last paragraph of 5.1.1

Brondizio	5		254		272	as discussed above, framing the chapter in terms of ontologies vis-à-vis for instance 'knowledge systems' creates all sorts of conceptual and practical problems. For instance, the contradiction starts in figure 1. the starting point is a dualistic view of the world (a point already criticized in the chapter earlier), then by dividing ontologies into two groups; on what grounds "science based knowledge systems" can or should be recognized as an 'ontology' or "indigenous peoples and local communities knowledge systems' be grouped as in some way sharing some sort of broad ontological category. The third row is also misleading as it makes assumption that all science-based approaches separate intrinsic value from anthropogenic values; granted that the MEP decided to separate these in the IPBES conceptual framework, many would argue that intrinsic values are largely anthropogenic values and their separation a misleading construct in the first place; further, the figure suggests that all indigenous and local community knowledge are holistic; it depends on what holism means; further and perhaps more problematic, it separates economic, biophysical, and sociocultural valuation approaches from indigenous and local communities which is misleading and does not match the wealth of examples and cases presented in the chapter.	The text has been revised to incorporate this perspective; we now recognise diversity and dynamism of knowledge systems and ontologies, and use the IPBES Conceptual Framework to develop the logic of the chapter, as suggested by many reviewers.
UK Government	5	14	254	14	256	Again the chapter distinguishes between science-based knowledge systems and indigenous peoples' and local communities' knowledge systems. Previous discussion links knowledge systems with spiritual belief systems (e.g., lines 239-252). It might be useful to include some discussion of how science-based knowledge systems and religion may be linked in western societies?	The text has been revised to incorporate this perspective; we now recognise diversity and dynamism of knowledge systems and ontologies, and use the IPBES Conceptual Framework to develop the logic of the chapter, as suggested by many reviewers.
E. Miriam Aldasoro Maya	5	14	254	14	254	Review the phrase "... basis of diverse of ontologies"	ok

Simone Athayde	5	14	255	14	255	I suggest that the authors include a paragraph distinguishing between the different epistemologies that might be included in what is described as "science-based" knowledge systems or ontologies. It is important to recognize that not all academic knowledge embraces a positivistic (from Descartes and many others) approach to studying the world. The positivistic and post-positivistic approaches are mostly embraced by what is known as "hard sciences", that use hypotheses testing and the scientific method. The object is out there and the subject observes the world without interfering in the world. Other academic fields, including social sciences and humanities, are characterized by what is known as "epistemological pluralism", adopting many methods to study the world and embracing different scholarly streams of thought. Anthropology as a scientific field, for instance, cannot be classified solely as cartesian, naturalist or post-positivist. It has many approaches and methods, including post-modernist perspectives which aim to break the distinction between the subject-object elements in research. I just think it is important to clarify these distinctions, and I can offer some literature on epistemology to help if needed.	Your perspective on diverse and dynamic ontologies and epistemologies has been incorporated in 5.1.1 including a citation to the Repko source. Literature: Repko, A. F. 2012. Interdisciplinary Research: Process and Theory. 2 ed. Sage, Thousand Oaks. Foucault, M. 1994. The order of things. An archaeology of the human sciences. New York, Vintage books. Frodeman, R. ed. 2010. The Oxford handbook of interdisciplinarity. Oxford, New York: Oxford University Press. Creswell, J. W. 2014. Research design: qualitative, quantitative and mixed approaches. 4th ed. Thousand Oaks, Sage.
Sandra Diaz	5	14	261			Figure 1: Please, to the best possible extent, try to be consistent with the value/valuation terminology and categories proposed by the IPBES CF and its recent document on Diverse Valuations (3D, to be available shortly)	The figure has been revised to be consistent with the IPBES CF and the Valuation Guide.
Catherine Robinson	5	14	261	14	261	Figure 1 is an excellent overview of this chapter and how it relates to overall volume. There is an important edit to consider - the authors label 'diverse knowledge systems' to reflect different knowledge systems (science and ILK) and also use the term 'diverse' to discuss a combination of science and ILK systems to create ontologies and socio-cultural contexts. Perhaps consider another term (line 264) to 'diverse' to show that this reflects a combination / negotiation of multiple knowledge systems and values that relate to a given context	The figure has been revised to be consistent with the IPBES CF and the Valuation Guide. While it does not specifically represent combined/negotiated knowledge, these are referred to in the definition of ILK, and the text, see 5.1.2 , and the sentence 'The definition also recognizes that hybrid forms of knowledge, negotiated between science, practice, technical, and ILK systems, and variously termed "usable knowledge", "working knowledge", "actionable knowledge", "situated knowledge" and "multiple evidence base" are frequently applied pragmatically to the challenges of biodiversity loss (Barber et al. 2014, Tengö et al. 2014, Robinson et al. 2015). "

Patricia Balvanera	5	14	261	14	270	Please cite here the first version of the IPBES document on diverse conceptualizations of value and add a few words on how the approach used here is compatible (or not) with that document	Your suggestion has been incorporated and the source cited in 5.1.1
Sandra Diaz	5	14	261			Figure 1. is the correct term "valuation frameworks and approaches" or "frameworks and valuation approaches" as stated on line 280 of the text?	Figure 1 has been revised to take account of this perspective.
UK Government	5	14	271	14	271	Practices and ethics are also important in western societies	This perspective is acknowledged in 5.2.1 "While many practices and ethics outside of indigenous peoples and local communities could also be considered as nature's gifts, the scope of this assessment did not extend to investigating this dimension "
Brondizio	5		273		283	these are good points, but the section deserves first a definition and discussion of knowledge systems regarding polination; for instance, as called attention in the first item of the exec summary or in sections such as in lines 836-840:	Your suggestion has been incorporated and the material now integrated into section 5.1.1 beginning with a discussion of knowledge systems regarding polliantions
UK Government	5	14	273			Section 1.3 (starting from line 273) mixes theories of knowledge (which it pays only lip service to) with diversity of traditions in, for example, how experiential knowledge is passed on. The section lacks theoretical clarity. For a summary of different theorisations / definitions of 'knowledge' see Davoudi, S. (2015) Planning as Practice of Knowing, Planning Theory, DOI: 10.1177/1473095215575919	This section has been rewritten to take account of this perspective, clarifying the issues of theories of knowledge.
Liliana Bravo	5	14	274	17	369	It might be useful to include more ideas based on cases or examples.	The text includes 28 case examples.
UK Government	5	14	276	14	278	This is a big jump from 'theories of knowledge' to single authorship and songs. The use of examples (e.g. Amerindian people) appears to be random with no clear links to the preceding discussions.	Your suggestions have been incorporated and the examples of Amerindian people removed, with the link to single authorship of songs clarified as an example of epistemological difference, see 1.5.1
Brondizio	5		284		285	this statement is highly problematic and speculative; one can argue about many other features that distinguish knowledge systems; this brings the point of defining 'knowledge systems' more carefully in preceding text.	Your perspective has been incorporated and the sentence revised to 'A system of knowledge is also distinguished from other such systems according to its ideas about what constitutes reality , about what kinds of things exist—its ontology (Descola 2014). ". The previous paragraph discusses epistemological difference, to give more balance to the topic.

Canadian Government	5	15	286	15	289	Statement is a little confusing – could benefit from rephrasing for clarity. Are you referring to the apparent paradox of people in what is assumed to be a naturalistic worldview having feelings of inspiration, wonder, and beauty which are not rationalist? Perhaps part of the limitation is as discussed in comments above – many people in cultures sharing the Western ‘Enlightenment’ epistemological tradition do not subscribe to the mechanistic and reductionistic paradigm, for various reasons. It might be a good idea to acknowledge that, and note that the division here is a pragmatic one for the purpose of managing the data.	The text has been revised to incorporate your perspective and recognise the diversity of ontologies, see 5.1.1
Charlotte vant Klooster	5	15	288	15	288	Please add between brackets types of pollinators (whole of Part 2 discusses various types of values and pollinators without discussing/listing in short the pollinators itself with relevant information for the reader. Chapter 3, page 30, line 821 mentions types of pollinators for the first time (pollinators such as)	The text has been revised and this sentence is no longer included.
Sandra Diaz	5	15	291			"fuzzy logic". Please explain the meaning of this within the context of ILK.	ok
Jyothis Sathyapalan	5		293		297	This is the main focus of the chapter. Earlier discussion on ontology, ethics and value might be made simple. A long discussion taking away reader from the main focus of the report.	Your suggestion has been incorporated and the earlier discussion shortened see 5.1.1
Brondizio	5		299		349	this section is very useful and informative and illustrates the limitations of the ontological framework presented so far in the chapter; it talks about diversity, dynamism, economic context, combination of knowledge, etc.. It seems to have been written independently and free from the ontological frame presented above; this section could come earlier in the chapter replacing much of the previous text on ontology;	Your suggestion has been incorporated and greater prominence given to this material, replacing some to the earlier text with the ontological frame
E. Miriam Aldasoro Maya	5	15	299	16	349	At the beginning of the section 1.4 it says that three premises underpin working with ILK, you clearly identify the first and the second, but not the third one.	Your suggestion has been incorporate and the text revised so this sentence is no longer included.
Jyothis Sathyapalan	5		299		349	this part is a discussion on ILK system and its characteristics. I think in places like India, certain caste identities and community identities are based on this knowledge system, that is the way they preserved it. It was oral and in some case right of knowledge is given to only one person in the family, some times it is not transfer if there is no right member in family. for example certain herbal health practices among Indian tribes. gender difference was another issue while transferring this knowledge, it was with male person in most cases.	The text and definition incorporate this perspeive

Canadian Government	5	15	300	16	349	At the start of this section it says "Three premises..." but the section only includes two. Is one missing? The content of this section is very good.	Your suggestion has been incorporate and the text revised; it no longer includes the sentence referring to number of premises
UK Government	5	15	300	15	307	Can we conclude from this paragraph that the term 'indigenous' refers to small holding 'farmers' involved in agriculture? If so, does this mean that urban dwellers do not count in this chapter's definition of 'local communities'?	The text has been revised to clarify the use of terms; Box 1 now sets out who is considered to be indigenous peoples and local communities
Serena Heckler	5	15	304	15	304	As per convention established by the UNDRIP, should be "indigenous peoples" here, with an "s"	Your suggestion has been incorporated and people corrected to peoples
Sandra Diaz	5	15	306	15	307	Although the role of ILK-related biocultural practices is undeniable, suggesting that 80% of the world's diversity is fostered by it is a rather sweeping and probably unsupported statement; please rephrase.	Your suggestion has been incorporated and this phrase is not longer used.
Canadian Government	5	15	308	15	308	This is an example of the use of "local communities" with global statistics, to which the question above regarding who is included in "local communities" pertains. The text reads as though it means all rural communities in all societies (including for example farming communities in Canada), but is this actually the case? The types of information provided are great, and very informative, it's just that we need better clarity socially and geographically about who is included and who is not included, please.	The text has been revised to clarify what is meant by "local communities" including in Bx 1; the material about family farms has been removed as confusing and make it difficult of focus on ILK systems
Sandra Diaz	5	15	313	15	314	This statement needs to be qualified /spelled out. What is meant by productivity? Surely one of the major claims from industrial agriculture is the ever-increasing yield per hectare.	ok
UK Government	5	15	315	15	317	It is important that the chapter does not romanticise the notion of 'small holding farmers' as knowing best. As with scientific knowledge, local knowledge is also limited and can lead to misguided treatment of the environment and pollinators. Not all local cultures and traditions are based on ecologically sound practices.	The text has been revised to remove the general reference to the FAO 2014 source and give details instead of specific knowledge that local farmers have been shown to hold, with sources from the peer-reviewed scientific literature.
Simone Athayde	5	15	316	15	317	...knowledge that is finely adapted to understanding AND MANAGING....	The text has been revised and now includes "and managing"
UK Government	5	16	319	16	320	How large? Which countries?	The text has been revised to remove this sentence as the lengthy explanatory matieral (how large, which countries, where) needed to clarify the point is beyond the scope of the assessment.

UK Government	5	16	323	16	324	This implies that 'cultural systems' are defined by people's occupation (fishers, farmers, etc.) rather than by their socially and historically shared values? This needs clarification. People's cultures and values are not solely shaped by their occupation. Also it is important to note that people have <u>multiple identities</u>	The text has been revised to incorporate your perspective and "cultural systems" replaced with "livelihood systems"
Charlotte vant Klooster	5	16	325	16	325	Please introduce the concept biocultural diversity here with a reference when used for the first time (it is mentioned in the glossary)	Your suggestion has been incorporated and the definition provided the first time the term biocultural diversity is used in section 5.1.3
E. Miriam Aldasoro Maya	5	16	332	16	332	Only "understanding", or can it be added "conserving in situ"?	Your suggestion and that of another reviewer have been incorporated and we have added "and managing" here see section 5.1.2
UK Government	5	16	332	16	333	Chapter states it is important to understand ILK in situ - there are some useful parallels with understanding socio-cultural values in industrialised societies, which could perhaps be drawn out more strongly? The UK Government Department for Environment Food and Rural Affairs (Defra) funded study on 'Social and cultural values of pollinators' takes an in-depth case study approach partly in order to understand social and cultural values <u>in situ</u>	to be incorporated recognition of this point into 5.1.5
UK Government	5	16	337	16	340	This seems another area where parallels could be drawn between ILK approaches and work in industrialised societies. The definition of ILK here has parallels (e.g., highlighting the importance of cultural practices and environmental spaces, grounded in the biophysical domain) with the conceptual framework for the linkages between cultural ecosystem services, values and benefits developed as part of the UK National Ecosystem Assessment Follow-on (see 'UK National Ecosystem Assessment Follow-on: Synthesis of Key Findings', Figure 15, p33 - http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx)	Your perspective on this parallel has been acknowledged, with the following sentence now included in 5.1.5 'Similarly, valuation approaches focused on highlighting the importance of cultural practices and environmental spaces are also recognized as suitable for assessments outside of ILK systems, although their application is at an early stage of development {UK National Ecosystem Assessment, 2014 #2020}.'
Serena Heckler	5	16	337	16	337	Again, should be "socio-ecological"	Your perspective ahs been considered, and social-ecological maintained, as more consistent with <u>relevant literature</u> .
UK Government	5	16	341			The terms in bracket confuse types of representations (i.e. 'written, oral') with types of knowledge (i.e. tacit and scientific). If ILK includes 'scientific' then why call it a separate name rather than simply talk about different types of knowledge. The use of the term ILK implies an emphasis on tacit and experiential knowledge, as against experimental systematic and scientific knowledge, so its definition should not include 'scientific'	Your perspective has been incorporated and this material moved to Box 2 where it is presented as a discussion elaborating the definition of Diaz et al 2015.

UK Government	5	16	346	16	349	It is useful to see examples from industrialised societies but these are brief - further detail would be good	The text in the chapter has been revised to include more examples from industrialised societies see
Canadian Government	5	16	350	17	368	Good section, good text. Not sure the reference to Lévi-Strauss on food for thought is that useful, might consider removing. The map with the textbox is good though.	The text has been revised to clarify the meaning of the reference to Levi-Strauss see 5.1.3
Jyothis Sathyapalan	5		350		357	I think spirituality also matter here, culture of worshiping nature (rivers, trees, animals) are also found in many parts of the world.	there may be a mention of spirituality , that connect culture and nature, from the perspective of eastern part of the world
E. Miriam Aldasoro Maya	5	17	351	17	359	I am afraid I would insist on mentioning the Biocultural Axiom of Nitschmann, on my opinion its a basic antecedent on the topic.	Your recommendation has been incorporated and the biocultural axiom included with the source where it first appeared oledo, V.M. (2001) Indigenous Peoples and Biodiversity. Encyclopedia of Biodiversity (ed. S.A. Levin), pp. 451-463. Elsevier, New York, USA.
Serena Heckler	5	17	355	17	385	Some of the terms being presented here are quite controversial--biocultural diversity and its proponents' mapping of linguistic and biodiversity have attracted controversy (see, for instance Brosius and Hitchner 2010, ISSJ pp. 141-168 and many works referenced therein). The Loh and Harmon paper treats languages as analogous to species that can be analysed using ecological concepts and tools. This is a problematic treatment that ignores multilingualism (although colonialism has posited that indigenous languages compete with colonial languages and hence should not be transmitted, the majority of the world's people speak more than one language. A model that sees languages as if they are species in competition with each other fundamentally misunderstands culture, which is why the work has not been picked up by linguists). It is true that the term "biocultural diversity" is increasingly used to talk about interlinked natural and cultural diversity, without intentionally invoking the more tenuous theories underlying the arguments made to support it by some of its originators. Nevertheless, the statement that these maps, questionable in themselves, "highlight the significance of ILK systems" is unclear and should be unpacked. Is the implication that ILK systems enhance biodiversity? Often the contention of authors such as Harmon and Loh and Stepp is that biodiversity gives rise (in a natural selection kind of a way) to cultural diversity. What exactly is meant here?	The text has been revised to clarify the perspective that cultural practices shape biodiversity, and to recognise the map as an interesting visualisation, rather than "highlighting the significance of ILK systems". See 5.1.5. We have reviewed and cited the Brosius source and ensured that we have addressed the objections he raises, particularly through our emphasis on the dynamism of knowledge, our inclusion of hybridity. The map is useful to those who are not familiar with the diversity of human languages.

Denise Matias	5	17	360	17	363	How about including wild honey bee hunting and wild honey gathering as an example of unique biocultural association with pollinators?	Your perspective has been incorporated and, these examples are included later in the text.
UK Government	5	17	363	17	364	It is useful to see reference to industrialised societies but the example of bee keeping could be discussed in more depth	Your perspective has been incorporated and, and this example discussed more fully later in the text.
Brondizio	5		369		369	start with "The term..." biocultural diversity ..	The text has been revised and the sentence now starts with "the term"
Natasha Fijn	5	17	369			Levi-Strauss was referring specifically to animals being 'good to think', not really biodiversity. It is important to include Levi-Strauss' 'From Honey to Ashes' somewhere but not particularly appropriate within this section <u>discussing biodiversity.</u>	Manuela, can you check our revision to this section and respond to this comment pls
Samson Gwali	5	17	369	17	369	Replace "provide" with "provides"	The grammatical errors in the sentence have been corrected.
Charlotte vant Klooster	5	17	370	17	385	Please modify map by removing text ' fig. 5.8 biocultural diversity in the world '. Ask source for original map to modify to your needs and add source after the figure explanation not in the map itself. Figure explanation should be below the figure (table explanation is above table)	The text and map have been revised to incorporate your perspective see 5.1.3 and Fig 2
Sandra Diaz	5	17	370			Figure 2: Please indicate the meaning of white areas in the legend or colour key embedded in graph.	The text and map have been revised to incorporate your perspective see 5.1.3 and Fig 2
Charlotte vant Klooster	5	17	386	18	397	After the map (which proves the correlation existing between biodiversity and ethnolinguistic diversity globally) I would expect as a reader an example that highlists the significance of this. The part on myths is valuable <u>but not the right place.</u>	The text has been revised to take account of this perspective and the significance of the relationships clarified see 5.1.3
Charlotte vant Klooster	5	17	386	17	386	Reference to case 1 is missing in the text (see list of case examples overview on page 4)	The text has been revised and case example 1 is now referred to see end of 5.1.3
Syed Md. Zainul Abedin	5	18	390	18	396	The scientific name of the "woodpecker" should be given in the parentheses for proper identification	Comment addressed

UK Government	5	18	398	21	507	<p>Discussion of socio-cultural values and methods is useful but could be expanded. It would be helpful to make reference to the 'IPBES guide on diverse conceptualization of values and on policy support tools and methodologies' (http://www.ipbes.net/news/45-work-programme/648-comments-2a-3d-4c.html).</p> <p>On methods, there is likely to be other national level work that can contribute. In the UK, the National Ecosystem Assessment Follow-on has developed a range of tools and approaches to help articulate social and cultural values and take them into account more effectively in policy and decision-making - see in particular Work Package Report 5 (Cultural ecosystem services and indicators) and Work Package Report 6 (Shared, plural and cultural values of ecosystems). Summaries of both can be found in the Synthesis of Key Findings - http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx</p>	The text has been reviewed and revised to take account of this perspective and the perspective of other reviewers that the section should be shorter. See 5.1.4 and 5.1.5
Jyothis Sathyapalan	5		398		527	lengthy discussion on concepts of values, may be shorted , otherwise reader may deviate from the main theme of the report	The text has been revised to take account of this perspective and shortened see 5.1.4 and 5.1.5
Patricia Balvanera	5	18	400	18	410	I think it would be important to cite in this section or earlier (fig 1) the first version of the IPBES document on diverse conceptualizations of value.	The text has been revised to include citation of this source in 5.1.4 and 5.1.5
Charlotte vant Klooster	5	18	401	18	407	On page 12 line 214 the term 'values' is introduced for the first time. Please consider adding the meaning of values, presented on page 18 line, 401-407, to page 12 online 215 after 'grounded'. If you replace this, the last sentence (line 407-410) should be replaced elsewhere as well for you to decide upon. Start new section 2.1.1 with 'The IPBES contextual framework.... line 411).	Your perspective has been incorporated and the term value is now defined at the beginning of 5.1.4
Liliana Bravo	5	18	401	18	410	It might be of interest for authors to broaden the concept of socio-cultural values with relationships between peoples and their environmental contexts. It is practical to use the concept of a value but when one approaches to analyse relationships can find different concerns and definitions of biodiversity held by local populations.	This perspective is acknowledged in 5.1.5
Canadian Government	5	18	401	18	407	Good, well stated.	Thanks

Catherine Robinson	5	18	401	18	410	The authors suggest 2 meanings of value that are important to IPBES. I suggest there is a third - values are an endogenous property of any pollination management process in which social groups seek to define what is important, and what deserves recognition. This suggests that we could expect debate (contestation?) over the definition of what is 'valuable'. This matters in relation to IKS and science knowledge negotiations over pollination agents and processes deemed to be more useful (or valid) to enable fertilisation and reproduction.	The text recognises that there are at least two meanings, which flow from the definition. The text has been revised to make clear that there are a range of other meanings associated with diverse groups of people see 5.1.5
Sandra Diaz	5	18	406			What is the meaning of the word "world" in this context?	The text has been revised and this sentence is no longer included.
Canadian Government	5	18	407	18	410	This sentence is less helpful as stated – can you reframe it to build on the two meanings at the start of the paragraph? If you are trying to explain the link between held or assigned values (as per the first 3 sentences) and achieving objectives or conditions there is a piece missing. Are you saying that in Western cultures values are ends-means based (for the utility of the valuing person)? There is a considerable body of research in environmental values that disagrees. Maybe you could restate your point in plain language.	The text has been revised and this sentence is no longer included.
Canadian Government	5	18	411	18	414	This sentence is well stated.	Thanks
Sandra Diaz	5	18	414	18	420	The CF does not assume people as a relatively insignificant part of nature, and this is not the basis for recognizing nature's intrinsic value (independent from human valuation or other considerations). The fact that some worldviews are more dualistic (nature sharply separate from nature) or holistic (people is an integral part of nature, intrinsically connected with, and embraced by it) is explicitly recognized when dealing with anthropocentric (human-perspective, although not necessarily human as the most important) values. I agree that conservation science has been moving from a sharp division between nature and people towards a more "people and nature" view, as described by mace 2014, but I don't think is correct to relate this with the intrinsic vs. anthropocentric values issue.	The text has been revised to incorporate this perspective and this sentence is no longer included. See 5.1.4
Simone Athayde	5	18	414	18	414	human well-being - better established that "good quality of life"	The IPBES CF recognises that human well-being is part of "good quality of life" as well as other concepts such as living in harmony with nature. We have used the over-arching rather than the sub-categories here.

Canadian Government	5	18	415	19	423	There are several unrelated items in this paragraph and it's not clear that they all belong here – the logic does not flow from one to the next. One sentence begins to compare and contrast holistic and dualistic worldviews but makes a point about intrinsic values that is not followed through with a counterpoint from an alternate view, but defers it to the next section. Then the focus shifts to an introductory remark about conservation science out of context. And it is quite true that the ES metaphor is meant to draw attention to the ways that humans depend on nature, it does not necessarily follow that ES assessment has “neoliberal undertones”. Many ES researchers and analysts in the natural and some social sciences focus on understanding ecosystem processes and functions associated with resilience and the implications of ecosystem change for human societies, e.g. in terms of health, risk, sustainable use, and so on. The ‘neoliberal undertones’ seems to be a criticism of the economic valuation. Granted that in the expert literature and popular media this is the controversial part of ES analysis, but it can be approached in ways that are not oriented to commodification and not used in situations for which it is not logically or culturally appropriate. Over the last several years there have been several key publications calling for sociocultural valuation of ecosystem services not using economic theory or methods and this should be fully consistent with the ES concept.	ok
UK Government	5	18	415			This is not quite true. The biocentric view of the world “considers humans as members of an interconnected ‘web of life’ and an integral part of nature, rather than its master or steward. From the biocentric perspective, nature has <i>intrinsic</i> values. It is an end in itself” Davoudi S. (2014) Climate change, securitisation of nature, and resilient urbanism, Environment and Planning C: Government and Policy 32(2) 360 – 375	ok - noted
UK Government	5	18	421			The under tone of ecosystem services is not ‘neoliberal’; it is functional utilitarian. These two may reinforce each other but they are the same. Utilitarian approaches to nature existed well before the rise of neoliberalism: Davoudi, S., (2012) Climate risk and security: New meanings of ‘the environment’ in the English planning system, European Planning Studies, 20(1)49-69	The text has been revised to remove the reference to neo-liberal undertones.

Canadian Government	5	18	422	19	423	Strongly advise revising sentence to say "Diverse valuation methods across sociocultural, biophysical and economic domains can elicit and, where relevant, quantify diverse values (Raymond et al., 2014). Sociocultural methods can also be used to identify and describe values qualitatively. In this section..."	Your suggestion has been incorporated and the sentence revised as follows "Diverse valuation methods in the biophysical, economic, socio-cultural, health and holistic domains can elicit and characterise intrinsic, instrumental and relational values through both quantitative and qualitative measures". see section 5.1.4
Charlotte vant Klooster	5	19	423	19	534	In this section of the chapter... needs and use.=> Please consider starting the 2.1.1. section with this text block, followed by textblock on the IPBES conceptual framework (from The IPBES line 411 to quantify values 423) after which you can continue again with the textblock starting with 'numerous voices ' (line 462)	The text has been revised to follow the structure suggested.
Canadian Government	5	19	425	19	425	Agree that environmental values typologies and forms of elicitation have been developed by philosophers and others since at least Kellert 1980 that are very useful (e.g. Callicott 1984, Rolston and Coufal 1991, Manning et al 1999, Satterfield 2001, and more). However, heritage and health are also part of the MA ES typology which begs the question of why they should be added from other sources.	Your suggestion has been incorporated and reference to these as separate to the MEA removed. See section 5.2.1
Canadian Government	5	19	426	19	434	the rest of this para is quite good.	Thanks
Brondizio	5		428		428	Levi-Strauss most certainly did not use the term "biodiversity" in 1962; check exact quote.	The text has been revised to remove the implication that Levi-Strauss used the term biodiversity see end of section 5.1.3
Samson Gwali	5	19	428	19	428	Replace "evalution" with "evaluation"	The correction has been accepted.
Charlotte vant Klooster	5	19	435	19	461	Please add figure 3 only after mentioning it in the text (line 474 page 20).	The text has been revised to remove Figure 3.
Sandra Diaz	5	19	435			Figure 3. If at all possible, try to find consistency in terminology with IPBES Document 3D (Diverse Valuatons). Also note that it should be "anthropocentric" rather than "anthropogenic"..	The text has been revised to remove Figure 3.
Brondizio	5		435		461	I am not sure I understand this figure. The title says diverse valuation methods, but the figure seems to be about factors influencing the 'process of valuation and value elicitation'; whats the intended flow (direction of interpretation) in the figure? The key outside to the right is not an outcome (as the arrow suggest), but an "input" to the center figure; how can perceptions and values and institutions be outside of the valuation and value elicitation?	The text has been revised to remove Figure 3.

Canadian Government	5	19	435	19	460	Figure 3 seems very much out of context and belongs with a discussion about how values are formed and negotiated. IPBES Deliverable 3d does this, so maybe not a good fit here. The text after the figure is fine, and if a figure is used perhaps this is not the best one to use, and any figure should come immediately after the text so that it is introduced.	The text has been revised to remove Figure 3.
Samson Gwali	5	19	435	19	436	Rephrase the figure caption as follows: Diverse valuation methods that elicit, shape and articulate values, operating as informal institutions that <u>influence diverse behaviours and perceptions</u>	The text has been revised to remove Figure 3.
Sebsebe Demissew	5	19	467	467		Brondizio et al. To <i>et al.</i>	The text has been edited to ensure et al. is italicised throughout
Simone Athayde	5	19	469	19	469	you can use "monetary" or also "market-based" economic valuations to refer to the conventional approach to valuation adopted by many policy-makers and governments.	The text has been revised in response to suggestions of reviewers to shorten this section and this sentence is no longer included.
Charlotte vant Klooster	5	20	472	20	472	Since the header 2.1.1 is on socio-cultural valuation approaches and 2.1.2. on socio-cultural valuation methods I suggest to incorporate the text starting from 472 (However, valuation methods...) to line 476 in a revised way to the next section 2.1.2 including Figure 3 (to which you only have to refer one time)	The text has been revised and these confusing sub-headings removed see 5.1.4 Diversity of methods for eliciting values and 5.1.5 Sociocultural and holistic valuation. The text has been revised to remove Figure 3
Charlotte vant Klooster	5	20	474	20	475	Vatn (2005) therefore refers to valuation methods as value articulating institutions (Figure 3) => If Fig 3 is based on work derived from Vatn (2005) please add source in the figure header in between brackets	The text has been revised to remove Figure 3.
UK Government	5	20	478	21	507	Section on socio-cultural evaluation methods (typology figure 4) is particularly useful way of framing the more-than-economic values and methods for evaluating them that abound in human societies in relation to pollinators	Thanks
Canadian Government	5	20	479	20	487	Really ANY critical approach to valuation, sociocultural or economic, should be reflexive enough to recognize your first point. The remainder of the paragraph applies to any ES assessment as part of the initial scoping – who is benefiting? who is affected? how?, etc., regardless of the type of <u>valuation being undertaken</u>	ok
Liliana Bravo	5	20	479	20	487	It might be useful (if authors agree) to add some questions as the following: what is happening to the environment / landscape / (agro)ecosystem? What people are doing, why and with what effect on the pollinators/(agro)ecosystem/farm/habitat?	The text has been revised to include these questions see 5.1.5

Catherine Robinson	5	20	483	20	487	In the case of pollination and pollinators, socio-cultural valuation might also include questions about what species and processes have pollination agency	The text has been revised to include these questions see 5.1.5
Liliana Bravo	5	20	488	21	507	It might be informative to include ethnographic methods which allow to elicit in-depth details of what people know, feel, do, why, and with what effect on the farm/habitat/landscape with impact on pollinators/pollination services. Some of these methods are already cited (e.g. participant observation, in-depth interviews)	Elisa, could you respond to this comment please
Samson Gwali	5	20	488	20	488	Replace "preferences" with "preference"	the text has been reviewed and the plural "preferences" is preferred to the singular "preference".
Samson Gwali	5	20	491	20	491	Replace "though" with "through"	The correction has been accepted.
Brondizio	5		495		497	figure 4 is potentially informative with few caveats: -it is unclear what "self-oriented" and "others oriented" mean and not explained in the text;-the qual-quant arrow does not work, for instance it does not represent the methods in the lower left corner? -most of the methods listed in the lower-left corner also fit in the lower right corner; -why there is a box on the upper right corner disconnected from the rest of the figure? Perhaps, a way to edit this figure is to eliminate the four quarters and have only one gradient from 'individual' to 'collective preferences' with methods "floating" along the gradient without being placed in fixed boxes.	Elisa, could you respond to this comment please
Simone Athayde	5	20	495	20	495	figure 4 - action research may also be quantitative. Important to briefly distinguish quantitative and qualitative approaches, since this is not clear for the ordinary reader or policy-maker. E.g. after line 507.	Elisa, could you respond to this comment please (reference provided by the reviewer : Creswell, J. W. 2014. Research design: qualitative, quantitative and mixed approaches. 4th ed. Thousand Oaks, Sage.
Charlotte vant Klooster	5	20	495	20	496	Figure 4 is not introduced in the tekst, please add reference to figure 4.	Your suggestion has been incorporated and Figure 3 is now referred to in the text of 5.1.5
Simon Potts	5	20	495	21	497	Some more explanation needed here. I found this a useful attempt to bring together a lot of information but ended up being quite confused. Are these three axes independent? Can all methods be simply assigned to quantitative vs qualitative, self vs other and individual vs collective? For instance ranking preferences can be both qualitative and quantitative and deliberative and consultative - also collective or individual?	ok

Canadian Government	5	21	497	21	497	Figure 4 is interesting, and conceptually informative however some revisions would help:	Thanks
Charlotte vant Klooster	5	21	498	21	498	Valuation by deliberative methods => Please describe 'deliberative methods' first in short before continuing with their aim (line 499).	ok
Canadian Government	5	21	498	21	507	Good content in this para, but written in a somewhat intellectually dense style that may be inaccessible to many bureaucrats and government decision-makers. Might be good to unpack some of this in simpler terms. For example, the clause on communicative rationality while academically relevant is a bit of a side point and not contributing to understanding the point about reasoned discourse. Likewise “challenged by power and knowledge asymmetries” is an important point but should be in plain language if you want it to get across. The final sentence of the para should actually go at the beginning of the description of sociocultural valuation.	ok
UK Government	5	21	505			Why the emphasis on 'rural': how is 'rapid rural appraisal' different from rapid urban appraisal?	Participatory and rapid rural appraisal are well-established as both terms and approaches in the literature; the terms have been retained and relevant sources added

Catherine Robinson	5	21	511	29	786	This is an impressive overview of the range of values that pollination provides for social-cultural values. It would be useful to add some examples of other species and processes that ILK deem to be essential for reproduction and fertilisation rather than just focuse on agents (such as bees) that have been identified by science as pollinators. I am sure there are many examples but consider the role of water as a fertilising agent for the Yolgnu of NE Arnhem Land. As an essential part of Yolngu cultural-ecological geographies that binds individual, clan and country together, meanings and metaphors associated with water act as an important symbolic vehicle through which shared management principles are made. For the Yolngu, water gives life to spiritual forms, country, memories, people, flora and fauna. Held and renewed in Yolngu people’s minds and bodies, from the North-east (Dhimurru) wind and in all living things, water provides a common medium to care for the life of Yolngu and country (quoted from Robinson CJ, N Munungguritj. 2001. Sustainable balance: A Yolngu framework for cross-cultural collaborative management, in R Baker, J Davies, E Young (eds), Working on Country: Indigenous Environmental Management in Australia, Oxford University Press, Melbourne, 92-107). One of these essential processes might in fact be ILK sharing and practice - as noted on page 36, line 1006. This might offer a useful balance to the current emphasis on bees	ok
Canadian Government	5	21	511	21	511	The acronym for the Millennium Ecosystem Assessment is MA (check the reports). This is likely because MEA is the acronym for multi-lateral environmental agreements – so to avoid confusion...	The text has been revised and the acronym removed.
E. Miriam Aldasoro Maya	5	21	511	21	511	Millenium Ecosystem A..... (MEA)	Changed
Canadian Government	5	21	511	21	514	This sentence needs revisiting – it is really hard to decipher. What is the single point being made? That value typologies are ways that people organize information to help them manage it, and that the choices of how to categorize things are strongly influenced by beliefs, customs, knowledge, and perception. As a result, typologies vary across cultures, contexts, and time.	The text has been revised to incorporate this perspective and now reads "The Millenium Ecosystem Assessment (2005) identified that typologies of values are always somewhat artificial—values can be categorized in many different ways which change in response to dynamic human cultures, knowledge systems, religions, social, and social-ecological interactions (Tengberg et al. 2012). "

UK Government	5	22	515	22	519	<p>This categorisation of cultural values is important as it provides a basis for subsequent discussion. However, it is not clear this captures the full range of values and complexities. It might be worth looking at the conceptual framework for the linkages between cultural ecosystem services, values and benefits developed as part of the UK National Ecosystem Assessment Follow-on (see 'UK National Ecosystem Assessment Follow-on: Synthesis of Key Findings', Figure 15, p33 - http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx). As one example, agriculture does not seem to be included in any way and yet is clearly an expression of cultural values (see Fish, 2011).</p> <p>Fish R (2011). Environmental decision making and an ecosystems approach: some challenges from the perspective of social science. Progress in Physical Geography 35, 5, 671-680</p>	The text has been revised to incorporate this perspective and to align better with the IPBES Conceptual Framework as recommended by many reviewers; a revised categorisation reflects this revision and is related to nature's benefits in 5.2.1 and good quality of life in 5.3.1. Agriculture is included as "diverse farming systems"
Canadian Government	5	22	515	22	519	the list of CES in this para becomes confusing because of the ways the ideas are stated. You might consider simplifying, e.g. Cultural Services are the result of ecosystem processes and functions sometimes combined with human interventions, that inform human physiological, psychological and spiritual well-being, knowledge and creativity.	The text has been revised to incorporate this perspective see section 5.2.1
UK Government	5	22	528	22	530	It would be useful to provide more introduction to this section, including a brief outline of the scope of the review and methods and approaches used to identify and assess evidence	
Sandra Diaz	5	22	528	23	556	The detailed categories contemplated here are fully compatible with the IPBES CF, and quite clear. But this seems to pull together as values what is considered in the CF, 3D valuation document and other (external) sources, as "benefits" (from pollinators) and their "values".	The text has been revised to incorporate this perspective and ensure consistency with the IPBES CF, see categories presented in 5.2.1 and 5.3.1
Samson Gwali	5	22	528	22	528	Replace "pollinator" with "pollinators"	Corrected

Charlotte vant Klooster	5	22	529	22	529	Please mention here which methods sections you refer to (2.1.2? And?) since Part 4.5 of the chapter is on Methods only.	Your suggestion has been incorporated and we have explained this at the end of 5.1.4 thus 'The methods used for assessment of the literature related to these values are presented in 5.5. However, we conclude this introduction with a brief summary of how socio-cultural and holistic valuations are undertaken, in recognition that valuation methods shape and articulate values, operating as informal institutions that influence diverse behaviours and perceptions (Gómez-Baggethun et al. 2014, Martin-Lopez et al. 2014).'
Charlotte vant Klooster	5	22	529	22	529	We identified... => This sentence seems to refer to a result of your work. Please make clear division for methods/results etc.	The text has been revised to incorporate your suggestion with the sentence 'The values of pollinators discussed here are derived from reviews of literature, paying particular attention to indigenous and local knowledge, as detailed in the methods section 5.5. ' in section 5.2.1
Samson Gwali	5	22	530	22	520	Replace "services" with "service"	The text has been revised and this sentence has been removed.
Canadian Government	5	22	531	22	537	Suggest removing these sentences that are examples of pollinator-related ES and treat them in the review itself. Keep this focused on introducing the <u>assessment of literature</u> .	Your suggestion has been incorporated and these sentences removed to sections 5.2.2 and 5.2.3
Samson Gwali	5	22	535	22	536	Sentence beginning, "Pollinators" is not clear. It should be rephrased!	the text has been revised and this sentence has been removed.
Bienvenue ZAFINDRASILIVON ONA	5	21	541	22	550	The social relation should be detailed and have an example	Your suggestion has been incorporated and "social relations" are now included as a category see Table 5.2 and section 5.3.1
UK Government	5	22	541	22	542	It is helpful to be explicit about the source of the classification but as indicated in previous comments, there is a significant volume of work on cultural ecosystem services developed since the MEA which could be incorporated (e.g., in the UK, the National Ecosystem Assessment Follow-on)	

Brondizio	5		544		550	why food is excluded or submed in the list? The MA typology of services has many utilities, but also some limitations such as separating provisioning from cultural services and as a consequence placing food production in the first category, but not in the second; while the MA typology is useful here, it could be modified to have more direct mention to food, a key link between ILK and pollination;	Your suggestion has been incorporated and food now listed in table 5.1 and section 5.2.2
Canadian Government	5	22	544	22	550	In comparison to the list provided in the comment above, the selection of six in the chapter seems very limited. Is this because that was all that could be found in the literature or did this list determine the scope of what was sought in the literature? If you must stay with this list due to the time it would take to go back into the literature to expand the scope there should be a very clear statement of the recognition of the scoping parameters you have used and why they were chosen, ideally with acknowledgment of the scope that could logically have been used (as per notes above about sociocultural values and their applicability to all ES (to varying degrees) and the choice you made to focus only on CES.	The text has been revised to incorporate a wider set of categories that more closely align with the IPBES CF see 5.2.1 and 5.3.1 and Tables 5.1 and 5.2
Canadian Government	5	23	551	23	556	these sentences not really needed here – best to move on to the assessment results.	The text has been revised and these sentences moved to 5.2.2 and 5.2.3 as suggested
Jyothis Sathyapalan	5		551		556	I think this is important , need more discussion, that is done in next subsections.	ok - noted
Canadian Government	5	23	557			Making the link to internationally designated sites of cultural heritage is useful and appreciated. There are also many other examples of the cultural heritage link that could be drawn upon.	Thanks
Liliana Bravo	5	23	577	23	579	In relation to the coffee cultural landscape of Colombia: it is an interesting case that allows to integrating pollination services, high levels of biodiversity, farming landscapes, the tradition of coffee growing in small plots, and urban areas. It might be useful to include additional details in this regard if authors agree. See more info in [http://whc.unesco.org/en/list/1121]	Guiomar I've added a phrase to the sentence here but wondered if there was more we could say about diversity of pollinators, and if there is diversity of genes like in the Agave example. I found this source online Winter, C. (2015) Safeguarding agricultural landscapes: The case of the coffee Landscape of Colombia. Masters Thesis, University of Pennsylvania, Phildephia, USA. Online: http://repository.upenn.edu/hp_theses/575 . but haven't been through it

E. Miriam Aldasoro Maya	5	24	596	24	596	Aldasoro MEM (2012) Documented that for Thalhuicas (Pjiekakjoo) People, the bumblebees are the ancestors souls that appear around the day of the death (2nd of november) to visit their families. The title: Documenting and contextualizing the Pjiekakakjoo (Tlahuica) knowledges through a collaborative research project. Tesis Doctoral. University of Washington, Seattle. E.U.A.Dissertation can be found at: https://digital.lib.washington.edu/researchworks/bitstream/handle/1773/20792/AldasoroMaya_washington_0250E_10214.pdf?sequence=1 .	The text has been revised to incorporate this material and source in section 5.2.3
Syed Md. Zainul Abedin	5	24	596	24	608	The scientific name of the "hummingbird" should be given in the parentheses for proper identification	ok
Jyothis Sathyapalan	5		597		623	Some examples may be taken from other parts of the world, particularly developing part, e.g. south Asia	examples are concentrating to one region
Brondizio	5		612		613	check for consistency in the use of the word honeybee vs honey bee; bumblebee vs bumble bee	Corrected to honeybee and bumblebee throughout
Canadian Government	5	25	621	25	623	yes, and this is important. however, the sentence seems quite out of place here, as it is unrelated to the rest of the discussion. perhaps a separate paragraph and a couple of examples would make a better fit.	The text has been revised to incorporate this suggestion and this sentence moved to section 5.4.1.2
Chinese government	5	25	622			"by has" should be "has"	Corrected.
Samson Gwali	5	25	622	25	622	Delete "by" which appears after the word "mascots"	Corrected.
Chinese government	5	25	626	26	657	section "2.2.4 aesthetic values and pollinator"discussed aesthetic values of pollinators in two ways: insect-pollinated plants, and pollinators themselves, but was devoid of several lines to show aesthetic values of pollinators or link between aesthetic values and pollinators, such as van gogh'sunflower on insect-pollinated plants side. It is better to add several lines on insect-pollinated plants and on pollinators side beside of bee and anjaris	This paragraph now begins with the sentence to make this link explicit "Pollinators are valued indirectly via their link to insect-pollinated plants, orchids, roses, sunflowers and many others ..."
Jyothis Sathyapalan	5		626		657	I agree that all are good examples but like to few from developing part because lots of tribes and indigenous peoples are living in this area.	the text has been revised and this suggestion incorporated in section 5.3.5
Samson Gwali	5	25	651	25	651	Insert " in France and several areas in Africa", after Cevennes National Park	Text has been reviewed and the African examples not included here as the whole section refers to France

Canadian Government	5	26	659			in this section the text jumps back and forth mentioning the same country multiple times but others inbetween. Would it make sense to summarize all the relevant points for, e.g. Ancient Greece, Ancient Egypt, etc. together? And perhaps separate ancient from contemporary, since the practical use of the assessment will lie in its relevance to contemporary societies and cultures. If you can make links between the ancient examples and current populations in the same regions who carry on recognizing those historical traditions it would also be good.	The text has been revised to incorporate these suggestions with the ancient separated and links to the contemporary clarified see 5.2.3
Nicolas Cesard	5	26	674			Julius Ceasar > Caesar	corrected
Natasha Fijn	5	26	681			The Indigenous Australian rock band Yothu-yindi sang about sugarbag and honeybees in one of their songs.	Interesting but unable to include without a song name or source.
Canadian Government	5	26	684	26	685	Zeus and Jupiter are the same god – Zeus is the ancient Greek version and Jupiter is the ancient Roman version – so this sentence needs to be fixed.	The sentence has been corrected so that only Zeus is now mentioned see 5.3.3
Canadian Government	5	26	685	26	687	can you expand on this statement, what are these sacred connections in Morocco?	The sentence has been expanded to explain the connections with the Islamic traditions see 5.3.3
Charlotte vant Klooster	5	27	691	27	691	No need for a separate case example here because text can be added in normal text like done before with other examples e.g. for ancient Greece starting from line 682 on page 26.	The case example has been retained in the interests of highlighting the earliest examples of written texts globally, and the Indian traditions.
Chinese government	5	27	696			"acient literature" should be "acient literature"	Corrected
Chinese government	5	27	704			"in relation go" should be "in relation to"	corrected
Samson Gwali	5	27	712	27	712	Delete the word "the and" after "following"	ok
Charlotte vant Klooster	5	27	719	27	719	In the 6 catagories no attention is paid to beekeeping as a traditional occupation only beekeeping as a recreational activity under section 2.2.6 here. Beekeeping is a form of a traditional occupation (although seasonal). See for more information eg. Honey hunting described by Anderson (2001) an ancient form of occupation being practiced e.g by the indigenous Alu and Jenu Kurumba tribes in South India. Anderson, P.N., 2001. Community based conservation and social change among South Indian honey hunters: an anthropological perspective. Oryx, vol 35 (1), 81-83. DOI: 10.1046/j.1365-3008.2001.00152.x	The text has been revised to incorporate this perspective and section 5.2.1 now presents both categories (recreational, innovations for honey hunting and beekeeping, and livelihoods) in 5.2.1 so that the reader knows to expect the additional material. The source from India has been added to 5.2.5.4.
Sandhya Chandrasekharan	5	28	731	28	735	needs to answer 'how?' with regard to Bee Hunt!	Gretchen could you please refer to the source and find out how Bee Hunt does what is claimed, thanks

Brondizio	5		742		786	this section is very interesting, but it mixes several different things, including medicinal use, musical uses and other material uses, while leaving 'nutritional' basically uncovered; as noted above, the latter (more broadly 'food') deserves more attention in the chapter:	The text has been restructured and some of this material now included in a section on "provisioning services" and the linkages made clear
Jyothis Sathyapalan	5		742		786	insects and pollinators are used in different systems of medicine e.g. homeopathy	Insufficient information provided to cite these sources
Christopher Golden	5	28	744			Cite Ellis et al. 2015 and Smith et al. 2015 in the parenthetical looking at nutritional and medical effects. In fact, the Eilers paper and others do not truly discuss medical or nutritional effects but only effects on food. I am becoming repetitive but a true health valuation should include health effects, and not just agricultural effects. Please maintain consistency in this throughout	Insufficient information provided to cite these sources
Nicolas Cesard	5	28	744	28	745	Around 2000 insect species (Jongema 2015). Jongema Y. List of edible insects of the world. Wageningen University, Wageningen, the Netherlands. 2015. http://bit.ly/1wbQojQ Accessed 13 July 2015.	The text has been amended and the source cited
Nicolas Cesard	5	28	746		747	To me, van Huis reference is enough. Pemberton and al. is a bit old, not too detail and on Japan only. On the protein contents of insects, I will use the recent Rumpold and Schlüter 2013 as a reference. Rumpold BA, Schlüter OK (2013) Nutritional composition and safety aspects of edible insects. Molecular Nutrition and Food Research 57 (5), 802-823	Text has been revised to incorporate these sources see 5.2.2
Sandra Diaz	5	28	748	29	756	" crop plants that depend fully or partially...." Key message that deserves to be more prominent in the chapter and assessment in general . I suggest gringing it forward to the Executive summary and also SPM.	This information is included in both
Sandra Diaz	5	29	760	29	761	the procedure, used as an example of a medicinal benefit, is used mostly against bee stings themselves, which would not be a concern if there were no bees around... I suggest deleting it.	The sentence has been deleted

Liliana Bravo	5	29	765	29	767	It might be informative to mention that stingless bees' honey is greatly valued for its medicinal properties on different local communities of farmers and villagers who inhabit the countryside. e.g., antibiotic / antibacterial properties. It is especially common on different regions of Colombia according to the oral tradition. Those bees are named "Angelitas" See also chapters (Part V) of biological properties of stingless bees' honey on Vit, P. et al. (2013). Pot-Honey A legacy of stingless bees. Berlin: Springer Verlag	Your suggestion has been incorporated in section 5.3.4
Sandra Diaz	5	29	768	29	779	The example gets in too much detail about the musical instruments themselves, missing the point. I suggest summarizing, just pointing out that the bee products are important for traditional musical instruments in Laos, China, Japan, etc.	The text has been amended to remove the unnecessary detail
Nicolas Cesard	5	29	772		774	... but the wax of local honeybees is used in.... In that case, better staying vague if we don't know the right honeybee species.	The text has been amended to incorporate the suggestion and to remove the distinction between the bees.
Sandra Diaz	5	29	781	29	786	The rationale behind these links between pollinators and biofuels is confusing. Perhaps it could be improved by expanding a bit more on the statement "choice of biofuel crops as bioenergy industry expands is likely to affect pollinators, and vice versa". Otherwise, prune the paragraph and simply refer to the importance of pollinators for the production of biofuels (e.g. Jatropha), fibre (e.g. cotton) and construction materials (e.g. Eucalyptus).	The text has been amended to incorporate the suggestion see section 5.2.2.

UK Government	5	29	788			<p>The use of the term 'valuing' in the some of the sub-headings Part 3 is not appropriate. The previous Part (P 2) discusses values of pollinators. Given the framework, it is expected that part 3 focuses on valuation methods/techniques. Instead, it is focused on 'valuing'. For example, section 3.3 is about 'valuing of diverse management practices'; is this a recommendation? The link between particular value systems and particular management practices is not made clear. Instead, a number of examples are listed. Overall, Part 3 does not seem to cover either the values of pollinators, or valuation techniques. Instead, it seems to be about valuing indigenous people and their local knowledge. This is fine but should be made clear from the outset and as part of conceptual framework. Furthermore, the headings and sub-headings do not always make sense. For example, 3.3 (line 945): should this be the value of pollinators in management practices?; 3.7 (line 1480) should this be the value of pollinators in livelihoods (rather than 'the valuing of livelihoods')? What is missing in Part 3 is a discussion of how different people / social groups place different types of socio-cultural values on pollinators. Social groups are more diverse than a simple distinction between indigenous and non-indigenous.</p>	<p>The text has been revised to incorporate these perspectives; the word "valuing" no longer appears in the titles; the analytical framework has been revised to recognise greater plurality and to more closely follow the IPBES Conceptual Frameworks.</p>
Brondizio	5		790		792	<p>the citation Brondizio et al 2010 did not use the term 'ontology' as the phrase seems to imply; it used several terms such as cultural differences, worldviews, cosmology, etc.. It put emphasis on sociocultural context and <u>history</u>.</p>	<p>The text has been amended to remove the inclusion of ontology see 5.1.4</p>
Brondizio	5		793		793	<p>this is a 'strong' statement "fit with the value system of ALL stakeholders.." a framework is a guide and not normative in the sense of the phrase;</p>	<p>The text has been revised and this sentence is no longer included.</p>

Simone Athayde	5	30	793	30	793	I suggest that it is better to refer to "many" or "different" stakeholders rather than "all stakeholders" - and maybe provide a context for why the valuation and why the consideration of different stakeholders might be needed. This important introductory paragraph is difficult to be understood by a policy-maker or non-technical person. Provide an example of why a valuation would be needed, how the stakeholders would be identified (maybe naming some - indigenous communities, farmers, managers, practitioners, government officers, beekeepers, etc). All valuation is contingent upon previously defined objectives, which should also be established with participation and inclusion of relevant stakeholders.	The text has been revised and this sentence is no longer included. The text has been revised to include information about stakeholders in 5.1.5
Patricia Balvanera	5	30	794	30	803	Please cite here the first version of the IPBES document on diverse conceptualizations of value	ok
Sandra Diaz	5	30	797	30	826	The considerations in this paragraph misunderstand the IPBES conceptual framework. In advocating for different views, values and valuation approaches to be brought to the table, Díaz et al. 2015 were not suggesting it would be easy, quite to the contrary, it was presented as a "formidable challenge", but one that was worth facing if decisions over common resources are to be made on the basis of a plurality of views, not just the dominant one. Furthermore it is not clear from the paragraph and the following paragraph (815-828) in what ways the valuation of practices and ethics is fundamentally different from, and more fitting than, the very general valuation approaches proposed in Díaz et al. (2015) and, more recently and with more detail, in IPBES 3D document on diverse valuation. Indeed, and at least from a non-specialist reader, a lot of the statements in subsections 3.2 to 3.8 could easily fit in section 2. If indeed the valuation of objects, processes, categories among ILK need to be fundamentally different from those among the rest of society, the basis for this, and in what ways the proposed procedure is different, should be outlined more clearly.	The text has been revised to incorporate this perspective, following more closely the IPBES conceptual framework and the consideration of ILK placed within nature's benefits to people and good quality of life. The overlap between the categories is acknowledged in 5.2.1. Greater attention has been paid to explaining the three features of ILK systems that challenge socio-cultural valuation see section 5.1.5.
E. Miriam Aldasoro Maya	5	30	798	30	798	change systems for systems?	corrected
Brondizio	5		801		802	list could include "terroir"	The suggestion has been considered and not included as it does not easily fit the set of objects in the list.

Nicolas Cesard	5	30	801			kin groups?	The correct term is "skin" but "kin" is probably more easily understood and so the change has been incorporated.
Canadian Government	5	30	804	30	808	<p>yes, there has been a methodological struggle but this is due largely to researchers lack of reflexivity or questioning of their own assumptions and therefore attempting to force categories from their ways of knowing onto cultures that use different categories and different ways of knowing. A proper ethnographic, grounded methodology observes and “listens” to information sources for patterns in ways that people experience, interpret, and communicate about the world from their own ontological lenses. Culturally relevant values therefore EMERGE from the evidence. Just to illustrate for you, an example of working through this experience is the MA thesis on landscape meanings in Eastern Cree oral tradition which can be seen at:</p> <p>https://www.researchgate.net/publication/273459661_Meaning_and_Representation_Landscape_in_the_Oral_Tradition_of_the_Eastern_James_Bay_Crees and a much shorter published conference paper building on the thesis can be seen at:</p> <p>https://www.researchgate.net/publication/273459711_Exploring_the_Eastern_Cree_Landscape_Oral_Tradition_as_Cognitive_Map.</p>	Thanks for this very interesting publication.
Chinese government	5	30	804		805	the description "...identified many challenges" did not make sense, it is better to list what are these challenges in details following the general description.	Your suggestion has been incorporated and the challenges presented first see section 5.1.5
UK Government	5	30	808	30	814	This paragraph is not clear.	The paragraph has been rewritten to achieve greater clarity see 5.1.5
Canadian Government	5	30	811	30	820	these sentences are too abstract for the IPBES primary audience and should be unpacked in plain language. Also suggest you say “some” Indigenous people’s views... because it’s extremely important to recognize cultural diversity among the world’s Indigenous peoples – they do not all have the same cosmology, ontology, and epistemology.	The paragraph has been rewritten to achieve greater clarity, and examples provided, see 5.1.5

Brondizio	5		812		812	does not account only for the view of indigenous peoples, but also different kinds of non-indigenous local communities;	The text has been revised to make the point more clear see 5.1.5 'Cultural values are seen to vary spatially and temporally with the dynamism of the social system, such as the spirit of relatedness— for example, Aboriginal people in Australia attribute the wave of mammal extinction to the decline of their ceremonies for those animals (Rose 1995, Pert et al. 2015{Jackson, 2015 #32}). Socio-cultural valuations approaches more frequently consider how the social groups assign values to various parts of the landscape, resulting in values varying spatially with the dynamism of the environmental attributes (Raymond et al. 2009) "
Samson Gwali	5	30	812	30	812	Sentence not clear!	The text has been revised to make the point more clear see 5.1.5 'Cultural values are seen to vary spatially and temporally with the dynamism of the social system, such as the spirit of relatedness— for example, Aboriginal people in Australia attribute the wave of mammal extinction to the decline of their ceremonies for those animals (Rose 1995, Pert et al. 2015{Jackson, 2015 #32}). Socio-cultural valuations approaches more frequently consider how the social groups assign values to various parts of the landscape, resulting in values varying spatially with the dynamism of the environmental attributes (Raymond et al. 2009) "
Samson Gwali	5	30	818	30	818	The word "legible" needs to be put in context, otherwise the sentence remains fuzzy!	This is a quote, so cannot be altered.
Brondizio	5		824		826	this phrase is fine, the ending makes it a bit unclear;	The paragraph has been rewritten to achieve greater clarity, and an example provided, see 5.1.5
Brondizio	5		827		828	it is not clear to me how/where this division between ethics and practices is made; it does not seem to organize the bullet list or text that follows	The text has been revised to make clear that the only "ethic" under consideration is the one of "diversity in itself" see section 5.2.1

Canadian Government	5	31	828			you might also want to state that by “ethics” you mean only “diversity for its own sake” and not other ethical considerations such as the ethics of relationships between humans and other species-persons which are vitally important in some Indigenous cultures.	Your suggestion has been incorporate and relevant sentences added to 5.2.5.1
UK Government	5	31	829	31	835	As elsewhere, this does not seem to reflect the full range of relevant practices in developed countries	The text has been revised and restructured to reflect the IPBES Conceptual framework and now more clearly addresses the range of values in "nature's benefits to people' and 'good quality of life'
Brondizio	5		841		841	it is not clear to me how this heading relates to the text; it is a very nice text illustrating the sophistication of local and indigenous entomological knowledge and the many forms of direct interaction with pollinators; the text is really not corresponding to the heading of the section; one option would be to combine the text in this section with the section below on management:	The suggestion has been considered and the heading changed to signal the treatment of this as an ethic ""The ethic of valuing diversity: influences on pollinators and their resource plants"; this is also now explained in 5.2.5.1

Sandra Diaz	5	31	841	33	912	Section on "Valuing of diversity for its own sake". This is a fascinating section describing the level of detail of the perception of the diversity of pollinators and their resource plants within ILK systems. However, I think it is misleading to call it "for its own sake". First, because it could be confused with biodiversity's intrinsic value, defined in the IPBES CF of the value beyond any human consideration. Clearly, people are valuing these species because they are finding them important physically or spiritually, therefore these are instrumental or relation values, not intrinsic values. Second, on the basis of the description, I think it is obvious that in some cases pollinators and their resource plants are not valued on "for their own sake" but also as valuable sources of food and materials, or as an important part of their intangible culture. I suggest to change slightly the title and the opening sentences. I suggest replacing the title for "Valuing the diversity of pollinators and their resource plants". In the opening section, I suggest replacing the first two sentences with "Many indigenous peoples have a detailed perception of the biological diversity of pollinators and their resource plants. This translated into very fine distinctions...." If, conversely, perception of biodiversity of pollinators irrespective of their practical or symbolic importance is to be emphasized, then I suggest eliminating from this section all the considerations about the domesticated plants, the honey collection, etc. (which would be a pity).	Your suggestion has been incorporated and the title changed to "The ethic of valuing diversity: influences on pollinators and their resource plants"; the first two sentences have been revised to clarify our perspective on diversity see 5.2.5.1
Serena Heckler	5	31	842	31	851	It is not clear how the list of species domesticated by Ips supports the point that fine distinctions are recognised and names in landscapes, etc.	The text has been revised to incorporate your suggestion and the sentence 'Observations of these distinctions enable Indigenous peoples and local communities to experiment and select varieties and species.' now appears before the one listing all the species
Sandra Diaz	5	31	844	31	845	Breeding skills, indeed emphasized by Darwin, have been developed by all societies, not just by those defined as IL. Therefore this sentence is a distraction, rather than adding to the main (quite important) point. I suggest deleting it.	Your suggestion has been incorporated and the material deleted see 5.2.5.1
Serena Heckler	5	31	845	31	851	Some of the crops in this list were domesticated in South America (i.e. potato, cassava, mate...), not Central America.	changed to central and south America see 5.2.5.1

Sandra Diaz	5	31	852	31	857	Part of the reasoning of the paragraph is confusing. No problem with the statement about a diversity of crop species and varieties being beneficial to pollinators. But how the sentence starting with "for example" is empirical proof of such statement is not clear at all. The fact that there are 17 recognizable honey varieties, each coming from a stingless bee species does not prove that a diversity of local crop species is beneficial for these bees, just the fact that there are a large number of bees, each of them producing different honey (which could be different because the bees are different, because they use different plants, or both).	The reasoning of the paragraph has been revised to incorporate this perspective, and it now begins with 'This ethic of valuing diversity translates into connections (relational values) with a wider array of pollinators and their products. "
Brondizio	5		853		853	this statement needs elaboration; collection and selection are inter-related in practices in agro-diversity management of species and varieties.	The text has been revised and this sentence is no longer included.
Charlotte vant Klooster	5	31	854	31	854	Chapter 2 is on: Drivers of change of pollinators, pollinator network and pollinator services. Please check if this chapter does cover the statement made here that diversity of crops.... are known to be highly beneficial for bees and other pollinators and refer to chapter and section in complete manuscript when finalized	The text has been revised and this sentence is no longer included.
Charlotte vant Klooster	5	32	860	32	860	It is a general practice in botany to give the plant authorization the first time you refer to a plant species in a manuscript which I advise to do here as well. Please change <i>Cananga odorata</i> in <i>Cananga odorata</i> (Lam.) Hook.f. & Thomson which is the full and accepted name now. You can also add the plant family which is here Annonaceae. Please check all other the plant species yourself with the internationally accepted plant list: http://www.theplantlist.org/ to see whether the plant name in your text is still accepted (or a synonym now which you can then add between brackets after mentioning the accepted name) and to add the authorization as well like I did for <i>C. odorata</i> . You can find more easy readable information on plant authorization with examples on: https://en.wikipedia.org/wiki/Author_citation_(botany) or check a botanist.	Is this appropriate for this chapter? Is the scientific categorisation (even scientific names) appropriate as many communities do not recognise these categories in the same way BH. 3.2
Serena Heckler	5	32	861	32	861	Bribri and Cambecar <i>peoples</i> .	Corrected section 5.2.5.1

Liliana Bravo	5	32	865	32	869	<p>According to the myth of origin of U'wa indigenous in Colombia, stingless bees provided the natural light. In addition, honey has been appreciated as source of purity, vitality, and strength for U'wa peoples. Similar ideas are also mentioned on case 21 (Page 54). The full citation is as follows: Falchetti, A. M., Nates-Parra, G. (2002). Las hijas del sol: Las abejas sin aguijón en el mundo Uwa, Sierra Nevada del Cocuy. En Rostros culturales de la fauna. 175-214. Bogota: Fundación Natura e ICANH.</p>	Guimar can you respond to this please
Sebsebe Demissew	5	32	868	868		<p>...25 Ethnospecies (What are these? Better to define or clearly indicate the differences with what is considered species in science)</p>	Your suggestion has been incorporated and a definition provided "In Colombia, Nates-Parra and Rosso-Londoño (2013) recorded nearly 50 common names used for the stingless bees, with wide variation between regions and informants. Common names do not always correspond one-to-one with scientific names, and such locally recognized entities are termed ethnospecies, which can match, under-differentiate or over-differentiate compared to scientific species (Otieno et al. 2015). "
Nicolas Cesard	5	32	870		871	<p>we need more details. what kind of products and from around 43 bee species >> (probably not all are honeybees)</p>	Guimar can you provide more details about the products please
Sebsebe Demissew	5	32	871	871		<p>.... 43 species (as indicated above the ethnospecies and the species concepts have to be clarified some how)</p>	Your suggestion has been incorporated and a definition provided "In Colombia, Nates-Parra and Rosso-Londoño (2013) recorded nearly 50 common names used for the stingless bees, with wide variation between regions and informants. Common names do not always correspond one-to-one with scientific names, and such locally recognized entities are termed ethnospecies, which can match, under-differentiate or over-differentiate compared to scientific species (Otieno et al. 2015). "

Samson Gwali	5	32	874	Rest of the text	Rest of the text	Mention of indigenous people's name should be followed by the state/country or region where they live(d) to give the reader the contextualisation necessary for understanding the document!	Kelsie can you put this in when you find the locations for the map
Nicolas Cesard	5	32	876		876	Kawaieté appear as Kawaiwete in the Panama Proceedings (Villas-Bôas 2015) and elsewhere in the report (see line 892 for instance, then case example 3 p. 34 taken from Villas-Bôas 2015).	Manuela can you address this comment please and advise on correct spelling and change throughout
Sebsebe Demissew	5	32	876	876		25 ethno species (need to be consistent in using the term ethno species or ethnospesies?)	Correct to ethnospesies throughout
Serena Heckler	5	32	882	32	883	The Maya also take inspiration from the social life and colony organization of the beehive (Lopez-Maldonado 2006 [already cited], Lopez, Florina Miro (2015), A dialogue of indigenous women from Central America on pollination and pollinators and their impact on community-based development, workshop report. Paris: IPBES and UNESCO (http://goo.gl/r1HP))	ok
Charlotte vant Klooster	5	32	885	32	885	not fearing the spirits => not relevant here, please delete.	Corrected
Charlotte vant Klooster	5	32	885	32	885	please change Indians in Amerindians	Corrected 3.2 BH
Charlotte vant Klooster	5	32	889	32	889	please check Apis mellifera with appropriate checklist for animals (comparable to remark related to the plantlist)	ok
Charlotte vant Klooster	5	32	890	32	890	Please update name into Bignonia nocturna (Barb.Rodr.) L.G.Lohmann (synoniem Tanaecium nocturnum), Bignoniaceae. If you add the plant family Bignoniaceae here, please do it everywhere for each plant. See http://www.theplantlist.org/tpl1.1/record/kew-318799	Needs a group decision. Corrected 3.2 BH
Charlotte vant Klooster	5	33	892	33	892	Please add reference to figure 5 somewhere in the text as well. It is not clear why this figure is added since the text is describing morphological structures of bees from a local perspective at all.	ok
Sandra Diaz	5	33	892	33		Figure 5 is quite interesting, but the legend should be more informative as to what is the point of showing this figure. Is the point showing how detailed the knowledge is? Are these parts important for different activities that the bee carries out? Does it provide a more detailed/different perspective that a description by mainstream entomology?	ok
Sandra Diaz	5	33	896	33	899	Great account of the celebration of bee diversity. I suggest pooling it together with the stamens at the beginning of this section.	Your suggestion has been incorporated in the opening sentence of this section 5.2.5.1
Nicolas Cesard	5	32	899		900	This is a strange point to me since I don't think people Xavante knew about bee's "domestication" (or "cultivation") back then.	Manuela this makes perfect sense to me but can you check if it needs clarity and reflects what Levi-Strauss 1966 intended

Serena Heckler	5	33	899	33	899	"unleashed"?	Corrected
Sandra Diaz	5	33	906	33	910	Very important statement that deserves more visibility, e.g. by bringing it forward to the Executive Summary and even perhaps to the SPM.	ok
E. Miriam Aldasoro Maya	5	33	908	33	908	also their behaviours (ethology?)	Did not alter. Ethology seems a too scientific and objective way of evaluation behaviours. The information is not presented to be able to describe it as <u>ethological</u> . BH (section 3.2)
Nicolas Cesard	5	32	910			".. a wide diversity in insect pollinators (Roué and al. 2015)". We could add at the end of the sentence the reference to this paper which goes in the same direction. Roué, M., Battesti, V., Césard, N. and Simenel, R. 2015. Ethnoecology of pollination and pollinators, Revue d'ethnoécologie 7 (http://ethnoecologie.revues.org/2229)	Your suggestion has been incorporated and the source cited in 5.2.5.1
Sandra Diaz	5	33	910	33	912	"tactics such as fuzzy logics". Please spell out. Fuzzy logics, which appears to have different meanings in different disciplines, is mentioned repeatedly in this chapter, as a tactic. It therefore merits a more detailed explanation, the first time it is used. Otherwise, consider removing it.	Fuzzy logic is now explained in 5.1.5 and removed from this section
Serena Heckler	5	33	911	33	911	The concept of "fuzzy logic" as it is used by Berkes and Berkes (2009) is used several times. However, in layman's parlance, this term is often used derogatively so the reference seems jarring. It would be useful to provide one or two sentences on exactly what is meant here and why it is a useful (and positive) concept for thinking about IPLC decision-making related to <u>NRM</u>	Fuzzy logic is now explained in 5.1.5 and removed from this section
Simone Athayde	5	34	914	34	914	Kawaiwete (correct spelling) - suggest to include (also known as Kaiabi)	Incorporated suggestion
Nicolas Cesard	5	34	929		939	The egg is the very first stage of the bee development (they are very small). They are many instar stages (larvae) and the pupae. I think that it is better to quote "eggs" or talk only of larvae.	Your suggestion has been incorporated and the text changed to larvae see case example 3 in 5.2.5.1
Samson Gwali	5	34	936	34	936	Replace the word "those" with the word "which"	Changed from "those" to "that"
220520841018	5	34	945	38	1090	For other views and uses of bees in different cultures: traditional view and use of stingless bees in venezuelan Hoti, see Zent & Zent, 2012. Interciencia 27(1). Cano et al. Etnobiología 11 (2), 2013. Demps et al. 2012. Hum Ecol 40:427-434	Your suggestion has been incorporated and two of the sources cite into section 5.2.5.1
Juan Manuel Rosso	5	34	945	38	1090	For other views and uses of bees in different cultures: traditional view and use of stingless bees in venezuelan Hoti, see Zent & Zent, 2012. Interciencia 27(1). Cano et al. Etnobiología 11 (2), 2013. Demps et al. 2012. Hum Ecol 40:427-434	Your suggestion has been incorporated and two of the sources cite into section 5.2.5.1

Sandra Diaz	5	34	946	34	947	Highlight this very important sentence.	It is important but have not highlighted because it is one element of important information see section 5.2.5.2
Nicolas Cesard	5	34	949			Battesti (not Battesto). Please correct also the reference. Another reference for Battesti in English is Roué and al. 2015). Roué, M., Battesti, V., Césard, N. and Simenel, R. 2015. Ethnoecology of pollination and pollinators, Revue d'ethnoécologie 7 Online : http://ethnoecologie.revues.org/2229	Reference corrected
Nicolas Cesard	5	34	950			Better speak of prohibitions? The right reference is Césard and Heri 2015 (not Valentinus) REFERENCE UPDATED Césard, N., V. Heri. 2015. Indonesian forest communities: Indigenous and local knowledge of pollination and pollinators associated with food production. In: Lyver, P., E. Perez, M. Carneiro da Cunha and M. Roué (eds.). Indigenous and Local Knowledge about Pollination and Pollinators associated with Food Production: Outcomes from a Global Dialogue Workshop (Panama, 1-5 December 2014). UNESCO: Paris, pp. 8-17.	We have kept the word 'taboo' and updated the reference see 5.2.5.2
Nicolas Cesard	5	34	954			The right reference is Samorai Lengoisia 2015 (Samorai Lengoisia is the full name) REFERENCE UPDATED Samorai Lengoisia, J. 2015. Ogiek peoples of Kenya: Indigenous and local knowledge of pollination and pollinators associated with food production. In: Lyver, P., E. Perez, M. Carneiro da Cunha and M. Roué (eds.). Indigenous and Local Knowledge about Pollination and Pollinators associated with Food Production: Outcomes from a Global Dialogue Workshop (Panama, 1-5 December 2014). UNESCO: Paris, pp.18-26.	Corrected reference see 5.2.5.2
Sandra Diaz	5	34	954	34	954	Define "biotemporal indicators" the first time they are mentioned.	Our own bracketed definition (observed changes in biological processes over time) see 5.2.5.2
Sandra Diaz	5	34	961	34	961	"Benefits to people" is probably more appropriate in this context than "ecosystem services" (see my general comments above).	We have revised the sentence to incorporate benefits to people see 5.2.5.2
Nicolas Cesard	5	35	962			Loagan Bunut, Sarawak (Malaysian Borneo)... <i>Koompassia excelsa</i>	Corrected sentence section 5.2.5.2
Nicolas Cesard	5	35	963			i am not sure that the Berawan people have the concept of keystone species. OR "The Tanying tree (<i>Koompassia excelsa</i>) of the Berawan people of Loagan Bunut, Sarawak, Malaysia, can be considered as a "cultural keystone species". The species is revered for its spiritual values..."	"Keystone" has been deleted and replaced by "important" and reference to Garibaldi reference deleted see 5.2.5.2

Nicolas Cesard	5	35	964			a prohibition?	Suggested change has been incorporate in made section5.2.5.2
Nicolas Cesard	5	35	964			i will not use the terme beehive (which is an enclosed structure, not the case here) but bee nests which is more neutral.	Corrected to bees' nests in it see 5/2/5/2
Chinese government	5	35	967			"indicate"should be "indicates"	Corrected section 5.2.5.2
Nicolas Cesard	5	35	974			Koompassia excelsa	Corrected section 5.2.5.2
Nicolas Cesard	5	35	975			Riau Province, Sumatra, Indonesia	Corrected section 5.2.5.2
Nicolas Cesard	5	35	982			(on sialang trees in the neighboring Tesso Nilo National Park, see Césard and Heri 2015)	Dami to check
Nicolas Cesard	5	35	989			The information on the Petalangan is certainly correct but is coming from a personal webpage (from a community member?) (Titinbk 2013). We should say it somewhere.	Dami to check
Nicolas Cesard	5	35	990			Verdeaux never wrote on (or went to) Indonesia. His paper is on Ethiopia.	Corrected 5.2.5.2
Catherine Robinson	5	35	995	35	995	Note reference source error	Corrected 5.2.5.2
Patricia Balvanera	5	35	995	35	995	Check for error in reference	Corrected 5.2.5.2
220520841018	5	35	1000	36	1003	In order to homogenize translation "abeias-brabas" and "abeias-gentle" coul be best: "abeias-fierce and abeias-gentle" or fierce bees and gentle bees.	sentences rephrased
Juan Manuel Rosso	5	35	1000	36	1003	In order to homogenize translation "abeias-brabas" and "abeias-gentle" coul be best: "abeias-fierce and abeias-gentle" or fierce bees and gentle bees.	sentences rephrased
Serena Heckler	5	36	1002	36	1002	As "abeias-gentle" works in English, it might also make sense to translate "abeias-brabas", i.e. fierce or aggressive.	sentences rephrased
Jyothis Sathyapalan	5		1006		1010	Honey hunting is the main occupation of certain sub castes of tribal communities in south India and their caste is also named after honey e.g., Then Kuruma, Janu kuruma etc , Then means honey, Jainu also mean honey	Dear Ro please check
Nicolas Cesard	5	36	1008		1009	Their knowledge of different migration and settling patterns of the various honeybee species of the region, and of their breeding schedules are vital...	The sentences has been rephrased to"Their knowledge of different migration and settling patterns of the various honeybee species of the region, and of their breeding schedules are vita" see 2.5.2.5
Nicolas Cesard	5	36	1010			Marchenay writes about Apis mellifera. Detailed knowledge of local people about Apis mellifera' behaviour underpin diverse swarm capture...	Sentences rephrased

Sandra Diaz	5	36	1015	36	1015	I suggest replacing "bear grass (Xerophyllu, tenax)" with "bear 'grass' (Xorophyllum tenax, in the Liliaceae family)". Otherwise, people might find it odd that a grass (most of the time Poaceae, and wind pollinated) is pollinated by an insect.	sentences rephrased as suggested see 5.2.5.2
Sandra Diaz	5	36	1015	36	1024	This requires more careful rasoning/writing, in particular the statement that "fires promete pollintor visitation". Probably it is not fire itself htat promotes visitation (fire and smoke are known to repel hymenopteran insects). Porably the effect is indirect: fire favours the spread of bear grass, and perhpas its flowering, which in turn attracts the insects that pollinate this important plant. So fire is likely to be used not to atract the pollinators, but rather to help the spread of this highly useful plant. Pollinators just follow the flowers.	the text has been revised to incorporate this perspective, adding the explanation offered in the paper "Experiments on abandoned farmland in south-eastern USA have found that fire promotes pollinator visitation indirectly through increasing the density of flowering plants, in that case the forb Verbesina alternifolia, suggesting the usefulness of fire management as a tool for supporting pollination services (Van Nuland et al. 2013). " see 5.2.5.2
Nicolas Cesard	5	37	1047		1050	Sorry, but i am not convinced by that case's study. A bit surprising that the main sources of nectar and pollen are coming not from the forest but from plantations and rice fields... NEED TO CHECK WITH ORIGINAL TEXT	Dami can you check this please
Nicolas Cesard	5	37	1059			The right reference is Césard and Heri 2015 (not Valentinus)	corrected
Simone Athayde	5	37	1061	37	1061	Correction: Kupeirup	Corrected
Nicolas Cesard	5	37	1069			The right reference is Samorai Lengoisa 2015 (Samorai Lengoisa is the full name)	Corrected
Nicolas Cesard	5	38	1079			East Kalimantan, Indonesia.	Corrected
Nicolas Cesard	5	38	1081			The Punan Kelay (Berau) practices of bee-hunting...	Corrected

Nicolas Cesard	5	38	1090		<p>I would add another Punan example (from the Punan Tubu) more on biotemporal indicators. "Among the Punan Tubu (Malinau), several signs announce the beginning of the honey season. The meranti, sago palm and several fruit trees bloom first, then the breeding season of the wild pigs (<i>Sus barbatus</i>) begins and hordes of boars migrate in anticipation of fruits. This is documented by a myth of origin in which animals have the appearance and behavior of men : bees occupy the branches of a huge tree under which wild boars live. During blooms, birds like owei (great argus pheasant, <i>Argusianus argus</i>), the kakapbakung, and insects like towé (a cicada) sing (Mamung and Abot 2000)." The book is difficult to find (i got a copy). REFERENCE. Mamung, D, Abot, D., 2000, Telang otah urun lunang (air susu hutan). Sebuah potongan cerita Punan dalam mengelola hutan. In: Tim Plasma (ed.) Membongkar mitos. Membangun peran. Inisiatif Lokal dalam Mengelola Sumberdaya Alam di Kalimantan Timur. Jakarta: Lembaga Pengembangan Lingkungan dan Sumberday Alam (Plasma), pp. 61-77.</p>	<p>Among the Punan Tubu (in Malinau Regency), the season for honey harvesting is signaled by the flowering of meranti (<i>Shorea spp.</i>), sago palm and several fruit trees, accompanied by singing of birds (e.g. great argus pheasant <i>Agursianus argus</i>) and cicadas, and followed by the breeding season for the wild pig (<i>Sus barbatus</i>). Hordes of boars migrate in anticipation of fruits. The mythology of the Punan Tubu tell of the link between bees on huge tree branches and pig underneath since the creation time {Mamung, 2000 #677}. see 5.2.5.2</p>
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Brondizio	5		1092		1258	this section is very interesting and informative; great examples; it could benefit from using examples from the work of Ivette Perfecto with coffee agroforestry and pollinators in Central America; she has published several articles and books relevant to the chapter; in fact, her work is a notable absence from the reference list. also relevant for section 4.1.2	The text has been revised to incorporate a section on agroforestry and highlight some of Perfecto's fine contributions 'Agroforestry systems globally support commodity production, particularly of coffee, rubber, arecanut and cocoa, with variable outcomes for pollination services highly dependent on the intensity of management, for example of synchronicity of flowering (Robbins et al. 2015{Boreux, 2013 #688}). Two decades of ecological research into traditional shaded coffee plantations in Latin America show they provides refuges for biodiversity and a range of ecosystem services such as microclimatic regulation, nitrogen sequestration into soil and pollination; one study identified the most predictive factors for bee abundance and species richness were tree species, the number of tree species in flower, and the canopy cover of the coffee agroforestry (Jha and Vandermeer 2010). Other studies have identified that an inverse relationship frequently exists between farm size and agricultural productivity—in a number of countries smaller farms have higher crop yields than do larger ones (FAO 2014b, Larson et al. 2014). While these farms are more labour-intensive than capital-intensive, which limits their extent especially in contexts of rural-urban migration, evidence is accumulating that in the tropical world the resulting landscape matrix with fragments of high-biodiversity native vegetation amidst the agriculture produces both high-quality food to the most needy and maintains ecosystem services such as pollination (Perfecto and Vandermeer
Sandra Diaz	5	38	1093	38	1095	Highlight this very important sentence.	?
Brondizio	5		1095		1096	delete '(slash-burn)' as an example of swidden system and use 'shifting cultivation'; swidden systems include a variety of shifting cultivation systems, some based on burning, but others not;	Your suggestion has been incorporated see 5.2.5.3

Nicolas Cesard	5	38	1103			Simenel et al. 2015, Roué and al. 2015). Simenel 2015 for an more complete version (French) and Roué et al. 2015 for an English version. REFERENCES Simenel R. et al. 2015. La domestication de l'abeille par le territoire : un exemple d'apiculture holiste dans le sud marocain. Techniques et Culture 63, 258-279. Roué, M., Battesti, V., Césard, N. and Simenel, R. 2015. Ethnoecology of pollination and pollinators, Revue d'ethnoécologie 7 (http://ethnoecologie.revues.org/2229) 1104. Same. Crousilles 2012 is included in Simenel et al. 2015	Your additional citation has been included.
220520841018	5	38	1104	38	1107	This sentence seems like thematically out of place in this section 3.4 "Valuing of diversified farming systems for pollinators". It could be moved for sectio 3.6?	The text has been revised to clarify that this section is about farming bees see 5.2.5.3 "The diverse farming systems of indigeneous peoples and local communities include a range of practices for farming fully and semi-domesticated bees. "
Juan Manuel Rosso	5	38	1104	38	1107	This sentence seems like thematically out of place in this section 3.4 "Valuing of diversified farming systems for pollinators". It could be moved for sectio 3.6?	The text has been revised to clarify that this section is about farming bees see 5.2.5.3 "The diverse farming systems of indigeneous peoples and local communities include a range of practices for farming fully and semi-domesticated bees. "
Johan van Veen	5	38	1104	38	1107	Meliponicultureculture is practiced throughout the tropics of the world, and no management of diseases is mentioned in the literature, only management of pests especially phorid flies (<i>Pseudohypocera</i> sp) and ants.	correction made
Sandra Diaz	5	38	1108	38	1109	Something is lacking in this sentenece.	Guiomar can you check this one please

220520841018	5	38	1111	39	1132	Please consider other references to offer a wide view of practices and species used in meliponiculture in other countries of Latin America and other regions: in Nates-Parra & Rosso-Londoño, 2013 (cited in this chapter), there is a list of 34 species managed in Colombia and a summary of some of these references in Table 3. Different chapters in Vit et al. (2013. Pot-Honey: A Legacy of Stingless Bees. Springer) list species reared from Argentina, Australia, Venezuela, French Guiana, Guatemala, Costa Rica and Mexico. For Brasil (Rosso et al., 2001. Memorias del II Seminario Mexicano sobre Abejas Sin Aguijón. p.28-35. Venturieri, G. et al. 2012. Chapter 11 In V. L. Imperatriz-Fonseca et al. (Eds.), Polinizadores no Brasil: contribuição e perspectivas para a biodiversidade, uso sustentável, conservação e serviços ambientais); Perú (Rasmussen & Castillo. Rev Per Ent. 2003;43:159-164) Austrália (Heard & Dollin, 2000. Bee World 81: 116-125; Halcroft et al. 2013. Journal of Apicultural Research.52(2):1-7), África (Ghana: Aidoo et al., 2011. Bees for Development Journal 100: 10-11).	Guiomar and/or Javier, could you please consider what if anything we need to add here.
Juan Manuel Rosso	5	38	1111	39	1132	Please consider other references to offer a wide view of practices and species used in meliponiculture in other countries of Latin America and other regions: in Nates-Parra & Rosso-Londoño, 2013 (cited in this chapter), there is a list of 34 species managed in Colombia and a summary of some of these references in Table 3. Different chapters in Vit et al. (2013. Pot-Honey: A Legacy of Stingless Bees. Springer) list species reared from Argentina, Australia, Venezuela, French Guiana, Guatemala, Costa Rica and Mexico. For Brasil (Rosso et al., 2001. Memorias del II Seminario Mexicano sobre Abejas Sin Aguijón. p.28-35. Venturieri, G. et al. 2012. Chapter 11 In V. L. Imperatriz-Fonseca et al. (Eds.), Polinizadores no Brasil: contribuição e perspectivas para a biodiversidade, uso sustentável, conservação e serviços ambientais); Perú (Rasmussen & Castillo. Rev Per Ent. 2003;43:159-164) Austrália (Heard & Dollin, 2000. Bee World 81: 116-125; Halcroft et al. 2013. Journal of Apicultural Research.52(2):1-7), África (Ghana: Aidoo et al., 2011. Bees for Development Journal 100: 10-11).	ok

220520841018	5	38	1111	39	1132	The last part of first paragraph of Case example 7, seems more related with section 3.7	The case study heading has been revised to clarify that this is about farming bees 'Farming and semi-domesticating stingless bees in India and South America" see 5.2.5.3
Juan Manuel Rosso	5	38	1111	39	1132	The last part of first paragraph of Case example 7, seems more related with section 3.7	The case study heading has been revised to clarify that this is about farming bees 'Farming and semi-domesticating stingless bees in India and South America" see 5.2.5.3
220520841018	5	39	1129	39	1129	The reference "Rosso and Parra 2008" is out of place. These authors do not made a revision of stingless bees species reared in Brazil.	The source has been removed.
Juan Manuel Rosso	5	39	1129	39	1129	The reference "Rosso and Parra 2008" is out of place. These authors do not made a revision of stingless bees species reared in Brazil.	The source has been removed.
Sandra Diaz	5	39	1134	39	1143	If this section 3 is exclusively about IL peoples, why is thi (important) paragraph here? It seems to deal with non-igenous, as well as IL peoples.	The text now includes a definition of indigenous peoples and local communities in 5.1.2, which makes clear why this material is included in this section.
Serena Heckler	5	39	1138	39	1138	The English for "maracuya" is passionfruit	correction made
Samson Gwali	5	39	1146	39	1146	Kenya is in East Africa while Ghana is in West Africa	Correction made
Daniela Leite	5	39	1151	39	1151	It is missing the year after the reference Martins and Johnson.	Citation corrected with date
Samson Gwali	5	39	1151	39	1151	Citation "Martins and Johnson" is not complete. Year of publication missing!	Citation corrected with date
Sandra Diaz	5	40	1164	40	1166	This account about the earliest use of honey in Africa will be better placed as part of a more general sentence in the introduction to the chapter, summarizing all the very early evidence of honey/bee use across the world.	Your suggestion has been incorporated and this sentence moved to 5.2.3
Sandra Diaz	5	40	1171			A lot of the wild plant diversity of the forest had existed for a very long time when humans first arrived, so it was not "co-created' (like a number of domestic and semi-domestic varieties were). "Fostered" would be more appropriate in this context.	ok
UK Government	5	40	1178	40	1211	This is a general comment and not only in relation to this case study. Overall there are many examples and case studies in the chapter but some have very little detail - sometimes just a sentence or two. There could perhaps be more attempt to draw out lessons from across examples and case studies. It may be better to have fewer well targeted examples with more detail	ok

Sandra Diaz	5	40	1178	40	1211	The role of pollinators needs to be made clearer in this example. They are mentioned in lines 1207-1208, but it is not clear whether they are connected to the plants enumerated above; the pollinator of the salpor maize is related to wind, not animal pollinators.	Guiomar and Javier, could you amend this case example to make the pollination link more clear. Also I put some of the text about the lost wax method in 5.2.2, can you please check if this meets Vera's request re the gold ornaments. With the Mayan Codex on bees that she also asked about, can you please check case examples 0-7 and 0-19. Javier I have put the stingless bee keeping case study that you edited in as number 0-14 in the livelihoods section. and have also referred back to it in the Section 4 management and mitigation. Can you please check these
Sebsebe Demissew	5	40	1203	1203		: macuy (<i>Solanum sp</i>) need to be : macuy (<i>Solanum sp.</i>). I hope this will be checked throughout the text.	corrected
Sebsebe Demissew	5	40	1205	1205		black beans (<i>Phaseolus</i>) need to be black beans (<i>Phaseolus sp.</i>)	corrected
Sebsebe Demissew	5	40	1205	1205		chile (<i>Capsicum spp.</i>) need to be chile (<i>Capsicum spp.</i>)	corrected
E. Miriam Aldasoro Maya	5	41	1222	41	1222	The gender should be in italics and it would be better if it is specified between parenthesis that it is a bat.	Corrected as suggested
Johan van Veen	5	41	1251	41	1253	Melipona beecheii (check spelling) is kept in wooden log hives "jobones" not in clay pots. The species commonly being kept in clay pots is <i>Scaptotrigona mexicana</i> .	Text has been revised to remove this error
E. Miriam Aldasoro Maya	5	41	1251	41	1251	Mariacca is misspelled, the correct word is with only one "c": Mariaca. Moreover, I suggest to make the reference to the particular paper on that volume that address the management of Melipona in homegardens. See correction on line 3383	Text has been revised to remove this error
E. Miriam Aldasoro Maya	5	41	1254	41	1254	Mariacca is misspelled, the correct word is with only one "c": Mariaca	Text has been revised to remove this error
Sandra Diaz	5	41	1257	41	1257	I suggest replacing "production of ecosystem services, and provision of food security and food sovereignty" with "provision of numerous benefits to people, and as the basis for food security and sovereignty"	Text has been revised to remove this error
Sandra Diaz	5	41	1259			Section 3.5. In what way this section is fundamentally different from, and not part of, section 2.2?	We have revised the text to clarify the differences between framing as "ecosystems services" and framing as "nature's gifts".
Nicolas Cesard	5	41	1264			They are probably singing mantras.	ok

Sebsebe Demissew	5	42	1271	1271		.. (<i>Datura</i>) as (<i>Datura sp.</i>); <i>Mandca spp.</i> Need to be <i>Manduca spp.</i>	Corrected
Nicolas Cesard	5	42	1275			Samorai Lengoisia 2015	Corrected
Simone Athayde	5	42	1276	42	1276	Correction: The Ikpeng indigenous people in the Brazilian Amazon....(they are not a sub-group or group of the Kawaiwete - they are a different tribe.	Corrected
Charlotte vant Klooster	5	42	1281	42	1281	Please refer to case example 11 in the text	Case example is now referred to at the beginning of 5.3.6
Denise Matias	5	40	1285	40	1286	Please check whether Philippine stingless bees are still <i>Trigona</i> or has been affected by the genus change to <i>Tetragonula</i> .	Dami can you check this please
Nicolas Cesard	5	42	1294		1295	I will change the last sentence. "In Danau Sentarum National Park, West Kalimantan, climbers sing mantras at different stages of the collection. When the scale is ready, they welcome its strength. Once on the branch, while smoking the bees, they sing again to appease the spirit of the tree, and when cutting the comb, they welcome the upcoming harvest. Once honey is harvested, they ask their ancestors to protect the basket in its descent. One last song marks the end of the harvest, the final descent of the climbers and the return to the village (Césard and Heri 2015). Part of the lyrics is improvised, not without humour (often as honey alludes to a beautiful young woman and to her charms) (Mulder et al. 2000) REFERENCE. Mulder, V., Heri, V. and Wickham, T. 2000. Traditional honey and wax collection with <i>Apis dorsata</i> in the upper Kapuas lake region, West Kalimantan. Borneo Research Bulletin. 31:246–260.	the text has been revised to incorporate your suggestion see section 5.2.5.4
Charlotte vant Klooster	5	42	1297	42	1297	Please refer to fig 6 in the text.	The text has been revised to incorporate a reference to this figure in section "

Nicolas Cesard	5	43	1325	44	1340	I will replace the second and third paragraphs by the one below: "Local people in Laos, particularly in the Northwestern region (Meung district of Bakeo Province) use rustic log hives for their traditional beekeeping practices. Various methods and tools were developed in different parts of Asia for many purposes, starting from tools for climbing, for honey collection, and for transport. Several communities have also developed "nesting sites" for the feral colonies <i>Apis dorsata</i> to come and start their nests. Although the constructions varies from one community to the next, the basic principle structures is the same. They use the traditional techniques of putting a two poles on the ground or using two tree branches, and adding a third pole on top of the two poles or putting up a sheet of wood. In Indonesia, the name for this apparatus varies across the region. In Western Kalimantan the structure is called tikung, and in Sulawesi it is called tingku, in the Belitung it is known as sunggau (Hadisoesilo and Kuntadi 2007). In Belitung, people link gelam flowers (<i>Melaleuca leucadendron</i>) to attracting large swarms from the nearby islands of Sumatra and Borneo. Honeybees are seen to first arrive for the pollen, then proceed to build wax com and wait on the structure until the flowers produce nectar (Césard and Heri 2015)."	The text has been revised to incorporate the suggested material see section 5.2.5.4
Nicolas Cesard	5	43	1342		1344	Figure 7. An honey plank (tikung) used in traditional beekeeping in the Danau Sentarum National Park, West Kalimantan province, Indonesia (Source: Hadisoesilo and Kuntadi 2007, Photo: N. Césard)	Change accepted
Charlotte vant Klooster	5	43	1372	44	1374	Suggest to delete the sentence here since it is not relevant in context of discussing 'innovation and adaptation with pollinators' (beekeeping)	Change not accepted as we believe these are innovations in beekeeping.
Samson Gwali	5	44	1372	44	1372	Insert "of" between "use" and "cow"	Change accepted
Daniela Leite	5	44	1376	45	1378	I think that it would be appropriated to give some example or summarize the technologies and innovations that are written in the manual.	We have chosen not to accept this change as readers can easily find the reference online.
Daniela Leite	5	45	1378	45	1380	Since the text mention the tradition of people of Algeria is in the present tense, I think that it would be appropriated to mention some more recent reference. I suggest mention the reference in the pg. 93 line 3215 (Hussein, M (2001)...	Change accepted
Samson Gwali	5	45	1378	45	1378	Word missing between "sounthern" and "Algeria"	Change accepted, the word "part" is inserted
Samson Gwali	5	45	1381	45	1381	Insert "in" between "wax" and "east"	Change accepted, the word "in" is inserted

Serena Heckler	5	45	1381	45	1382	This sentence is not clear to me. 10 times superior in what sense? Higher production? Are combs not destroyed in "modern" beekeeping? How does this lead to more wax for traditional beekeeping? Just a clarification.	The text has been revised and this sentence is no longer included
Simone Athayde	5	45	1385	45	1386	Correction: Seven mechanisms of ENVIRONMENTAL ADAPTATION have been identified among the Kawaiwete (Kaiabi) indigenous people in the <u>Brazilian Amazon</u> :...	Change accepted, term environmental inserted
Sandra Diaz	5	45	1396			Case example 13 does not seem to be directly related to pollinators or pollinator.	The text has been edited to emphasise how these activities foster pollination and pollinators.
Charlotte vant Klooster	5	45	1396	45	1396	Please refer to case 13 in text	Change accepted
Serena Heckler	5	45	1416	45	1416	English translation of "yuca" = manioc or cassava	Change accepted
Charlotte vant Klooster	5	45	1425	45	1425	Please refer to case 14 in text	Change accepted
Marie Stenseke	5	60	1441	70	2251	Section 4.3.4: This section should gain from also presenting the challenges related to participatory management. First, the very concept of participation can have various understandings, also covering arrangements where rather little power is delegated. Second, local participation is not a guarantee for sustainable practices.	ok
Charlotte vant Klooster	5	46	1454	46	1454	Please refer to case 14 in text	Change accepted
Serena Heckler	5	46	1456	46	1456	Kayapo (with no "s")	Change accepted
Liliana Bravo	5	46	1457	46	1466	Additional information that might be of interest: Pre-hispanic peoples of the central region in Colombia, utilized bee wax as basis of their work as goldsmiths. Detailed info can be found at: http://admin.banrepcultural.org/node/25811 http://www.metactual.com/revista/24/actualidad_prehistoria.pdf See for instance Page 14: Técnicas de elaboración: fundición a la cera perdida "Lost-wax casting"	Text has been revised to include this information in section 5.2.2
Samson Gwali	5	46	1473	46	1473	Word missing between "use" and "to"	Change accepted, the phrase is removed
Charlotte vant Klooster	5	46	1478	46	1478	Please add some more text after line 1393 which now ends with a summary of 7 mechanisms of adaptation. Can you tell something more about that or are the cases examples of that? The paragraph has a lot of cases compare to the amount of body text.	The text has been revised to clarify the links to polinnation see 5.2.5.4

Sandhya Chandrasekharan	5	47	1480	50	1621	this section (and chapter in general- pg.31. line 841 onwards) is too much about honey rather than about all major pollinators - bees, butterflies, bats and birds - in a balanced manner. A better balance can perhaps be attempted? Can draw from chapter 1, pg 17, pp.311-312	The focus of this section is on livelihoods, and the focus on honey reflects substantial evidence that honey production has great significance
Sandhya Chandrasekharan	5	47	1489	47	1491	too generalised. Could be about the Soligas (one tribal group) in the BilligiriRangan Hills, perhaps?	Javier this refers to the sentence you contributed that "Key elements for the recovery of stingless beekeeping have been: teaching and extension work, respect for their local costumes and traditions, increased value of products, development of a market niche for stingless bees products." could you give a source or indicate if it is about a particular group, thanks
Charlotte vant Klooster	5	48	1523	50	1591	Is it possible to make a table with uses and literature references instead of text only?	A table has been considered but not included as the number of different categories and examples would make it unwieldy
Jyothis Sathyapalan	5		1533	1540		this part shows some Asian understanding, Indian case stingless bee honey is considered as the most valuable in Ayurveda system of medicine, many Ayurveda medicine are consumed in honey.	ok
Samson Gwali	5	49	1580	49	1580	Replace "the" between "shown" and "it" with "that"	ok
Sandra Diaz	5	50	1592			Case example 17. Please provide source, either literature, oral presentation, etc.	Peter could you check a source for this, now case example 0-16
Samson Gwali	5	50	1594	50	1594	Replace "been" with "beer" in the sentence beginning "Honey been is taken ..."	corrected
Andony Melathopoulos	5	61	1609	62	1633	The Liss et al. review is very good. But reading this section one might get the impression that, in the valuation exercise, pollination services are measured in a myriad of different ways. This is not the case. While there has been a number of different approaches (e.g., replacement costs, contingent valuation, etc) the predominant approach relies on one measurement (dependency) and one dataset (Klien et al. 2007). This fact should be highlighted in this section.	ok
Brondizio	5		1622		1724	this section is fine, although romanticizing community relationships and governance in few places; given that it is about governance, it misses the opportunity of talking about the global boom in indigenous reserves and territories and how land and resource ownership have been changing dramatically with various implications for resource management affecting pollination (among others).	The text has been revised to incorporate this perspective in 5.4.7.2

UK Government	5	50	1622			What does 'governance by pollinators mean'?	The text has been revised to explain this in the second sentence of section 5.3.5
UK Government	5	50	1623			This is only one definition amongst many. It is a limited definition because it does not mention actors and institutions. For a more comprehensive definition see Davoudi, S. Healey, P., Vigar, G. with Majale, M (2009) The institutional and regulatory framework for planning in: The UN-Habitat Global Report On Human Settlements 2009: Planning Sustainable Cities, Earthscan, London; Chapter 4, pp. 72-93	The definition is useful in this context for recognising how interactions with pollinators can be part of governance
UK Government	5	51	1627			The term 'local communities' should be dropped from this chapter or defined more precisely and clearly because, a neighbourhood in London can also be called a local community but the decision making in a local community in London doesn't necessarily resemble the features listed here (i.e. the use of a spoke person controlled by a council of elders).	The term local communities has now been defined in section 5.1.2 and Box 1
Serena Heckler	5	51	1627	51	1635	These 4 features are sweeping generalizations that have many exceptions. For instance, many IPLCs have governance systems that are very hierarchical and land tenure is diverse, but may be family-based. Of course, there are notable examples that follow this system, but they are not by any means universal to all IPLCs. The language should be tweaked here to make this clear	The text has been revised to make clear there are many exceptions and to reduce the emphasis on harmony see section 5.3.5
UK Government	5	51	1627	51	1635	These features give the impression that for 'indigenous' people there are no power relations, tensions or conflicts in their decision making processes. This is a highly unrealistic (and romanticised) view of 'indigenous' people and 'local communities'. Case example 18 (starting at line 1645) clearly shows that such a view is far from reality as the General council and the priest exert power on the rest of the community. Also the example mentioned in lines 1699 to 1706 shows the hierarchical systems and the significance of social status (and hence power and control) in land holding.	The text has been revised to incorporate your suggestion and these dynamics recognised 'Political struggles over power and influence in decision-making by ILK-holders continue to be promulgated through these governance systems, despite the dominance of nation-state structures, in both developing and developed world contexts, and affect the extent to which pollinator-friendly practices will continue (Buendia et al. 2006, Hill et al. 2012)." see 5.3.5.
Denise Matias	5	51	1629	51	1629	"Decision making is consensus driven, OFTEN without any formal leader" I would suggest rethinking OFTEN and changing it to SOMETIMES.	The text has been revised to incorporate this perspective and the reference to leaders removed.

Andony Melathopoulos	5	62	1636	63	1639	<p>There should be some discussion about the Klein et al. dataset. While I completely agree that we need to consider interacting agronomic factors that affect producer profits, I don't think Klein et al. reflect the <i>actual</i> "initial/fruit pod set" response to pollinator visitation. Valuations since Klein et al. seem to overlook one of the key insights of that study, namely "we found that inadequate information is available on the pollination biology and pollinator requirements of many crops, especially when considering differences among modern varieties and the contribution to pollination services by different pollinator species" (p 310). The authors, consequently, call for more data from crops collected across multiple years and different growing regions. But as Pauly (1996) long ago noted for fisheries data, the "preliminary" character of preliminary data is readily forgotten. Consequently, there has been little effort to revise these dependency values. The vast majority of valuations and forecasts since 2008 have relied on this dataset. We seem to proliferate new methodologies for valuation but have a real inability to reflect on the empirical grounds from which we draw our inferences. This problem has been highlighted elsewhere (Bauer and Sue Wing 2014, Melathopoulos et al. 2015 and Hanley et al. 2015). Somewhere in the report this problem needs to be identified. Pauly, D., 1996. One hundred million tonnes of fish, and fisheries research. Fisheries Research 25, 25-38.</p>	Misplace comment, should be in Chapter 4
Andony Melathopoulos	5	63	1639	63	1658	<p>It is unclear why the effect of 'cultivar' is accord a special status in this section and be separated from "5.2.3.1 Crop management and inputs". I do not understand how this section isn't just dealing with one of the "determinants of the benefit(s) of pollination service" (1660)</p>	Should be in Chapter 4

Sandra Diaz	5	51	1645			Case example 18 does not seem to be directly related to pollinators or pollinator.	The text has been revised to make the links obvious, adding "Guna people explained that they do not see pollination and pollinators as a distinct theme, rather that life must be preserved and, in order to do so, plant reproduction (from pollination to seed dispersal) is very important. The preservation of life is linked to following the Guna system of governance over human conduct, which is based on the respect for life, which includes protecting the life of birds, insects and the plants on which they depend. " see section 5.3.5
Serena Heckler	5	51	1645	51	1674	Guna Yala case is interesting and informative, but seems to speak more to a model for autonomy, rather than the general principles from Fenelon and Hall (2008) at the top of the page.	The text has been revised to make the links obvious, adding "Guna people explained that they do not see pollination and pollinators as a distinct theme, rather that life must be preserved and, in order to do so, plant reproduction (from pollination to seed dispersal) is very important. The preservation of life is linked to following the Guna system of governance over human conduct, which is based on the respect for life, which includes protecting the life of birds, insects and the plants on which they depend. " see section 5.3.5
Nicolas Cesard	5	51	1651			See updated reference	Unclear what reference comment refers to.
Daniela Leite	5	51	1657	51	1659	"In February 2015, the Guna will celebrate 90 years of autonomy"needs updating.	Change accepted
Samson Gwali	5	51	1659	51	1659	Replace "will celebrate" with "celebrated"	Change accepted
UK Government	5	51	1671			What law? Needs to be referenced	The text has been revised to include (customary) to clarify the meaning

Serena Heckler	5	51	1675	52	1685	This case is corroborated in Lopez Miro, Florina (2015) cited above.	Guiomar/Javier, Serena is referring to corroboration of the case that says "The Mayan Miatschahales (philosophers), as is clear from the Codex held in Madrid, used stingless bee (Melipona beecheii), as a model for adequate social organization as well as ecological and political ethics. ...now case example 0-19. I couldn't find corroboration of it in the Proceedings, would you mind checking or follow up with Serena please
Andony Melathopoulos	5	64	1685	64	1687	Glad to see the Bennett et al. reference. This is an excellent point.	ok
Nicolas Cesard	5	52	1689			Césard and Heri 2015)	Change accepted.
Nicolas Cesard	5	52	1691			"More than 280 trees have been registered so far to the park authorities (Césard and Heri 2015)." Please skip this sentence. This is right but i don't give the info in the proceedings.	Change accepted. Sentence deleted
Nicolas Cesard	5	52	1692			In Sumatra and Kalimantan, honeybee trees belong... (Césard and Heri 2015). They are not called sialang in Kalimantan.	Change accepted.
Nicolas Cesard	5	52	1695			Are you sure about the reference? Novellino works in Palawan, Philippines. You can replace by "In Ujun Kulong National Park, West Java, there is no ownership of the trees... (Césard and Heri 2015).	Change accepted.
Nicolas Cesard	5	52	1696		1697	No sialang trees in Borneo. And the idea of soils being more fertile under bee trees is an old myth. The second part of the sentence is correct. However Verdeaux wrote Ethiopia not on Indonesia. I would skip this sentence.	Your suggestion has been incorporated and the sentence deleted.
Sandra Diaz	5	52	1699	52	1706	Explain more how is this relevant to pollinators and pollination or delete.	The text has been revised to clarify the link to pollination, adding 'enabling access to resources with sets of checks that contribute to ensuring that pollinators resources and pollination resources are not over-exploited " see section 5.3.7
UK Government	5	52	1711			Does the statement 'local communities across the world' include an inner borough of London? If not, please provide a precise definition of what is meant by 'local communities'.	Your suggestion has been incorporated and a definition provided in section 5.1.2 and Box 1
Nicolas Cesard	5	52	1715			Samorai Lengoisa 2015	Change accepted. Reference corrected
Nicolas Cesard	5	53	1717			(Césard and Heri 2015)	Change accepted. Reference corrected

Nicolas Cesard	5	53	1718			I will not mention "worthy of a prince" since Hitam Manis means Black Sweet (if translated from Indonesian). The Buchmann and Nabhan 1996 doesn't look like a first hand reference...	Change accepted
Samson Gwali	5	53	1719	53	1719	Replace "refer" with "referring"	Correction made
Denise Matias	5	53	1727	53	1738	Pälawan should be Palawan or Palaw'an	Correct to Palawan
Serena Heckler	5	53	1727	53	1727	Indigenous peoples (with "s")	Correction made
Samson Gwali	5	53	1729	53	1729	Replace "theses" with "these"	Change accepted.
Samson Gwali	5	53	1729	53	1729	Define or explain what "karst" is!	Text has been revised to incorporate a definition of karst (towers, cliffs and ridges of limestone) see 5.3.7
Andony Melathopoulos	5	66	1732	66	1738	But importantly Garibaldi et al. 2013 suggest that such interactions between honey bees and other species are not typical (i.e., the lack of an interaction between honey bees x non- <i>Apis</i> species in models predicting fruit set from visitation rates). This finding should be worked into this section	Passed to Chapter 4
Nicolas Cesard	5	53	1748		1749	A collector party, known as menumbai, consists of several peoples with different roles and responsibilities. The juragan tuo is the coordinator of the harvesting team, usually.... He passes knowledge to the juragan mudo,... (menumbai is a verbal form, tuo means old, and mudo, young)	Text has been revised to incorporate these corrections.
Andony Melathopoulos	5	66	1750	66	1755	Similar studies include Javorek et al. on blueberries and Artz and Nault on pumpkin. Artz, D.R., Nault, B.A., 2011. Performance of <i>Apis mellifera</i> , <i>Bombus impatiens</i> , and <i>Peponapis pruinosa</i> (Hymenoptera: Apidae) as pollinators of pumpkin. <i>Journal of economic entomology</i> 104, 1153-1161. Javorek, S., Mackenzie, K., Vander Kloet, S., 2002. Comparative pollination effectiveness among bees (Hymenoptera: Apoidea) on lowbush blueberry (<i>Ericaceae: Vaccinium angustifolium</i>). <i>Annals of the Entomological Society of America</i> 95, 345-351.	Passed to Chapter 4
Samson Gwali	5	53	1752	53	1752	Include a few words to describe who the "mudo" is, just like has been done for the "tuo" at the beginning of the previous sentence.	Change accepted. Sentence added.
Samson Gwali	5	54	1778	54	1778	Include the common name (Stingless bees) before " <i>Melipona beechei</i> "	Change accepted, term inserted.

Andony Melathopoulos	5	67	1778	68	1787	I think the scope of replacement goes far beyond what is described in this section and the author's ought to go beyond mechanical pollination. Take the example of a large crop like oilseed rape (which a potentially large influence on valuation at national and global scales). In North America we have seen the shift away from self-incompatable B. rapa to self-compatable B. napus in a span of 10 years beginning in the 1990s. B. rapa is barely grown at this point. Moreover, pollinator yield increases have become more complex in this crop with the widespread adoption of hybrid varieties beginning in the 2000s, which are heavily stocked with multiple species of managed pollinators. Yet dependency seems to remain static in all the valuations. Moreover, there is conflicting evidence that the newer hybrid varieties are less pollinator dependent (Marini et al. 2015 speculates this is because hybrids produce more flowers, allowing them to compensate for low pollinator visitations, but Hudewenz et al. 2013 hybrids were more sensitive) This example shows the complex processes through which "artificial" substitutes for pollination can be generated.	Passed to Chapter 4
Charlotte vant Klooster	5	54	1786	54	1786	Heading 4.1 is too broad, please consider a change in the section he overall framework Part 4.	The suggestion has been incorporated and the heading change to "impacts of the decline of pollinators and pollination on nature's benefits to people and good quality of life see 5.4.1
Brondizio	5		1789		1790	why only "as considered through the science-based knowledge systems"; as the chapter is showing the socio-cultural values of pollinators are widely recognized, independent of knowledge systems;	The text and framing has been revised to incorporate this perspective and remove the dichotomy between science and ILK, using instead the plural approach of the ILBES Conceptual Framework

Canadian Government	5	54	1789	54	1790	It really is not correct to refer to other-than-Indigenous cultures as “science-based knowledge systems” for several reasons. Firstly, ILK includes science. Secondly, people in non-Indigenous cultures “base” their understandings of experience in life (if I may use the old-fashioned term phenomenology) not on “science” and Cartesian rationality but on perception, experience, relationships, and both informal and formal systems of learning (as all humans do). Sociocultural values are experiential, emotional, and perceptual – for all humans. It does a disservice to non-Indigenous cultures, as privileged as they may be in many parts of the world, to characterize them as lacking in experiential and metaphysical values outside of visible institutional structures. Please reconsider your framing.	The text and framing has been revised to incorporate this perspective and remove the dichotomy between science and ILK, using instead the plural approach of the ILBES Conceptual Framework
UK Government	5	54	1789	54	1790	Is this correct - not all socio-cultural values are recognised and taken into account in science-based knowledge systems	The text has been revised and this sentence is no longer included
Charlotte vant Klooster	5	54	1790	54	1790	Please add one or two sentences after '...are very high'. to make the bridge to the next sentence on the probable impact of the decline. This will improve the reading.	
Brondizio	5		1791		1833	the language in these bullet points imply different types of causalities without elaborating in any of the points; these points/causalities can be contested in many ways; while the example of Easter Island is interesting, it does not speak to the many problems experienced today with the decline in pollinators of many crops; this section could be more effective it selecting fewer categories of impact and exploring the cascading effects of decline in pollinators;	We are going to consult with chapter 6 before revising this section of the chapter
Charlotte vant Klooster	5	54	1791	54	1791	Do you have references?	ok
Simone Athayde	5	54	1795	54	1795	I would take out loss of happiness - It sounds weird. I would just live loss in well-being, that captures the essence of what the authors want to say here.	ok
Samson Gwali	5	54	1797	54	1797	Replace "artists" with "artist"	ok
Brondizio	5		1799		1800	this point is unclear	ok
Sandra Diaz	5	55	1799	55	1800	Statement unclear	ok
Sandra Diaz	5	55	1818	55		How is health affected?	ok

E. Miriam Aldasoro Maya	5	56	1834	56	1843	Even though this paragraph mentions the loss of Traditional Knowledge and management practices, it is highly emphasized in the environmental realm. The loss of pollinators is related certainly to it, BUT ALSO to socio-cultural changes. As far as we see only one side of the coin, our proposals to face the situation will be partial and therefore not as efficient as they could be. On my opinion in the list of causes of decline, the socio-cultural change should be considered as well as all the environmental causes.	The text has been revised to give greater recognition to socio-economic and cultural change see 5.4.1.2
Juan Manuel Rosso	5	56	1834	58	1929	Offering a complementary view about the importance of traditional knowledge to understand pollinator trends, there is a Sentimiel program from French Institut de Recherche pour le Développement (IRD) which aims "constructing a network of cooperative initiatives at the international level... and to ensure, through this network, the monitoring of effects of global changes, viewed through the prism of their impact on bees and on their production of honey and associated products" http://www.cefe.cnrs.fr/sentimiel . Three insights (Morocco, Cameroon, Brazil) of case studies are in Sciences au Sud - Le journal de l'IRD - n° 67 - novembre/décembre 2012 p.10.	Reference to this initiative has been included
Sandra Diaz	5	56	1834			Section 4.1.2. Quite an important section, deserves to feature in the Executive Summary or even in the SPM. Can the statement in lines 1835-1838 be backed up by specific sources?	The sources are provided with the detailed sections on each of these in the paragraphs that follow
Liliana Bravo	5	56	1835	59	1941	It might be useful to include also the role of powerful drivers such as land ownership, agricultural policies, global/local markets and the growing demand for certain crops (e.g. biofuels) and mineral resources. Similarly, it might be of interest to take into account the case of social drivers of coffee pollination which act at global, regional and local scales (Bravo-Monroy et. al. 2015, http://www.sciencedirect.com/science/article/pii/S0926641015000000)	These drivers are discussed in chapter 3
Jyothis Sathyapalan	5		1846		1855	this is true in the case of Kodagu, In south India rubber cultivation (monocrop) affected quality of honey and its medicinal properties,	Without a source we cannot include this
Samson Gwali	5	56	1855	56	1855	Replace "Burkino" with "Burkina"	Corrected throughout
Sebsebe Demissew	5	56	1855	1856		The country is not Burkino Faso, but Burkina Faso	Corrected throughout
Daniela Leite	5	56	1866	56	1866	I would change Paraná region for Paraná state.	Corrected
Samson Gwali	5	57	1888	57	1888	"M. beechei" should be italicised.	Corrected

Daniela Leite	5	57	1890	57	1892	I would make a comparison with what is written in the lines 1865 - 1868, because here it says that there is a great economic return with <i>Apis mellifera</i> and in the previous lines, with Guarani people, there has been a reduction in honey productivity with <i>Apis mellifera</i> . It would be appropriated to describe the situations that lead to different results.	Gretchen could you check this please
Sebsebe Demissew	5	57	1891	1892		introduced honey bee (<i>Apis mellifera</i>)	ok
Nicolas Cesard	5	58	1901			Indonesia	ok
Nicolas Cesard	5	58	1902			Suku means tribe	ok
Nicolas Cesard	5	58	1903		1904	I propose "For instance, Anak Dalam people in Sumatra are using honey as an exchange value (non-monetary) to buy other necessities, such as food that are not available in the forest (Pasya and Nur 2013, for other examples, see Chapter 4 7.1). "dan" means "and" in English. In that subchapter of chapter 4, other example are presented.	ok
Nicolas Cesard	5	58	1907			(Césard and Heri 2015)	ok
Nicolas Cesard	5	58	1909		1910	Honey harvesters in Sentarum Lake in Indonesian Borneo report that... (Césard and Heri 2015).	ok
Nicolas Cesard	5	58	1911		1912	Indigenous groups and local communities have also lost access to... (Césard and Heri 2015, Samorai Lengois 2015).	ok
Samson Gwali	5	58	1912	58	1912	Mention the nationality of the Ogiek people, I suppose it is Kenya!	ok
Samson Gwali	5	58	1914	58	1914	Delete repeated word "their"	ok
Nicolas Cesard	5	58	1915			Samorai Lengois 2015	ok
Daniela Leite	5	58	1921	58	1921	"A decision is due in 2015" stayed out of reference.	ok
Nicolas Cesard	5	58	1921			Samorai Lengois 2015	ok
Samson Gwali	5	58	1921	58	1921	Check whether a decision to this court case has not yet been delivered	ok
Jyothis Sathyapalan	5		1927			there are beekeepers in India who migrate to different places with bee depending up on flowering of plants (This I found in Uttar Pradesh State of India) , You may please refer Management of floral resources to increase honey production through migration K. Subba Rao and K. Lakshmi Rao	ok
Charlotte vant Klooster	5	58	1933	58	1933	In sentence ' a number ofplease delete word <i>communication</i> and delete the websites from the text. These can be added in footnotes/reference list (never in text itself)	Correction made

Sandra Diaz	5	59	1943			Section 4.2. I have concerns about discussing managing and mitigation options based on science (this section) and on ILK (Section 4.3) in such a starkly separate way. The differences between the two knowledge systems are important. However, many ecosystems and landscapes around the world are not purely under IL or non-IL control. And even if they are locally, some of the drivers that threaten them, and therefore the solutions, are cross-landscape, cross-sectoral and cross-societal. So the identification of completely separate sets of management, mitigation and adaptation options appears as a blind alley, or as a purely intellectual exercise. Furthermore, some of the options discussed under one knowledge system appear quite compatible with the other (e.g. knowledge co-production, collaborative governance, livelihood approaches). I encourage the authors to make an effort to bring together all the management, mitigation and adaptation options in a single, more integrated section, and discuss, in case, whether the option in question is compatible with one or both knowledge systems, and why. A summary table integrating the content of Tables 2 (page 59) and 3 (page 63), and indicating the knowledge-system compatibility of each option, could be really useful.	The section has been revised to present an integrated list of management and mitigation options
Sandra Diaz	5	59	1943			Specifically about the content of Table 2, the content of some of the cells, as written is not self-explanatory. Make sure that the reader can have a general idea of what the table is referring to without having to consult the main text.	ok
Brondizio	5		1947		1947	include 'pollinators' decline' after 'impact [?]	corrected
UK Government	5	59	1947	59	1952	It's helpful to identify the challenge as a 'socio-ecological issue' - which means that people are seen to be at the heart of the issue and engaging different groups is critical. However, the process of moving from this to the three options for management and mitigation is not clear - I would have thought a far wider range of options may be relevant	The sentence has been rephrased to acknowledge socio-economic and cultural aspects.
Brondizio	5		1954		1956	table 2 is concise and informative; could add mention to landscape-level governance as part of "collaborative governance"	ok

Simone Athayde	5	60	1957	60	1957	Here, I noted that in heritage protection there is lack of mention to the convention of biological diversity and associated knowledge and benefits from biodiversity that protects indigenous peoples not only physical "heritage", but intangible heritage, such as specific knowledge of techniques, species and remedies that might have a market value and need to be protected, including legal mechanisms such as free prior informed consent, intellectual property rights and other human and indigenous rights	ok
Samson Gwali	5	60	1958	60	1960	Sentence not clear!	ok
Charlotte vant Klooster	5	60	1958	60	1960	Please revise sentence (delete part after 1972 starting with Convention till end of sentence).	ok
UK Government	5	60	1959	60	1961	Words missing?	ok
Samson Gwali	5	60	1962	60	1962	Replace "are considered" with a more appropriate word, in the context of the sentence ¹	ok
Samson Gwali	5	60	1963	60	1963	Replace repeated word "the"	ok
Daniela Leite	5	60	1964	60	1964	I think that could give another example than the Coffe Cultural Landscape of Colombia.	ok
Samson Gwali	5	60	1967	60	1967	Delete "of the"	ok
E. Miriam Aldasoro Maya	5	61	1981	61	1996	Reference missing for this case, of any type, academic or not.	ok
Sandra Diaz	5	60	1981			Case example 22 needs to be more specifically related to pollinators and pollination.	ok
Simone Athayde	5	61	2011	61	2012	Suggestion: replace levels by scales - loca, regional, national, etc.	ok
Sandra Diaz	5	61	2015	61	2018	Obscure sentence. Please spell out.	ok
Samson Gwali	5	61	2016	61	2016	Delete repeated word "the"	ok
UK Government	5	61	2018			Provide full reference for Aichi targets	ok
Samson Gwali	5	61	2022	61	2022	Replace "include" with "including"	ok
Sandra Diaz	5	62	2023	62	2032	Important point, but perhaps too general (or dealt with in too much detail here) to be directly relevant to the specific them of the assesment. Also, not only individual emotions, feelings, etc., also the agendas, interests and priorities of different social groups intervene, see e.g. Keeley & Scoones 2003	ok
Samson Gwali	5	62	2031	62	2032	Sentence not clear; especially the word "isses" which is used in the sentence!	ok
Daniela Leite	5	62	2034	62	2036	I think that this is a general and strong statement that need more references to sustain it.	ok
Samson Gwali	5	62	2034	62	2036	Clarify the sentence. Is it that the values and frames approaches "are NOT 'established' or are 'established'"? Replace "establish" with "established"	ok

UK Government	5	62	2035			Is this meant to be 'are' established, instead of are not?	ok
Charlotte vant Klooster	5	62	2042	62	2043	Please revise sentence starting from 'and through SHARE (Simply Have Areas Reserved for the Environment)'	ok
Samson Gwali	5	62	2042	62	2044	Replace "I" before "Simply" with a bracket "(" so that the acronym "SHARE" is described in the brackets as "(Simple Have Areas Reserved for the Environment)". It would, however, be prudent to briefly explain this SHARE initiative a little more!	ok
Charlotte vant Klooster	5	62	2046	62	2046	Please add figure 8 text under the figure.	ok
Catherine Robinson	5	63	2049	71	2319	The section on management and mitigation options is excellent and critical to this chapter	ok
220520841018	5	63	2049	70	2275	Many researchers, practitioners, politicians and other people that could be interested in this document, could not be aware of ethical aspects of research with ILK and communities. Is important to remark these aspects. Some recommendations came from International Society of Ethnobiology Code of Ethics (http://www.ethnobiology.net/what-we-do/core-programs/ise-ethics-program/code-of-ethics/) and other principles could be extracted from http://www.cemi.org.co/#!documentos/c1wx . Many countries have its own laws and regulamentations related. Section 4.3.3 mention Free Prior and Informed Consent and other right-based approaches, but not in relation with anthropological and ethnobiological research. Some researchers has worked around this subject; som examples: Menzies C. 2001. Reflections on research with, for, and among indigenous peoples. Canadian Journal of Native Education; 25, 1. Smith, Linda. 1999. Decolonizing Methodologies: Research and Indigenous Peoples. Zed Books Ltda. University of Otago Press (this author cites Merata Mita (1998): "We have a history of people putting Maori under a microscope in the same way a scientist looks an insect. The ones doing the looking are giving themselves the power to define").	ok

Juan Manuel Rosso	5	63	2049	70	2275	Many researchers, practitioners, politicians and other people that could be interested in this document, could not be aware of ethical aspects of research with ILK and communities. Is important to remark these aspects. Some recommendations came from International Society of Ethnobiology Code of Ethics (http://www.ethnobiology.net/what-we-do/core-programs/ise-ethics-program/code-of-ethics/) and other principles could be extracted from http://www.cemi.org.co/#!/documentos/c1wx . Many countries have its own laws and regulamentations related. Section 4.3.3 mention Free Prior and Informed Consent and other right-based approaches, but not in relation with anthropological and ethnobiological research. Some researchers has worked around this subject; som examples: Menzies C. 2001. Reflections on research with, for, and among indigenous peoples. Canadian Journal of Native Education; 25, 1. Smith, Linda. 1999. Decolonizing Methodologies: Research and Indigenous Peoples. Zed Books Ltda. University of Otago Press (this author cites Merata Mita (1998): "We have a history of people putting Maori under a microscope in the same way a scientist looks an insect. The ones doing the looking are giving themselves the power to define").	ok
Charlotte vant Klooster	5	63	2054	63	2056	We=> or did you find this in literature? Please add reference.	ok
Samson Gwali	5	63	2054	63	2056	Sentence beginning with "We ..." not clear; insert space between "identified" and "seven" and delete the word "identifiedseven"; insert an appropriate word between "options" and "biocultural"	
Samson Gwali	5	64	2060	64	2060	Insert a comma after the word "endeavour"	ok
UK Government	5	64	2067			This is right but it contradicts the previous over-emphasis on 'indigenous' and 'local communities' in the chapter.	ok
Nicolas Cesard	5	65	2089			the invasive Africanized honey bees	
Sebsebe Demissew	5	65	2089	2089		invasive <i>Apis mellifera</i> (African bee). Need to be consistent with what one describes <i>Apis mellifera</i> , as African bee if it is so.	ok

Sandra Diaz	5	65	2091	65	2096	About "supporting change as an evolutionary process". It is important here not to mix two different processes/meanings of the work "evolution" in dynamics social-ecological systems. There is biological evolution by changing natural selection agents, which can indeed be very fast (the work of Hendry et al. cited in the text is about this process), and there is also the mutual adjustment of social and natural component of the systems, and the use of "adaptive" practices, that change according to the dynamics of the context. This more socially-centered process is also sometimes called evolution. Both processes often happen together, especially under rapid socio-environmental change, but they should not be confounded.	ok
Daniela Leite	5	65	2094	65	2096	It would be interesting to make a parallel in European bee approach on lines 1865 - 1869 which was negative, contributing to the impoverishment of ecosystems and in this case where the ecosystem is already degraded and where was a good option.	ok
Charlotte vant Klooster	5	66	2108	66	2108	Refer to case in the text.	ok
Samson Gwali	5	66	2112	66	2112	Write these acronyms "ISEC" and "EMBRAPA" in full as well!	ok
Samson Gwali	5	66	2122	66	2122	Insert appropriate word between "joint" and "contributed"	ok
Samson Gwali	5	66	2124	66	2124	Check the use of "learnings" in this sentence. Would "knowledge" be more appropriate here?	ok

Serena Heckler	5	66	2127	67	2145	HRBAs are not actually mutually exclusive with endogenous development, the biocultural approach, participatory approaches or the other approaches listed. In fact, The UN Statement of Common Understanding on Human Rights-based Approaches to Development Cooperation and Programming (the Common Understanding) (http://hrbaportal.org/the-human-rights-based-approach-to-development-cooperation-towards-a-common-understanding-among-un-agencies) is much more comprehensive than the treatment given here. It is about much more than FPIC, tenure and governance. It is conceived as a framework for covering many different approaches to development. Elements of good practices include: "People are recognised as key actors in their own development..." and "The development process is locally owned." While it is true that all too often these principles are paid lip service without meaningful changes to the decision-making processes that determine development, nevertheless, the frame can and should be applicable to all the approaches covered in this section.	ok
Jyothis Sathyapalan	5		2146		2195	The 2006 Indian Forest Act recognized honey collection as a community right of tribal communities. Now it is statutory in India, this Act was a <u>historical change in Indian forest management</u>	ok
Daniela Leite	5	67	2156	67	2160	"FPIC is poorly implemented by corporation and government agencies," In my view it need more references to sustain this general statement and or give more details of the only reference given (Carino and Colchester, 2010).	ok
Nicolas Cesard	5	67	2171			Césard and Heri 2015, Samorai Lengoisia 2015.	ok
Charlotte vant Klooster	5	69	2211	69	2211	Please add figure 9 text under the figure.	ok
Sandra Diaz	5	65	2211			Figure 9. The diagramme needs further explanation to reach its potential. Please provide more context, and e.g. the meaning of the descriptors "heart", "mind"and "spirit" in such context. And explain more how is this <u>relevant pollinators and pollination</u> .	ok
UK Government	5	69	2211			Given the scope of the review, it is expected that more than one source is used to provide a synthesis of the key features of 'good governance'. There is a large body of literature on the topic including criteria identified by a number of international organisations other than the World Bank and these should have been consulted (in the systematic review) to provide a more authoritative and reliable definition.	ok

Simon Potts	5	69	2226	69	2226	Are these bats all pollinators?	ok
Charlotte vant Klooster	5	70	2255	70	2255	please add source IUCN (year publication or website updated last time)	ok
Charlotte vant Klooster	5	71	2277	71	2277	Add case example nr to the text.	ok
E. Miriam Aldasoro Maya	5	71	2277	71	2296	Reference missing for this case, of any type, academic or of other type.	ok
Samson Gwali	5	71	2282	71	2282	Line 2282 is not clear! Please re-write to obtain a clear meaning ...	ok
Samson Gwali	5	71	2317	71	2317	Insert 'a' between "as" and "strategy"	ok
Denise Matias	5	71	2320	71	2320	How about including wild honey bee hunting in this section? Check ntfp.org for examples of wild honey enterprises in South and Southeast Asia.	ok
Sandra Diaz	5	71	2321			Define livelihood approaches in a couple of words.	ok
Sebsebe Demissew	5	72	2330	2330		Ingram, 2011 #443. What is #	ok
220520841018	5	72	2331	72	2339	The growth of meliponiculture is a key factor in a widespread interest in stingless bees. Nevertheless, this same interest is a potential threat for the wild populations of stingless bees and associated traditional knowledge: the rise of monetary and utilitarian views over others, have increased demands of products (mainly honey) and wild nests for commercial purposes, or even for institutional projects that claims reduce poverty or preserve biodiversity. Is important remark these contradictions (see Sciences au Sud - Le journal de l'IRD - n° 67 - novembre/décembre 2012 p.10. Rosso-Londoño 2013)	ok
Juan Manuel Rosso	5	72	2331	72	2339	The growth of meliponiculture is a key factor in a widespread interest in stingless bees. Nevertheless, this same interest is a potential threat for the wild populations of stingless bees and associated traditional knowledge: the rise of monetary and utilitarian views over others, have increased demands of products (mainly honey) and wild nests for commercial purposes, or even for institutional projects that claims reduce poverty or preserve biodiversity. Is important remark these contradictions (see Sciences au Sud - Le journal de l'IRD - n° 67 - novembre/décembre 2012 p.10. Rosso-Londoño 2013)	ok
Samson Gwali	5	72	2331	72	2331	Insert an appropriate word between "efforts" and "rescuing" so as to make the sentence more meaningful	ok
Samson Gwali	5	72	2337	72	2337	Replace "as" with "since"	ok

Samson Gwali	5	72	2340	72	2341	Re-write the first part of the sentence thus, "Among the "quilombola", a traditional population of descendants of runaway slaves or "quilombos",	ok
Samson Gwali	5	72	2343	72	2343	Who are the "ribeirinhos"? Add a few words about who they are!	ok
Charlotte vant Klooster	5	78	2345	78	2345	Please add when the review took place, the selection criteria e.g. if you made a selection in publications over the last 10 years or all available literature?	corrected section 3.1 BH
Nicolas Cesard	5	72	2347			Māori	ok
Charlotte vant Klooster	5	72	2351	72	2351	FAOs.... Supply chains.=> please modify sentence, not complete now.	ok
Charlotte vant Klooster	5	73	2359	73	2359	Add case example nr to the text.	ok
Samson Gwali	5	73	2360	73	2361	The information in the two lines is confusing! Line 2360 indicates Malawi, yet line 2361 indicates Bijagos Islands! The following text in the box is with reference to only Bijagos Islands! I therefore suggest that "Malawi" in line 2360 should be deleted!	ok
Simon Potts	5	81	2368	81	2640	Delete "We look forward...in IPBES" - this is not an appropriate statement to have in the assessment core text; could be interpreted as lobbying...	ok
Charlotte vant Klooster	5	73	2379	73	2379	Add case example nr to the text.	ok
Liliana Bravo	5	73	2384	73	2403	It might be of interest to include more examples of organic honey as potential alternative of livelihoods on different locations.	ok
Samson Gwali	5	73	2384	73	2384	Replace "have" with "has"	ok
German Government	5	74	2405	75	2445	The pollinator-context of this part of the Chapter (4.3.7) remains vague; it rather seems like a disquisition on 'food sovereignty' and agricultural practices. It might be helpful to point out the pollinator-context more clearly here.	ok
Liliana Bravo	5	74	2405	75	2445	It might be useful to include a brief definition of ecological intensification; un example is also illustrative on this matter.	ok
Samson Gwali	5	74	2415	74	2415	Insert "a" between "as" and "vision"	ok
Samson Gwali	5	74	2415	74	2418	Sentence beginning with "Food sovereignty focuses" is long and not clear. Revise for clarity!	ok
Samson Gwali	5	74	2421	74	2421	Delete the word "places"	ok
Samson Gwali	5	74	2430	74	2432	Sentence not clear, especially at the point of ".... Agriculture strengthen the complementary between species,". Need to re-write and make the sentence clear!	ok
Samson Gwali	5	74	2433	74	2433	Replace "natura" with "natural"	ok

Samson Gwali	5	75	2440	75	2445	The sentence should ammended thus: replace "an" with "a" in line 2440; delete "results" from line 2441;	ok
Charlotte vant Klooster	5	75	2446	75	2446	Add case example nr to the text.	ok
Liliana Bravo	5	75	2450	75	2463	Very interesting case (no. 28). It would be useful to include more details about the name and location of indigenous peoples, crops/vegetation and pollinators involved, etc.	ok
Samson Gwali	5	75	2451	75	2451	Insert an appropriate word between "Network" and "draw", otherwise, revise sentence for clarity!	ok
Samson Gwali	5	75	2457	75	2457	Replace "raigin" with "raising"	ok
Samson Gwali	5	75	2462	75	2462	Correct the spelling for the word "strengthening"	ok
220520841018	5	75	2466	77	2525	Chapter 4 in Rosso-Londoño (2013) explores the socio- environmental conflict around the hunting and commercialization of stingless bees and their honey made by the "meleiro" (honey hunter) in northeast Brazil analyzing his practices under an historical and sociocultural perspective. The responsibilities of stakeholders (like stingless beekeepers, research and government institutions, industry) others than meleiro, in diminishing local availability of stingless bees is discussed because market and new projects (for production, education, hobby and even research) increase the demand of wild nests for rear in hives. Is proposed understand meleiro and his knowledge as a potential allies in conservation, instead of a stereotyped view as destructor, common in the same institutions and bee keepers discourse.	ok
220520841018	5	75	2466	77	2529	For knowledge co-production and education some qualitative approaches are useful for enhance interdisciplinarity and public engagement: narrative (i.e. Robertson et al. 2000. Ecosystem Health 6(2)), auto ethnography (Ellis C., Bochner A. 2000. Autoethnography, Personal Narratve, Reflexivity: Researcher as Subject. In: Denzin N., Lincoln Y. Handbook of Qualitative Research), "arts-informed research (Knowles J.G., Cole A.L. Handbook of the arts in qualitative research: Perspectives, methodologies, examples, and issues. Sage Publicatons) (This may be useful for section 2.1?).	ok

Juan Manuel Rosso	5	75	2466	77	2529	For knowledge co-production and education some qualitative approaches are useful for enhance interdisciplinarity and public engagement: narrative (i.e. Robertson et al. 2000. Ecosystem Health 6(2)), auto ethnography (Ellis C., Bochner A. 2000. Autoethnography, Personal Narrative, Reflexivity: Researcher as Subject. In: Denzin N., Lincoln Y. Handbook of Qualitative Research), "arts-informed research (Knowles J.G., Cole A.L. Handbook of the arts in qualitative research: Perspectives, methodologies, examples, and issues. Sage Publications) (This may be useful for section 2.1?).	ok
220520841018	5	75	2466	77	2529	An example of two-voices storytelling exercise between indigenous-researcher: Rosso J.M., Estrada W. 2015. In the land of the river-mirrors: dialogues about "bee-cultural" diversity. Landscape 4(1):23-28.	ok
Juan Manuel Rosso	5	75	2466	77	2525	Chapter 4 in Rosso-Londoño (2013) explores the socio- environmental conflict around the hunting and commercialization of stingless bees and their honey made by the "meleiro" (honey hunter) in northeast Brazil analyzing his practices under an historical and sociocultural perspective. The responsibilities of stakeholders (like stingless beekeepers, research and government institutions, industry) others than meleiro, in diminishing local availability of stingless bees is discussed because market and new projects (for production, education, hobby and even research) increase the demand of wild nests for rear in hives. Is proposed understand meleiro and his knowledge as a potential allies in conservation, instead of a stereotyped view as destructor, common in the same institutions and bee keepers discourse.	ok
Juan Manuel Rosso	5	75	2466	77	2529	An example of two-voices storytelling exercise between indigenous-researcher: Rosso J.M., Estrada W. 2015. In the land of the river-mirrors: dialogues about "bee-cultural" diversity. Landscape 4(1):23-28.	ok
Sandra Diaz	5	75	2466			Section 4.3.8. Knowledge co-production. Surely, by definition, this does not only involve IL peoples.	ok

220520841018	5	75	2470	75	2477	Please check if references are located in the right place: there are nine references located after the sentence "Although no mention is given directly and specifically to pollinators and pollinization, the importance of keeping healthy environments to keep food diversity and to respect nature is emphasised...". May be these refs are related with previous sentence, which talks about "Recovery of traditional knowledge in some communities of Andean countries in South America"?	ok
Juan Manuel Rosso	5	75	2470	75	2477	Please check if references are located in the right place: there are nine references located after the sentence "Although no mention is given directly and specifically to pollinators and pollinization, the importance of keeping healthy environments to keep food diversity and to respect nature is emphasised...". May be these refs are related with previous sentence, which talks about "Recovery of traditional knowledge in some communities of Andean countries in South America"?	ok
Samson Gwali	5	75	2474	75	2474	Replace "pollinization" with "pollination"	ok
Juan Manuel Rosso	5	75	2476	75	2477	Please check: Perichon 2013, Ferrufino 2013, Gomez 2012, Sánchez et al 2010, Pérez y Salas 2008, Meriggi et al 2008, Ferrufino y Aguilera 2006, Chicchón 2010, are not in references. Rosso 2013 is maybe Rosso-Londoño 2013	ok
220520841018	5	75	2476	75	2477	Please check: Perichon 2013, Ferrufino 2013, Gomez 2012, Sánchez et al 2010, Pérez y Salas 2008, Meriggi et al 2008, Ferrufino y Aguilera 2006, Chicchón 2010, are not in references. Rosso 2013 is maybe Rosso-Londoño 2013	ok
Sebsebe Demissew	5	76	2485	2485		in " <i>Phyllanthus emblica</i> and <i>P. indofischeri</i> Benett.), Bennett refers to the name of the author that described <i>P. indofischeri</i> , as I did not see the use of authors in the text, it is better to delete h name of the author and only write as <i>Phyllanthus emblica</i> and <i>P. indofischeri</i>	ok
Samson Gwali	5	76	2486	76	2489	Sentence beginning "Kayapo people working ..." is not clear. It needs clarity! Replace the abbreviation "vs" with an appropriate word!	ok
E. Miriam Aldasoro Maya	5	76	2492	76	2492	The correct form of this reference is: Aldasoro 2003; Aldasoro and Argueta 2013	ok
Nicolas Cesard	5	76	2504			Césard and Heri 2015	ok

Simone Athayde	5	76	2506	76	2506	Complement: in the first sentence, it would be valuable to add: knowledge co-production between researchers, managers and indigenous communities is vital for developing locally-relevant, transparent and inclusive Environmental Impact Assessments (EIAs), which often employ top-down and science-based-only approaches.	ok
Charlotte vant Klooster	5	77	2527	77	2527	Please add Fig 10 text under the figure	ok
Charlotte vant Klooster	5	77	2530	77	2587	The method section should be presented earlier before the results. Please adjust your chapter structure which will make it more readable.	ok
UK Government	5	77	2530			The method section should have been included in the introduction rather than at this very late stage (the end of the chapter).	ok
UK Government	5	77	2532			It is stated that the review has CEE guidelines. In that case, it should have adopted a set of clear quality standards to assess the reliability and suitability of each source. If so, what are the standards adopted and what was the outcome of the assessment in terms of eliminating some sources from the systematic review?	ok
UK Government	5	78	2551			Where is table 1? A full description of the method used for systematic review should be provided (if necessary in an Annex). This should include the total number of sources (articles etc.) that were found, numbers reviewed under various categories, etc.	ok
Charlotte vant Klooster	5	78	2551	78	2551	Reference to table 1 incorrect=> please correct in table 4 on databases	ok
German Government	5	78	2568	78	2569	The direct interaction with and input from indigenous and local knowledge systems into the pollination assessment is much welcomed.	ok
Nicolas Cesard	5	79	2573			(see for instance, Roué et al. 2015).	ok
Charlotte vant Klooster	5	80	2588	80	2629	The text here is a summary of the chapter not final conclusions and should be placed in the summary or deleted.	ok

Catherine Robinson	5	80	2588	82	2648	The conclusion provides a succinct overview of the chapter and its contribution to IPBES goal (page 81, line 2631). It would be useful if the authors returned to Figure 1 to help distil the important differences between IK knowledge, values and ontologies that are presented in this chapter. Two key messages can then be made clear - 1) IK contributes to the understanding and management of pollination 2) pollination processes and management are critical to sustainability of cultural-ecological systems. Finally but importantly it is interesting to note that there appears to be little evidence of knowledge co-produced between IK and science to understand and manage pollination. This is surprising and worrying given that 1) Indigenous peoples and communities are sharing responsibility for critical biosecurity issues that are affected by complex, changing and multi-scalar pollination processes 2) Enabling positive pollination processes across modern landscapes create serious knowledge and management uncertainties that could really benefit from IK and scientific knowledge partnerships	ok
Charlotte vant Klooster	5	80	2588	80	2646	Could you please give final conclusions. What is the question that you would like to answer here?	ok
Sandra Diaz	5	80	2588			Conclusions. This section has some important messages, but also a considerable amount of repetition with the Introduction. I suggest tightening up and moving all those bits that describe what is in the chapter to the Introduction (with references to specific sections in brackets) where they will be more useful	ok
UK Government	5	80	2588			Conclusion - in order to reflect the content of this section more accurately, this section should be called summary and conclusion.	ok
Samson Gwali	5	80	2588	82	2648	The conclusion is written more or less like a summary. It would be suitable for inclusion at the beginning of the Chapter as an Abstract or Summary!!!	ok
Samson Gwali	5	81	2619	81	2624	Sentence that begins with "These options include" is very long! The sentence gets fuzzy from line 2623 where the next part beginning with "and knowledge co-production ..." makes the meaning of the sentence unclear!	ok

Promila Kapoor	5	81	2627		2629	a. The possibility of losing the pollinators-their heritage, diversity and linked cultures are very high if the values are not respected. One action which will bring all humans to convergent peaceful actions is- when confronted with real fear of nuclear disasters (Japan experience in 2014 due to volcanoes,earthquakes), or nuclear war. The repeated natural hazards in mountains ecosystems of Himalayas in past two years has brought down diversity of pollinator species (needs assessment)	ok
Promila Kapoor	5	81	2627		2629	b. The fears of isolation of human race due to impending fears of hazards ,the solutions offered by the scientific knowledge emerging from IPCC, IPBES, and other such platforms combine with traditional knowledge can be the mover to bring synchronicised actions across the geo-ecological regions to maintain peace and scio-cultural values which allow conservation, maintenance and protection of biodiversity of key species such as the pollinator, and their ecosystem (from Draft of An Update on Biological Diversity and Genetic resources Promila Kapoor under preparation).	ok
Simone Athayde	5	81	2627	81	2627	I would use monetary and non-monetary values, or market-based and socio-culturally-based values.	ok
Charlotte vant Klooster	5	81	2633	81	2640	The constraints....=> text is on limitations of the work and should be part of a discussion section which is missing in the chapter and should be added.	ok
UK Government	5	81	2633			It is more appropriate for this statement to be included in the method section along with any other observations related to potential limitations of the study.	ok
UK Government	5	81	2638	81	2640	This is interesting - again, there are opportunities to draw parallels between ILK and developed societies since future assessments could also give greater prominence to a wider range of social and cultural values and lay knowledge in industrialised countries	ok
Charlotte vant Klooster	5	81	2641	81	2646	You can end the conclusion section with this quote after the conclusions are given without need for reasoning why (delete text 2641-2646). Good luck with the new version!	ok
Canadian Government	5	81	2646			like the closing prayer	ok
Nicolas Cesard	5	82	2648			Samorai Lengoisa 2015: 18	ok
Samson Gwali	5	82	2648	82	2648	Replace "will" with "while"	ok

Nicolas Cesard	5	86	2851			Césard N, and Heri V (2015). Indonesian forest communities: Indigenous and local knowledge of pollination and pollinators associated with food production. In: Lyver, P., E. Perez, M. Carneiro da Cunha and M. Roué (eds.). Indigenous and Local Knowledge about Pollination and Pollinators associated with Food Production: Outcomes from a Global Dialogue Workshop (Panama, 1-5 December 2014). UNESCO: Paris, pp. 8-17. Online : http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/IPBES_Pollination-Pollinators_Panama_Workshop.pdf	ok
Nicolas Cesard	5	88	2971			WRONG REFERENCE Doherty J, and Tumarae-Teka K (2015) Tūhoe Tuawhenua (Māori, New Zealand) knowledge of pollination and pollinators associated with food production. In: Lyver, P., E. Perez, M. Carneiro da Cunha and M. Roué (eds.). Indigenous and Local Knowledge about Pollination and Pollinators associated with Food Production: Outcomes from a Global Dialogue Workshop (Panama, 1-5 December 2014). UNESCO: Paris, pp. 27-37. Online : http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/IPBES_Pollination-Pollinators_Panama_Workshop.pdf	ok
220520841018	5	90	3068	90	3070	The right author's name to this reference (single author): Gasca, Héctor Jaime. Corect citations in the whole text.	ok
Juan Manuel Rosso	5	90	3068	90	3070	The right author's name to this reference (single author): Gasca, Héctor Jaime. Corect citations in the whole text.	ok
Nicolas Cesard	5	94	3246			Journal de la Société des Américanistes	ok
Nicolas Cesard	5	95	3332			Samorai Lengois, J. 2015. Ogiek peoples of Kenya: Indigenous and local knowledge of pollination and pollinators associated with food production. In: Lyver, P., E. Perez, M. Carneiro da Cunha and M. Roué (eds.). Indigenous and Local Knowledge about Pollination and Pollinators associated with Food Production: Outcomes from a Global Dialogue Workshop (Panama, 1-5 December 2014). UNESCO: Paris, pp.18-26. Online : http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/IPBES_Pollination-Pollinators_Panama_Workshop.pdf	ok
E. Miriam Aldasoro Maya	5	96	3383	96	3383	Mariacca is misspelled, the correct word is with only one "c": Mariaca. Moreover, I suggest to make teh reference to the particular paper on that volume that adress the management of Melipona in homegardens. Sotelo SLE, Guerrero GME y Álvarez ACD. 2012. El cultivo tradicional de la abeja Melipona beechei. Una constante del huerto familiar entre los mayas de Yucatán. En: Mariaca,R. (editor). El Huerto familiar	ok

E. Miriam Aldasoro Maya	5	97	3400	97	3400	The correct form of this reference is: Aldasoro MEM 2003	ok
220520841018	5	97	3403	97	3404	Right names in reference: Aldasoro EMA & Argueta AV. 2013. COLECCIONES ETNOENTOMOLÓGICAS COMUNITARIAS: UNA PROPUESTA CONCEPTUAL Y METODOLÓGICA. Etnobiología 11(2):1-15. Correct citations in whole text	ok
E. Miriam Aldasoro Maya	5	97	3403	97	3403	The correct form of this reference is: Aldasoro MEM y Argueta VA	ok
E. Miriam Aldasoro Maya	5	97	3403	97	3403	Changue Colecciones etnoentomológicas por Colecciones etnoentomológicas	ok
Juan Manuel Rosso	5	97	3403	97	3404	Right names in reference: Aldasoro EMA & Argueta AV. 2013. COLECCIONES ETNOENTOMOLÓGICAS COMUNITARIAS: UNA PROPUESTA CONCEPTUAL Y METODOLÓGICA. Etnobiología 11(2):1-15. Correct citations in whole text	ok
E. Miriam Aldasoro Maya	5	97	3404	97	3404	Etnobiología 11(2):1-5.	ok
Nicolas Cesard	5	99	3491			REFERENCE UPDATED Indigenous peoples' and local communities' valuation and values regarding pollinators: a Mayan perspective. In: Lyver, P., E. Perez, M. Carneiro da Cunha and M. Roué (eds.). Indigenous and Local Knowledge about Pollination and Pollinators associated with Food Production: Outcomes from a Global Dialogue Workshop (Panama, 1-5 December 2014). UNESCO: Paris, pp.80-90. Online : http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/IPBES_Pollination-Pollinators_Panama_Workshop.pdf	ok
Nicolas Cesard	5		3509			REFERENCE UPDATED In: Lyver, P., E. Perez, M. Carneiro da Cunha and M. Roué (eds.). Indigenous and Local Knowledge about Pollination and Pollinators associated with Food Production: Outcomes from a Global Dialogue Workshop (Panama, 1-5 December 2014). UNESCO: Paris, pp.73-75. Online : http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/IPBES_Pollination-Pollinators_Panama_Workshop.pdf	ok
Nicolas Cesard	5	101	3627			Online : http://www.ecologyandsociety.org/vol17/iss4/art6/	ok
Nicolas Cesard	5	102	3647			Si A (2013) Aspects of Honeybee Natural History according to the Solega. Ethnobiology Letters 4: 78-86.	ok

Nicolas Cesard	5	104	3758			The Kawaiweté people's traditional knowledge about native bees: Xingu Programme, Brazil. In: Lyver, P., E. Perez, M. Carneiro da Cunha and M. Roué (eds.). Indigenous and Local Knowledge about Pollination and Pollinators associated with Food Production: Outcomes from a Global Dialogue Workshop (Panama, 1-5 December 2014). UNESCO: Paris, pp.55-72. Online : http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/IPBES_Pollination_Pollinators_Dialogue_Workshop.pdf	ok
Stephan Lorenz	5	7, 17	54, 335			There is a difference in writing 'that culture and nature mutually constitute through adaptation and co-evolution' or that 'links have developed over time through mutual adaptation and possibly co-evolution' (line 355). However, adaptation and co-evolution are terms closely related to biology and therefore associated with physical and physiological functioning. The variety and opportunities of cultures and societies cannot be reduced to physical functions. Could we describe the examples given above (31ff.) with these terms? (In what way, for instance, could we understand a 'rock-art of honeybees' or an 'ingredient in many fine musical instruments' in terms of adaptation or co-evolution?) To add social terms like 'co-production' or just to speak of mutual influences could help.	ok
Simone Athayde	5	17	figure 5.8	17	figure 5.8	The figure shows on reference in its title and another within it. Also, the quality could be enhanced, as it is difficult to distinguish the levels of correlation between linguistic diversity and biodiversity across the world.	ok
Jyothis Sathyapalan	5		General observation			I felt this chapter is quite lengthy but very informative, lots of methodological discussion taking readers attention out from the main theme particularly in the beginning part. Some effort required to improve the flow of the chapter. I enjoyed reading this.	ok
Geoff Hicks	5	50	line 1624		line 1784	This section is too generic to be useful, we suggest you greatly reduce it or delete.	ok
Geoff Hicks	5	51	line 1645		line 1673	delete this case example as it has no relevance to pollination. This would be more usefully picked up in the ILK work programme component.	ok
Geoff Hicks	5	60	line 1958		line 1996	delete as this is not relevant to pollination per se	ok
Geoff Hicks	5	66	line 2128		line 2209	delete as this is irrelevant to pollination per se, in fact the whole chapter could benefit from rigorous editing to reduce its length to that concerning <u>pollination and pollination services only</u>	ok

Geoff Hicks	5	80	line 2588			this is an overview not a conclusion	ok
Geoff Hicks	5	24	line 596			What is the value ascribed to bees and how do indigenous peoples view their demise?	ok
Geoff Hicks	5	31	line 836		line 840	Indigenous peoples view bee variation as disturbance related change, therefore they understood it and are not fearful of it. But it is unclear what they have to say about bee decline and the drivers of decline.	ok
Canadian Government	5	60	Table 2	last row		Your characterization of values and frames in the table misrepresents the concept. A more careful read of Crompton's report and a more thoughtful way of representing it are in order. The description on pages 61-2 are a little better but still really not hitting the mark.	ok
						GENERAL COMMENTS: -the chapter has an incredible set of material, examples, cases; it is very rich and has great potential; however, the conceptual framework presented at the beginning (section 1) is problematic and limiting, including several conceptual flaws (see extensive comments below); as discussed below, it would be more productive to develop a conceptual frame based on 'knowledge systems' rather than ontologies; I would suggest significant revision and reduction in this section (see comments below); these editing could be done without much impact at all on the remaining of the chapter; in fact, the term "ontology" disappear from the text after page 15; when this frame appears implicitly later in the text, it limits the scope of the discussion, for instance see comment about the separation of sections 4.2 and 4.3 below. Drastically reducing and reframing this first part of the chapter would allow to present a framework better suited to the actual narrative and examples used in the chapter; a reformulated first part of the chapter could include the section on methods presented at the end, which is concise and informative;	
Brondizio	5						ok
USA government	General Comment					All chapter headings should be placed at the beginning of each heading. For example, Chapter 1, Background, 1.1 should be at the start of line 4. For example, Chapter 2, Line 3 page 5 should have 2.2.1 at the start.	The text has been revised to incorporate this suggestion

USA government	General Comment					As with many group drafted documents, this draft is in need of a good editorial review, for both grammar and style consistencies. In particular, our reviewers have noted many scientific names are lacking, the need for proper use of italics for scientific names and <i>et al.</i> , consistent serial commas and citation notations, and section / heading styles.	The text has been revised to address this issues of grammar and style, and for consistency in format.
USA government	General Comment					There are sections of the document which speak directly about trying to convince policy makers of something, or to take some action. Our government scientists do not advocate, but strive to provide unbiased science without directed outcomes. Some more specific comments are made in Chapter 4	The text has been carefully checked to ensure only policy-relevant information is provided.
Nicolas Cesard	5	5				Figure 7. An honey plank (tikung) used in traditional beekeeping in the Danau Sentarum National Park, West Kalimantan province, Indonesia (Source: Hadisoesilo and Kuntadi 2007. Photo: N. Césard)	Your correction to the figure caption has been incorporated.
Sandra Diaz	5	11				Table 1. To make it clearer, I suggest organizing it as a double entry table, with interiority similarity/dissimilarity as columns, and physicality similarity/dissimilarity as rows (or the other way around), and ahimism, naturalism, etc. as the four cells in the main body of the table.	ok
Natasha Fijn	5	10				This section 1.1 on ontological viewpoints is important and great that the authors have included the background theory here.	ok
Sandra Diaz	5	21				Figure 4. Please expand legend to explain the meaning of the different colours in the arrows and in the text of the figure, and whether categories in the four different quadrants represent combinations of the different arrowheads, i.e. for example whether the categories enumerated in top left corner correspond to mostly quantitative, self-oriented and individual preferences	ok
Canadian Government	5	all				the structure of the chapter is a little challenging to follow. It is possible that changing the titles of the main parts would help, for example by the time Part 2 got into summarizing examples of the importance of pollinators (mostly bees) around the world and through history, it was no longer evident that the focus excluded Indigenous and local communities especially since several examples really are in relation to local and traditional communities. But then part 3 is introduced as the summary for Indigenous peoples and local communities.	ok
Canadian Government	5	23		25		good examples provided.	ok

Liliana Bravo	5	30		54	· Farmer communities are present in the text but it might be beneficial to include more cases and/or experiences of those social groups. Compared to indigenous peoples, there is less information about those communities in the chapter (e.g. peasants).	Possibly one or two but whether to add or exclude one or two indigenous examples due to chapter length. BH
Liliana Bravo	5	30		54	There would be also interesting to include information about Afro-descendant communities in Latin America and other regions. For instance, Choco region in Colombia involves community management of natural resources by Afro-descendant populations. It likely may include interesting relationships with pollinators, traditions, and habitat management.	ok
Sandra Diaz	5	general			A number of categories and examples in Part 3 (e.g. 3.5, 3.6, 3.7) could easily fall within the subsections of Part 2.2, as they are related with the heritage, aesthetic, spiritual, medicinal, nutritional, etc. values of (IL) people. The reasons why they are treated separately should be better explained. More generally, the sharp dichotomy between Part 2 and part 3 should be either better justified or else reconsidered.	ok
Liliana Bravo	5	30		54	· It might be also useful to include a case example where pollinators are illustrated as a part of a region as a whole. A case by which the nature-culture divide is dissolved in accordance with written or spoken descriptions of indigenous or local communities.	ok
UK Government	5	General			Examples often appear in 'listing' fashion under various sub-headings with no clear framing, typology, connection to the discussions in the introduction, or even clear sign posting at the start of each sub-section.	ok

Canadian Government	5					The nuance here is that while industrial agriculture includes specific practices that are scientifically proven to be detrimental to pollinators as you document, the contrast is not only between indigenous peoples/local communities and industrial agriculture (although there are clearly differences of great significance) but between industrial and ecological approaches to agriculture. It is still very important to characterize the different populations engaged in ecological agriculture in terms of their distinctive cultures, geographies, practices, dependence on pollination, vulnerability due to loss of pollinators, the diverse values they hold, and the diverse values they attach to pollination and pollinators.	ok
Liliana Bravo	5	30		54		Part 3. Indigenous peoples and local communities and values of pollinators.	ok
Liliana Bravo	5	30		54		· Sections 3.2, 3.3, 3.4 and 3.5: very interesting information about the cultural diversity of definitions and relationships associated to pollinators, management, rituals.	ok
Canadian Government	5	all				General comment: much of the explanatory text in this comment is drawn from a current review draft guidance document in development in Canada, written by this reviewer.	ok

Canadian Government	5	all				<p>A major point, based on first time it appears on page 22, is the scope of sociocultural values. There is a LARGE difference between sociocultural values and cultural ecosystem services. Sociocultural values as defined in the comment above apply to anything, and to any type of ecosystem service. People often conflate the terms “cultural ecosystem services” (CES) and “cultural values” because the character of CES is that their significance to people is informally often discussed using the same terms (and it does not help that the MA inserted the word “values” after each of the CES types). To illustrate, consider the following: “Aesthetic Experience” is a service, but it is also how some people state how or why a natural place is important to them, i.e., ‘I value it because of the aesthetic experience’ or more naturally, ‘I value it because it is beautiful’. But in fact, aesthetic experience is the <i>service</i> and <i>beautiful</i> functions as a synonym for it rather than explaining why or how it matters, and how much it matters. Once the clear distinction is made between the “thing” (the type of ES) and the “benefit” (how or why it matters to people), the analyst can decide on how to select data sources and what to look for in them, select relevant analytic methods and tools, and know what to focus on to reveal the relative significance or importance of that ES or its benefit. The disciplines of philosophy, psychology, and cultural anthropology provide the basis for understanding how and why CES – and all other ES – matter to people on <i>an experiential level</i> .</p>	
Canadian Government	5	all				Should there also be indications of the relative certainty associated with the findings in this chapter too, as is the norm for assessments?	ok
Marie Stenseke	5	Chapter 2				The content in chapter 2 should be better harmonized with the IPBES report on Diverse Conceptualisation of values (3d)	ok

Sandra Diaz	5	general				The Chapter is presented as addressing pollinator values to people other than those considered by traditionally monetary-oriented economic analysis, what is called in the chapter “socio-cultural values”. There is a clear, explicit emphasis on indigenous and local peoples (IL). But obviously the socio-cultural values of pollinators are important for very many people who cannot be described as IL My concern is where in the Pollination Assessment are these values considered. If Section 2.2 is the only place, then I worry that the “socio-cultural” values of sectors of society not defined as IL will be underrepresented in the Assessment, as compared to economic values (Chapter 4) and sociocultural vamot of this chapter).	ok
Sandra Diaz	5	general				The Chapter does not define in a clear way what is meant by “local” communities. Surely many local communities will place themselves more in the Cartesian-Naturalist-Western vision of the world, rather than in the ones more commonly associated to indigenous peoples. And many local peoples will be somewhere in between the worldviews/ontologies mentioned in Table 1. Please define, as early as possible in the chapter, indigenous and especially local communities within the context of this assessment.	ok
Canadian Government	5					People attribute or assign importance (values) to things on the basis of their experiences, beliefs, and understandings which are influenced by their society and their culture. The process of attributing or assigning values occurs both within the consciousness of an individual and collectively within groups of people through shared experience of the valued subject, as well as through group discussion or negotiation. When values are shared by people in social groupings, those values can be considered “social” rather than only individual. When these values become part of the group of symbols and meanings that inform the shared identity of a particular culture group, they are “cultural” values. The term “sociocultural values” is often used to refer to either/both of these. Socio-cultural values apply to all aspects of nature, nature’s benefits (including all types of ecosystem services), and good quality of life. Sociocultural values are experienced by all people.	ok

Canadian Government	5				<p>You might also explain that sociocultural <i>valuation</i> involves describing how people collectively (in any culture or society) experience a subject (in this case, pollination and pollinators) as well as reporting on how the subject matters to them, and how much it matters to them. This evidence is typically in descriptive and narrative format and can be found especially in publications of qualitative social research including ethnographies and contemporary research among urban and rural populations as well as in ILK. It may also be found in grey literature produced by – or in association with – communities. The academic research draws on theory and methods of cultural and environmental anthropology, human ecology, and cultural geography, but explicitly not with theory and methods of economics. The premise underlying socio-cultural valuation approaches is that people attribute or assign importance (values) to things (in this case, the benefits from ecosystem services) on the basis of their experiences, beliefs, and understandings which are influenced by their society and their culture.</p>	ok
Canadian Government	5				<p>Ariansen 1997 described experiential and affective values (how people feel [about nature and places]) as “constitutive” because they are constitutive of the person’s identity as well as the identity of the object of value. This can apply to culture groups as well, and the point illustrates the profound importance of such values and sheds light on why disputes can arise when those values are threatened.</p>	ok
Canadian Government	5				<p>Socio-cultural valuation methods can be qualitative or quantitative; there are many methods for each. In addition, some field methods involved in rapid assessment (such as transect walks and participatory mapping) can be used to identify socio-cultural values of ES. Socio-cultural valuation methods can be designed to capture statistically representative results (as through probability sampling for open-ended surveys), or to focus on in-depth understanding among individuals and groups within a population (more typical).</p>	ok

Canadian Government	5					Sorry, this is clearly a huge work and your efforts are appreciated – please don't take this as a rejection of your work, only that it's assumptions may not have been adequately examined before proceeding, and the option now is probably to insert text in several places that frames the assessment this way as an intentional choice of the working group and acknowledging what was not included but could have been, so that you avoid errors of omission.	ok
Canadian Government	5	33				do you need to refer to fuzzy logic or is that extraneous? If you need it, define it explicitly.	section 3.2
Canadian Government	5	35				try to either avoid or define specialized terms that bureaucrats and government decision-makers are unlikely to understand (generally throughout the assessment) e.g. moities	ok
Thomas Brooks	General					Congratulations to everyone involved on this impressive piece of work; the IPBES pollination assessment is shaping up to be a really valuable contribution. I am now comfortable that the assessment builds on and reflects in appropriate ways the various contributions from IUCN on the subject of pollination, notably a) the IUCN SSC Red List of Threatened Species http://www.iucnredlist.org and b) the IUCN CEM/SSC Worldwide Integrated Assessment of the Impact of Systemic Pesticides on Biodiversity and Ecosystems http://link.springer.com/journal/11356/22/1/page/1 , and citation to the specific papers therein. It is very important that these citations are retained through to the final publication of the IPBES pollination assessment, reflecting IPBES's mandate to build from existing work. I also make a few suggestions and comments on other points I noticed as appropriate.	ok
USA government	General Comment					I was impressed with the scope & depth of the assessment. Although I devoted most of my time to the Preface and the Summary for Policy Makers, I did look at all chapters and I believe that each provides a very useful global scale synthesis. I think that the Assessment will be very useful in framing discussions going forward.	ok

Canadian Government	5				Because of their perceptual and cognitive origins, socio-cultural values tend to be expressed first in descriptive terms by the valuers. Typical methods for collecting this information include interviews, focus groups, open-ended survey, and narrative analysis.[1] Quantification of these values through ranking (or through monetary units in economic valuation) is thus an abstracted interpretation of 'how much the ES matters'.	[1] Scholte et al., 2015 provide a detailed discussion of socio-cultural values of ES and describe some of the main methods for their valuation.
Canadian Government	5				ES beneficiaries and other stakeholders can help to identify a broader range of choices or options to support decision-making such as:	ok
UK Government	5	59		75	Sections 4.2 (scientific knowledge perspectives) and 4.3 (ILK perspectives) has a tendency to reproduce an outdated geo-political map of the conflict between 'western' science/agricultural practices and 'global south' ILK. Some of the most pressing sites in which such conflicting framings and practices can be seen in action are in the BRIC countries (notably China, Brazil, India) where the major biotech pushes come from agri-industries inside these countries rather than / as much as from North America/Europe.	ok
Nicolas Cesard	5	45			among the Xingu Kaiabi of Brazil... not the Kawaiweté?	ok
	Brondizio	5		1943	sections 4.2 and 4.3 are quite good and have a wealth of material, BUT the separation between the two sections (science-based and ILK based) does not work; it is a schims reminiscent of the ontology framework presented at the very beginning. It does not work because the categories used to illustrate each "approach" overlap and are inter-dependent than separated; all of the categories in 4.3 for instance, as the text also suggest, evolved as part of interactions between science, practioners, and local social movements. It would be much more productive to combine these sections and instead framing as the potential of interactions and linkages between science-based and ILK in finding solutions to the decline in pollinators and to biodiversity management; some categories could be combined and each sub-section/category could point to advances and conflicts involved in each management and mitigation approach;	ok
	Brondizio	5		2466	section would benefit from points and citation from Tengo et al 2014 on connecting diverse knowledge systems published in <i>Ambio</i>	ok
	Brondizio	5		2619	why is this list not including the approaches presented in section 4.2 and only including 4.3?	ok

Sandra Diaz	5	general				This chapter represents a major step forward with respect to previous international assessments in incorporating ILK. The compilation of information is impressive and will undoubtedly be a landmark in the international recognition of ILK in understanding, protecting and managing pollinators and their societal benefits. My comments below aim mostly at improving the clarity and usefulness of what is already a remarkable product.	ok
German Government	5	General Comment				The chapter is nicely structured, easily readable, and the quotations and case examples are welcome.	ok
Canadian Government	5	part 3 (and compare to part 2)				It appears that the Jackson and Palmer approach has provided you with a successful conceptual framework to organize the data on Indigenous culture's relationships with pollinators. The information included in each section appropriately describes the ethnoecological epistemology, the 'social' relationship between people and pollinators, and in most cases you have characterized the importance (values) of these relationships to the culture group. Nicely done.	ok
German Government	5	Table of Contents				The lists of case examples, figures, tables and boxes are appreciated.	ok
Canadian Government	5					· <i>Revealing trade-off options.</i> Socio-cultural valuation can help to identify what things (objects, experiences) people consider acceptable for trading-off in decision contexts, and what the acceptable extent of change might be. This is particularly helpful because analysts and decision-makers may identify trade-off options based on limited understanding, compared with stakeholder and ES beneficiary perspectives of the range of choices available. By including socio-cultural valuation, especially through participatory approaches, other options can be revealed that can lead to more acceptable and sustainable outcomes overall.	ok

Canadian Government	5					· <i>Revealing how, why, and how much.</i> Socio-cultural valuation can be a useful component of ES assessment in nearly all cases because it provides insight into why and how parts of the ecosystem and ES benefits matter to people as well as how much they matter. Descriptive and visual (e.g. participant mapping) approaches provide a richness of explanatory power that is not possible with quantitative measures. This richness can be critical in resolving complex and intense disputes, and can be constructive in land use and conservation planning to avoid disputes in the first place.	ok
Marie Stenseke	5	46		46	1445	The issue of protection against menstruating women as presented here, signals a problematic unconsciousness of the gender issue at hand, and how this practice is related to oppression of females. It should preferably be omitted, or at least commented in similar ways as the use of bumble bees as mascots. line 620-623	ok
Nicolas Cesard	5	47				tribe can be pejorative, better use people or group ... "... several groups and communities in Indonesia, such as the Anak Dalam (REF), the Sakai (REF), the Petalangan (ref) of Sumatra and the Punan of Borneo (Widagdo 2011, Mamung and Abot 2000), and many others."	ok
Liliana Bravo	5	50		54		Section 3.8 The valuing of governance... In case that it might be possible, additional workshops with members of indigenous and local communities would be suggested in order to explore and contrast different relationships (including values) between people and their environments/landscapes/ecosystems/habitats. It can be fruitful that they draw a picture or map of their respective territories with human and non-human beings (including plant-pollinator interactions). Those illustrations could be an interesting input for this section.	ok

Liliana Bravo	5	63		71	<p>About section 4.3 Management and mitigation options....</p> <p>This sections presents options of management (4.3.1 to 4.3.5) by recognising both the relevant role and perspective of ILK systems. That is a great advance made in the acknowledgement of cultural diversity with beneficial effects on landscape management. A fact that would be important to stress is the potential incompatibilities between local populations, governments' legislation that can favour foreign investment (to the detriment of ILK, biodiversity and ecosystem services), conservationists, multinational corporations with business interests, and NGOs.</p> <p>That complex actor network frequently occurs in regions of several developing countries. It has a significant effect on access to natural resources by local communities and therefore on the achievement of the sustainable use of biodiversity and ecosystems.</p>	ok
Canadian Government	5				<p>· <i>Revealing intangible values and connections across ES.</i> Socio-cultural valuation is especially relevant in addressing Cultural Ecosystem Service (CES) values because they tend to be intangible and experience-based. And while monetary valuation is an obvious choice for Provisioning Ecosystem Services, especially those that have market values already associated with them, socio-cultural valuation can reveal additional aspects of importance that are not captured in markets. Most notably this occurs when a provisioning service is strongly linked to one or more of the CES or to other experiential and moral values that may be sufficiently important to make the subject ES a matter of serious dispute.</p>	ok
Canadian Government	5				<p>These three benefits of socio-cultural valuation can be useful in a wide range of policy and project analysis contexts.</p>	ok

Canadian Government	5					It helps a lot if you remember that sociocultural values are simply the importance that people attach to things, as informed by their sociocultural context. CES in contrast, are about the particular SERVICES that ecosystems provide to ALL humans - Most cultural services generate experiences that people feel internally - emotionally or intellectually - that are both individual and shared, and that support core human needs for connection and growth [2]	[2] These needs are well established in science; for brief explanation of link to ecosystem services see Summers et al., 2012.
Canadian Government	5					See on this issue: Samantha S.K. Scholte, Astrid J.A. van Teeffelen, and Peter H. Verburg. 2015. Integrating socio-cultural perspectives into ecosystem service valuation: A review of concepts and methods. <i>Ecological Economics</i> 114: 67-78.	ok
Canadian Government	5					This affects a major portion of chapter 5.	ok
Canadian Government	5					· SHORT simple definition of culture (Geertz 1973 is simple enough to capture the basics and still be relevant today – not really necessary to delve into the poststructural theory for this audience: “a transmitted pattern of meanings embodied in symbols, a system of inherited conceptions expressed in symbolic form by means of which people communicate, perpetuate, and develop their knowledge about and attitudes towards life”).	ok
Canadian Government	5					· Different cultures or societies can have very different understandings of the nature of existence, or being (ontology), the nature of knowledge (epistemology), and the nature, origins and evolution of the universe (cosmology):	ok
Canadian Government	5					· These understandings inform people’s expectations about how to live and what things mean, the values that people hold and the significance they assign to things:	ok
Canadian Government	5					· All humans are part of at least one culture and are often influenced by other cultures, and from the perspective of some worldviews all living beings share culture:	ok
Canadian Government	5					· In all societies cultural knowledge is passed from one generation to the next and evolves through experience and learning.	ok
Nicolas Cesard	5	83				Athayde S (2015): TITLE In: Lyver, P., E. Perez, M. Carneiro da Cunha and M. Roué (eds.). Indigenous and Local Knowledge about Pollination and Pollinators associated with Food Production: Outcomes from a Global Dialogue Workshop (Panama, 1-5 December 2014). UNESCO: Paris, pp. 46-54	ok
Nicolas Cesard	5	84				Battesti... online : https://halshs.archives-ouvertes.fr/halshs-00004609v2	ok

Nicolas Cesard	5	96				... L'Homme et l'Abeille, Paris, Berger-Levrault	ok
Marie Stenseke	5	5.1 and 5.6 General				Chapter 5 obviously focuses on indigenous people and small scale farmers in developing countries - it is shown in the overall reasoning, in the number of pages for given for ILK issues and by the examples. While there are good reasons for having this focus initially in the IPBES work, and I fully support it, this choice of approach should be more clearly presented and motivated, in the beginning and the end of the chapter. As for now, this text is to a very large extent on practices which are directly related to pollinators and pollination, while literature on indirect human relations to pollinations and aspects such as consumption, environmental awareness, outdoor recreation and western and urban people's perception and understanding of pollination and pollinators is little addressed. Moreover, there is a rich literature on humans relations to nature in developed countries, including research on gardening. There is also rich literarure on farmers having more than 2 ha of land, and their attitudes, values, practices etc. related to environmental concern and biodiversity. I believe it is too late in the process of this deliverable to broaden the scoupe in a consistent and scientifically qualified way. Mentioning the limitations and motivations for it, will pave the way for widening the approach in future assessments.	ok

Canadian Government	5	all				General comment regarding the populations considered for the assessment: The organic movement in developed countries has become widespread internationally and has undergone rapid increase in scale. Smallholder and moderate sized organic, biodynamic, permaculture and ecological farms operate from an ecosystem perspective, are holistic, and include versions of many of the practices, forms of knowledge, ethics and beliefs that are characteristic of ILK in the context of agroecological practices. This is relevant in the context of the Pollinators assessment. The attention to indigenous peoples and local communities in the document is very good, but in several cases the specific points raised could also be characterized with examples from the [comparatively smallholder] organic (and related) 'culture'. In many cases this activity occurs for local or regional consumption making much of it invisible to industry-scale analyses, but it is extensive. There may be some research on it – worth checking. Maybe IFOAM can point you to some publications. http://www.ifoam.bio/ To the extent that you can support it with research, it would make the report more complete if you can include the contributions of this movement to pollinator habitat conservation and sustainability.	ok
Canadian Government	5					· Cultural knowledge may take the form of e.g., ILK, or Eastern and Western philosophies	ok
Marie Stenseke	5	Executive summary				Examples might not be necessary in the executive summary	ok
Marie Stenseke	5	General				Numerous sections in the chapter concerns the broader issue of sociocultural values of biodiversity, and not just the more narrow issue of values related to pollination. There is a point in relating to a wider context, I suggest it is reconsidered if it has to be done to such a large extent as is now the case	ok

Sandra Diaz	5	general				<p>The Chapter makes a distinction that is perhaps too sharp between “Western” and IL worldviews. Surely they coexist and mix in the way in which many people see and operate within their context. Moreover, finding solutions for the biodiversity crisis requires the best of all knowledge systems and this requires all of them making an effort to reach out to other systems, rather than working on separate/parallel channels. Some portions of the chapter are excellent in trying to find connections, some others show a quick dismissal of attempts by Western science to bridge gaps, without proper justification. Similarly, in (rightly) highlighting the importance of ILK, the chapter is un-critical about its possible misadaption, obsolesce, gaps, erosion, and other limitations. The same way other chapters critically point to many limitations, misconceptions, incompleteness, etc. of scientific knowledge, as well as to its strengths, this chapter should try to present some of the most critical limitations in present ILK.</p>	ok
Sandra Diaz	5	general				<p>The title is a bit confusing. Considering the general theme of the assessment, I suggest something more centered on pollinators, such as “Pollinators, their socio-cultural benefits and values, and their importance for biocultural diversity” or “The socio-cultural benefits and values of pollinators” etc</p>	ok
Sandra Diaz	5	general				<p>In this chapter there is a wealth of excellent material links between ILK biodiversity, ecosystems, benefits to people and ILK. However, a good proportion of it is very general, not just related to pollinators. This makes the chapter rather long and also at times slightly unfocused. Perhaps all this general material should be compiled in a special document about the ILK contribution to biodiversity and nature’s benefits to people in general, and leave here only those aspects which are relevant to the main thematic focus of this assessment. Below I point out to specific portions of the chapter that are examples of this.</p>	ok

Sandra Diaz	5	general			Issue of terminology: the Chapter often refers to the IPBES Conceptual Framework, whosever, in parts is inconsistent with it. If this is because there is a fundamental diagreement, it shold be pointed out, but when this is not the case, authors are advised to use the terms as in the CF and its glossary, for the sake of consistency among different products of IPBES. A case in point is the use, in the use of "pollination services", o "ecosystem services". This is standard terminology in maisntream ecology and economy. However, during the construction of the CF, it was expressed that the word "services" does not apprpriately convey the full meaning of the values of pollinators to people, and could be even offensive in some context. Within some traditions, the word "nature's gifts" was considered more appropriate. The CF therefore considereddifferent terminologies and categories, such as "ecosystem services" and "nature's gifts", that refer to the more inclusive category "nature's benefits to people". In view of the emphasis of this chapter on ILK, the authors should consider using this more inclusive category, unless of course they really meant "ecosystem services" in the strict sense of ecology/economy (but it looks from the text that this is often not the case).	ok
Sandra Diaz	5	general			In thic chapter values and benefits are sometimes conflated. The IPBES CF (Díaz et al. section on	ok
Sandra Diaz	5	general			In parts this chapter appears to conflate the values and benefit. The IPBES CF distinguishes them. For example in the legend of Fig. 1 of Díaz et al. 2015: The anthropocentric values of nature are embedded in the nature, nature's benefits to people and good quality of life boxes, and in the arrows connecting them. The intrinsic values of nature (blue oval) are by definition independent from human experience and thus do not participate in these arrows. The broad categories of anthropocentric values (instrumental including use and non-use, as well as relational) are described in the section "Values and valuation of nature and its benefit to people" of the same article. The document 3D (Diverse Valuations) of IPBES provides further refinement of these categories. The authors are advised to try to establish a clearer distinction between benefits and values. To the extent in which is possible and admissible, they should also try to have a consistent terminology with the CF and the document 3D, for the sake of consistency and clarity across IPBES products.	ok

UK Government	5	General				The chapter is somewhat North American in outlook of what work is reviewed and would benefit from stronger engagement with parallel literatures (e.g. STS, particularly that coming out of Europe) to complicate the ILK / scientific knowledge dichotomy that goes largely unquestioned here.	ok
UK Government	5	General				In the discussions about values, a great deal of emphasis has been put on 'indigenous people' and 'local communities'. It is therefore important that clear definitions of these two terms and the distinction between them are provided. At present, they seem to be used in the chapter interchangeably, giving the impression that all 'local' people are 'indigenous' people and vice versa. They are then combined in another frequently used but insufficiently defined notion of 'indigenous local knowledge' (ILK).	ok
UK Government	5	General				A weakness in the chapter is that it underplays significance of intellectual property rights (and farmers/indigenous people's rights as established by FAO / Commission of Plant Genetic Resources) to ILK and biocultural diversity conservation (for example Posey and Dutfield, 1996; Haan, 1998; Strathern, 1999; Hayden, 2008).	ok
UK Government	5	General				The conceptual framework makes a distinction between 'valuation methods' and 'values' which are discussed in 2.1 and 2.2 respectively. However, these two aspects are not treated equally in the chapter. While Part 3 provides detailed discussion of different values, there is not much discussion about different valuation methods.	ok
UK Government	5	General				Figure 3 line 435 mentions 3 types of valuation methods (socio-economic, biophysical and monetary) and 2 types of values (intrinsic and anthropocentric which itself is divided into instrumental and relational). However, these typologies are not followed through in an explicit and clear way in the chapter.	ok
UK Government	5	General				The chapter does not discuss the social and cultural values of 'non-indigenous' people with regard to pollinators. An implicit assumption is made that 'indigenous' groups have higher socio-cultural appreciation (value) of pollinators than non-indigenous groups. If this is the case, it has to be made explicit and based on evidence.	ok

UK Government	5	General				There is an over-emphasis on 'rural' based on an implicit assumption that urban dwellers do not value or engage with pollinators (such as bees) and pollinators do not affect their values and well beings.	ok
UK Government	5	General				Overall, the implicit division between 'indigenous' and 'non-indigenous' is problematic when it used outside a specific context and not helpful for the understanding of socio-cultural values of different social and cultural groups across the globe. It implies that there is a positive association between valuing pollinators and being indigenous. This clearly is not the case and should be made clear.	ok
Marie Stenseke	5	General				Chapter 5 is overall too polemic as regards "westerners" vs. ILK, especially in part 1. I would like to see this more nuanced. One major reason is that concepts such as local communities and local knowledge are fuzzy. We are all in a sense local, and by everyday practice people beyond what is usually considered as ILK holders has to various degrees holistic perspectives on how they interact with nature and non-human features. See literature on bodily experience, more-than-human approaches, social science research evolving around the landscape concept, including research related to the European Landscape Convention. There e.g. a rich literature on nature resource research in developed countries showing that the concept "wilderness" also is problematic in the interface nature conservation - in-placed "western" people	ok
David Aston	5	General Comment				There is no reference to the role of bees and honeybee products in Europe and there are no European authors, only omne review editor	ok
Canadian Government	5	Titles				If there is an opportunity to revise the chapter titles, it might be helpful to readers if the titles for chapters 4 and 5 were structured/worded very similarly, indicating that one is economic valuation and one is sociocultural valuation.	ok
Canadian Government	5					A comparable level of detail in Part 2 would be nice to see, and while it's historical content is interesting, more contemporary evidence would be of greater interest to governments for decision-making.	ok

Canadian Government	5					To help readers (particularly governments) understand it will be very useful to begin with an explanation of what 'sociocultural values' are and what 'sociocultural valuation' consists of. Many more people are familiar with economic valuation than sociocultural valuation.	ok
Canadian Government	5					This definition of sociocultural values may be helpful since it is not commonly understood:	ok
Liliana Bravo	5	30		54		· It might be also useful to include more info about local knowledge and practices that influence the selection and maintenance of animal-pollinated crop varieties and the conservation of endangered and rare pollinator/plant species.	ok
Canadian Government	5					Urban beekeeping is also becoming a large movement in developed countries and possibly worth noting since early reports suggested that honeybee hives were faring better in cities than in rural areas, raising questions about the effects of different contexts.	ok
Canadian Government	5					Referencing Descartes is a common way of framing "Western" views, however in the contemporary context it is an oversimplification when discussing "Western" cultures because <i>many</i> people who are not Indigenous nor part of traditional local communities do not subscribe to the Cartesian worldview (reductionism, mechanistic universe, and a [economic] market-based society, as demonstrated by large-scale social and environmental movements). However, the major institutions of Western societies were built on the Cartesian worldview, so there is no question that it is a powerful influence.	ok
Canadian Government	5					Descola is a good source but many in the IPBES' primary audience (governments, bureaucrats, decision-makers) will find this portion of the text more intellectually dense than they are accustomed to (even senior undergraduate anthropology students struggle with it). In addition the risk of using this categorization is that it essentialises cultural complexity. Might consider removing this section and replacing with a simpler explanation of these concepts and their relevance to IPBES and this assessment. This simpler explanation might include the following items:	ok

Canadian Government	5				Some authors refer to these as “Information Services” because they <i>inform</i> human experience. Cultural services are tightly bound to human values and behavior, as well as to human institutions and patterns of social, economic, and political organization. Thus perceptions of cultural services are more likely to differ among individuals and communities than, say, perceptions of the importance of food production. The types of CES can be identified as: cultural identity and heritage; spirituality and religion; knowledge systems and education; cognitive development, psychological and physical health and well-being; aesthetic experience; inspiration for human creative thought and work; recreation and ecotourism; and, sense of place. Further articulating some of these as you have for heritage can be very helpful to readers, being careful that the descriptions can apply to all human cultures/societies, not only Indigenous [and local] communities.	ok
Canadian Government	5				Lines 161-162 seem to say that only indigenous peoples and local communities have “cultures”, which is untrue. All humans are part of a culture. Further, in the current era, many people are influenced profoundly by more than one culture as a result of cross-cultural marriage, mobility, education, media, and more.	ok
Canadian Government	5				Placed as it is here it suggests that any valuation method is negative, and that claim is not supported in the document, nor is it supported in the literature. Sociocultural valuation for example can be completely qualitative and can be expressed in narrative format in the voice of the valuing person. It does not have to be quantified. This is a major concern with the theoretical assumptions of this chapter.	ok
Canadian Government	5				ES and their benefits can be ranked and analyzed quantitatively in terms of their importance or use, and qualitative information can be even more effective at capturing and communicating a complex set of values within and across populations.	ok
Canadian Government	5				1. it should be noted that “choice experiments” are an economic method for identifying non-market values in monetary terms, so definitely not a sociocultural valuation technique – should be removed from this chapter entirely.	ok
Canadian Government	5				2. surveys and interviews can provide quantitative OR qualitative information particularly about individuals.	ok

Canadian Government	5				3. surveys and interviews can be two VERY different kinds of things, for example, an ethnographic interview is often unstructured, open-ended and exploratory, resulting in narratives expressing meanings, whereas surveys can be completely reductionistic with all options framed in advance by the researcher without the voice of the respondent being represented. Alternatively, survey design can be qualitative, and structured interviews can be quantitative. They should probably be listed separately on both sides of the qual/quant divide. The graphic needs to show this, since by its design so far it implies comprehensiveness.	ok
Canadian Government	5				4. preferences is not really the right term here, since values are about more than preferences, they are about significance or importance. Preference is also closely tied in with economic non-market valuation techniques which is not what this chapter is supposed to address, so really encourage you to change this to "Values".	ok
Canadian Government	5				5. Citizen science has been done without 'apps' for many years, but more importantly, citizen science is about biophysical data collection, not about sociocultural values. Suggest that it is removed.	ok
Canadian Government	5				6. Is multicriteria analysis a valuation method or a decision support approach? <u>Not sure it belongs here.</u>	ok
Canadian Government	5				Having said this, the general comment above about the distinction between sociocultural values and cultural ecosystem services is very important to address, and means that the discussion in this chapter should extend <u>beyond CES to potentially all ES.</u>	ok
Canadian Government	5				so the impacts of declines in pollinators from the sociocultural values perspective in relation to Part 2 cultures should also recognize the deeper experiential meanings associated with pollinators and pollination. The second bullet lines 1797 seems pretty trivial. You could say a lot more about this, comparable to what you have for loss in relation to Section 3 cultures starting line 1802.	ok
Canadian Government	5				The balance of comments from this reviewer will assume that all comments above continue to apply throughout, and that the scope of the assessment was a conscious choice to focus only on a selection of CES and omit all other ES.	ok

Canadian Government	5					general – how do these examples of the ways that different cultures through time have recognized the importance of pollinators through art, literature, etc., influence what people did then, and now? In what ways are these outward symbols indicative of meaning? In addition to being adopted in various symbols or cultural forms, how is the importance of pollinators enacted in contemporary activities and ways of knowing? How important are these symbols and the pollinators they are based upon, and in what ways? You provide a dizzying string of one-sentence examples of where pollinators (mostly bees) appear in cultural forms around the world, which is fascinating, but have not said how important (valuable) that is to people, in what ways, and what the evidence of that importance is, with the exception of lines 721-22 and 733-35.	ok
Canadian Government	5					there is a lot of reference to bees, which is topical to be sure, but what of other pollinators?	ok
Simone Athayde	5				59	Kawaiete is misspelled - correct spelling is Kawaiwete - and I suggest to also include between brackets (also known as Kaiabi), since this group recently changed their self-designation to Kawaiwete, and few people know this new designation.	ok

OK