REGIONAL ASSESSMENT REPORT ON BIODIVERSITY AND ECOSYSTEM SERVICES FOR EUROPE AND CENTRAL ASIA

Comments external review second order draft - Chapter 3

Reviewer Name	Chapter / SPM	From Page	From Line	To Page	To Line	Comment	Response
Ilja Gasan Osojnik Črnivec	0	0	0			local and native breeds are two interchangeable terms, for greater clarity, I would reccomentd only one expression is used for the whole publication.	The two terms address slightly different issues, as local breeds denotes breeds present only in a distinct region, and native breeds denotes breeds which had sufficient time to adapt to specific local conditions.
Brendan Coolsaet	0	0	0			All documents include big differences in the quality of the writing. Everything should be thoroughly proof-read and edited by native speakers.	This has been done throughout
Brendan Coolsaet	0	0	0			Use of genetic resources and Nagoya protocol are notably absent in most of the chapters	Limited or unequal access to NCP or genetic resources is now mentioned where appropriate.
Brendan Coolsaet	0	0	0			For reviewing purposes, it may be useful to indicate the gender-balance and 'discipline-balance' within the group of authors (could be illustrated with a gauge at the beginning of each doc for example). This will facilitate identifying biaises	The complete authorship is listed at the beginning of each chaper. Statistics on gender and disciplinary balance are available from the ECA TSU and IPBES Secretariat
Germany	0	0	0			We believe that the regional ECA assessment generally has a comprehensive and scientifically sound structure. However, linkages between the chapters, especially for chapters 6, are not that strong yet. For instance, it is not clear in how far chap. 6 builds upon the findings and insights of the analyses within the previous chapters. While the review work, analyses and evaluations made in these chapters are by themselves very insightful, linking more strongly back to the status and trends chapter as well as the drivers/scenarios/visions and pathways chapters would be very useful. For instance, the 'status and trends' chapter 3 might help identify where policy action is most needed and the 'drivers' chapter 4 determines the underlying drivers which need to be addressed by policy action. Giving more weight to these chapters in the discussion of policy options might help to derive more region-based options. As it stands now, many key messages of chapter 6 are of a more general nature.	A comprehensive attempt has been made to cross-reference the different chapters to ensure consistency between them. All chapter texts were screened for potential opportunities for governance or management action and these opportunities are now mentioned in chapter 6 with reference to the chapter of origin.
Germany	0	0	0			This assessment shows some imbalances regarding a lack of coherence in the use of terminology: This can lead to different understandings and also to misinterpretations. For instance, at its last Plenary, the IPBES had agreed to use the term “nature’s contributions to people” (NCP) as a synonym for the term “ecosystem services”. Unfortunately, the term NCP is now being used in the assessment frequently in a modified form and therefore inconsistently. This aspect needs to be addressed in the assessment as well as in the SPM.	Terminology was systematically checked across the full report
Germany	0	0	0			There are significant contributions and benefits arising from agro-ecosystems. The increase in food, feed and timber production and resulting food security has been mentioned, but not thoroughly discussed. We would therefore ask the authors to extend this discussion and provide a more balanced perspective on the increase in food security over the last decades. Furthermore, information on traditional varieties and breeds or on genetic resources for food and agriculture is missing. Thus, the contributions of agriculture to the biological diversity in the agricultural sector have not been completely considered so far.	We have attempted to address this comment by taking a more balanced perspective on the relative contributions of nature to people especially with respect to food and fible provision in chapter 2. We have also increased the treatment of genetic diversity of crops and animal breeds in chapter 3.
Germany	0	0	0			Regarding kowledge gaps - please provide a section at the end of each chapter to present the relevant knowledge gaps that were identified from the reviews (for chapter 3 it's missing). It is refered to in the SPM, p. 8 l. 233 that relevant knowledge gaps are identified, so please ensure that all knowledge gaps identified throughout the individual chapters are then summarized and assessed in the corresponding section of knowledge gaps and uncertainties towards the end of each chapter.	Knowledge gaps have been identified for each chapter, as well as being summarised as a box in the SPM
Germany	0	0	0			Some of the chapters (particularly 2, 3, 4, 6) are very long and readers easily loose track as to what type of information is currently presented. Please try to synthesize the information as much as possible and if a lot of information is to be presented provide short summaries or highly important findings.	All of the chapters have been reduced considerably in length
Germany	0	0	0			There are still some gaps, placeholders or work in progress in the SOD. This makes it partly difficult to comment. Please fill these gaps effectively.	Gaps have been filled throughout the document
Germany	0	0	0			We urgently request the chapter authors to ensure that all facts and figures contained in the chapters are accurately cited and adequately referenced with up-to-date sources. We also encourage chapter authors to cross-check whether the same facts and figures on a specific topic are being used throughout the assessment. Please make sure that all key messages are backed up by facts and figures.	The use of evidence sources has been comprehensively checked across the document, especially including those that integrate across chapters
Germany	0	0	0			Please explain all abbreviations when first used and then use them coherently afterwards (e.g. ILKP in the SPM)	All abbreviations have either been spelt-out or defined on first use
Belgian government - Hilde Eggermont (IPBES National Focal Point)	0	0	0			All documents include big differences in the quality of the writing. Everything should be thoroughly proof-read and edited by native speakers.	The document has been comprehensively reviewed by native English speakers
Belgian government - Hilde Eggermont (IPBES National Focal Point)	0	0	0			Use of genetic resources and Nagoya protocol are notably absent in most of the chapters	Limited or unequal access to NCP or genetic resources is now mentioned where appropriate.
Belgian government - Hilde Eggermont (IPBES National Focal Point)	0	0	0			For reviewing purposes, it may be useful to indicate the gender-balance and 'discipline-balance' within the group of authors (could be illustrated with a gauge at the beginning of each doc for example). This will facilitate identifying biases	The complete authorship is listed at the beginning of each chaper. Statistics on gender and disciplinary balance are available from the ECA TSU and IPBES Secretariat
Belgian government - Hilde Eggermont (IPBES National Focal Point)	0	0	0			no reference to Nature-based solutions, though very relevant in this assessment (i.e. In the different Chapters and SPM)	The NBS concept is referenced where there is literature and evidence to support its use
Anatoliy Khapugin	0	0	0	0	0	Through the whole assessment, there are many cases of mixture English (British+American): e.g., ch.1, p. 12, line 333 (prioritize) vs. ch.1, p. 4, line 83 (recognised), etc. I think, some one of English forms should be used through the whole assessment. Also, there are many mistakes (or it is a lack of standards of formatting) for references style. I would revommend check it through the whole assessment. I didn't add concrete recommendations because I don't know what format of references and references style should be used	The document language has been systematically edited by native English speakers
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the IPBES Core Indicator 'Marine Trophic Index' is used in this assessment. Indicator information is available from the IPBES Indicator portal and the BIP website www.bipindicators.net. This indicator can be disaggregated/made available for this region, more information on this is available from the Indicator Focal point Dirk Zeller (email: d.zeller@oceans.ubc.ca).	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the IPBES Core Indicator 'Proportion of local breeds, classified as being at risk, not-at-risk or unknown level of risk of extinction’ is used in this assessment. Indicator information is available from the IPBES Indicator portal and the BIP website www.bipindicators.net. This indicator can be disaggregated/made available for this region, more information on this is available from the Indicator Focal point Roswitha Baumung (email: Roswitha.Baumung@fao.org)	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.

UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the IPBES Core Indicator Percentage of Category 1 nations in CITES is used in this assessment. Indicator information is available from the IPBES Indicator portal and the BIP website www.bipindicators.net. This indicator can be disaggregated/made available for this region, more information on this is available from the Indicator Focal point Tom De-Meulenaer (email: Tom.DE-MEULENAER@cites.org)	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the IPBES Core Indicator 'Nitrogen + Phosphate Fertilizers (N+P205 total nutrients)' is used in this assessment. Indicator information is available from the IPBES Indicator portal and the BIP website www.bipindicators.net. This indicator can be disaggregated/made available for this region, more information on this is available from the Indicator Focal point Francesco Tubiello (email: francesco.Tubiello@fao.org)	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the IPBES Core Indicator 'Trends in Pesticide Use' is used in this assessment. Indicator information is available from the IPBES Indicator portal and the BIP website www.bipindicators.net. This indicator can be disaggregated/made available for this region, more information on this is available from the Indicator Focal point Francesco Tubiello (email: francesco.Tubiello@fao.org)	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the IPBES Core Indicator 'Percentage of Undernourished People' is used in this assessment. Indicator information is available from the IPBES Indicator portal and the BIP website www.bipindicators.net. This indicator can be disaggregated/made available for this region, more information on this is available from the Indicator Focal point Carlo Cafiero (email: Carlo.Cafiero@fao.org)	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the IPBES Highlighted Indicator 'Wetland Extent Trend Index' is used in this assessment. Indicator information is available from the IPBES Indicator portal and the BIP website www.bipindicators.net. This indicator can be disaggregated/made available for this region, more information on this is available from the Indicator Focal point Sarah Darrah (email: Sarah.Darrah@unep-wcmc.org)	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the IPBES Highlighted Indicator 'Trends in invasive alien species vertebrate eradications' is used in this assessment. Indicator information is available from the IPBES Indicator portal and the BIP website www.bipindicators.net. This indicator can be disaggregated/made available for this region, more information on this is available from the Indicator Focal point Shyama Pagad (email: s.pagad@auckland.ac.nz)	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the IPBES Highlighted Indicator RAMSAR areas is used in this assessment. Indicator information is available from the IPBES Indicator portal and the BIP website www.bipindicators.net. This indicator can be disaggregated/made available for this region, more information on this is available from the Indicator Focal point Maria Rivera (email: RIVERA@ramsar.org)	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the IPBES Highlighted Indicator 'Number of countries with national instruments on biodiversity relevant tradable permit schemes' is used in this assessment. Indicator information is available from the IPBES Indicator portal and the BIP website www.bipindicators.net. These indicators are country-specific, so they can be disaggregated by countries in your region. However, given the incomplete country coverage, any regional aggregates cannot be taken to represent the entire region. Currently we have data on about 58 countries. [Just to note, we also have information on countries with biodiversity-relevant taxes in place]. More information on this is available from the Indicator Focal point Katia Karousakis (email: Katia.KAROUSAKIS@oecd.org)	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the IPBES Highlighted Indicator 'Trends in potentially harmful elements of government support to agriculture (produced support estimates)' is used in this assessment. Indicator information is available from the IPBES Indicator portal and the BIP website www.bipindicators.net. This indicator is available for the OECD as a whole and has not been disaggregated as such. The original data on (total) government support to agriculture is available on the OECD website by country. More information on this is available from the Indicator Focal point Katia Karousakis (email: Katia.KAROUSAKIS@oecd.org)	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the IPBES Highlighted Indicator 'Better Life Index' is used in this assessment. Indicator information is available from the IPBES Indicator portal and the BIP website www.bipindicators.net. The data is available for only 38 countries and therefore it would be difficult to be used regionally the way IPBES has classified these. More information on this is available from the Indicator Focal point Katia Karousakis (email: Katia.KAROUSAKIS@oecd.org)	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the IPBES Highlighted Indicator 'Protected area coverage of terrestrial, marine and freshwater ecoregions' is used in this assessment. Indicator information is available from the IPBES Indicator portal and the BIP website www.bipindicators.net. This indicator can be disaggregated/made available for this region, more information on this is available from the Indicator Focal point Ed Lewis (email: Edward.Lewis@unep-wcmc.org)	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the IPBES Highlighted Indicator 'Growth in species occurrence records accessible through GBIF' is used in this assessment. Indicator information is available from the IPBES Indicator portal and the BIP website www.bipindicators.net. This indicator can be disaggregated/made available for this region, more information on this is available from the Indicator Focal point Tim Hirsch (email: 'thirsch@gbif.org')	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the IPBES Highlighted Indicator 'Number of countries that have adopted legislative, administrative and policy frameworks to ensure fair and equitable sharing of benefits' is used in this assessment. Indicator information is available from the IPBES Indicator portal and the BIP website www.bipindicators.net. This indicator can be disaggregated/made available for this region, more information on this is available from the Indicator Focal point Robert Hoft (email: robert.hoft@cbd.int)	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the IPBES Highlighted Indicator 'Information provided through the financial reporting framework, adopted by decision XII/3' is used in this assessment. Indicator information is available from the IPBES Indicator portal and the BIP website www.bipindicators.net. This indicator can be disaggregated/made available for this region, more information on this is available from the Indicator Focal point Robert Hoft (email: robert.hoft@cbd.int)	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the IPBES Highlighted Indicator 'Number of world natural heritage sites per country per year' is used in this assessment. Indicator information is available from the IPBES Indicator portal and the BIP website www.bipindicators.net. This indicator can be disaggregated/made available for this region, more information on this is available from the Indicator Focal point Douglas Nakashima (email: D.Nakashima@unesco.org)	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the Indicator 'Trends in Loss of Reactive Nitrogen to the Environment' is used in this assessment. Indicator information is available from the BIP website www.bipindicators.net. This indicator can be disaggregated/made available for this region, more information on this is available from the Indicator Focal point Albert Bleeker (email: Albert.Bleeker@pbl.nl).	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the Indicator 'Wild Bird Index (forest & farmland specialist birds) is used in this assessment. Indicator information is available from the BIP website www.bipindicators.net. This indicator can be disaggregated/made available for this region, more information on this is available from the Indicator Focal point Richard Gregory (email: richard.gregory@rspb.org.uk).	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the Indicator 'Climatic impacts on European and North American birds' is used in this assessment. Indicator information is available from the BIP website www.bipindicators.net. This indicator can be disaggregated/made available for this region, more information on this is available from the Indicator Focal point Richard Gregory (email: richard.gregory@rspb.org.uk).	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.

UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the Indicator 'Ocean Health Index' is used in this assessment. Indicator information is available from the BIP website www.bipindicators.net. This indicator can be disaggregated/made available for this region, more information on this is available from the Indicator Focal point Benjamin Halpern (email: halpern@nceas.ucsb.edu)	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the Indicator ' Cumulative Human Impacts on Marine Ecosystems' is used in this assessment. Indicator information is available from the BIP website www.bipindicators.net. This indicator can be disaggregated/made available for this region, more information on this is available from the Indicator Focal point Benjamin Halpern (email: halpern@nceas.ucsb.edu)	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the Indicator ' Proportion of countries adopting relevant national legislation and adequately resourcing the prevention or control of invasive alien species' is used in this assessment. Indicator information is available from the BIP website www.bipindicators.net. This indicator can be disaggregated/made available for this region, more information on this is available from the Indicator Focal point Shyama Pagad (email: s.pagad@auckland.ac.nz)	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the Indicator 'Biodiversity Barometer' is used in this assessment. Indicator information is available from the BIP website www.bipindicators.net. This indicator can be disaggregated/made available for this region, more information on this is available from the Indicator Focal point Rik Kutsch Lojenga (email: rik@ethicalbiotrade.org)	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the Indicator 'Red List Index (impacts of utilisation)' is used in this assessment. Indicator information is available from the BIP website www.bipindicators.net. This indicator can be disaggregated/made available for this region, more information on this is available from the Indicator Focal point Tom De-Meulenaer (email: Tom.DE-MEULENAER@cites.org)	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the Indicator 'Water Quality Index for Biodiversity' is used in this assessment. Indicator information is available from the BIP website www.bipindicators.net. This indicator can be disaggregated/made available for this region, more information on this is available from the Indicator Focal point Hartwig Kremer (email: hartwig.kremer@unep.org)	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	0	0	0			We would recommend that the Indicator 'Number of Parties to the CBD that have deposited the instrument of ratification, acceptance, approval or accession of the Nagoya Protocol' is used in this assessment. Indicator information is available from the BIP website www.bipindicators.net. This indicator can be disaggregated/made available for this region, more information on this is available from the Indicator Focal point Beatriz Gomez (email: 'beatriz.gomez@cbd.int')	Chapter author teams made use of these core/highlighted/further indicators as far as possible given the delivery late in the process.
EU: Frank Wugt Larsen (EEA)	0	0	0			A few points on references: 1) In general, there is a need to systematically check references in the chapters. Specifically, EEA reports are not referenced consistently, e.g. in some chapters it is EEA XXXX, while in other chapters European Environment Agency XXXX. 2) Chapter 3 doesn't seem to contain any reference to EEA materials, which seems a bit odd given the many relevant EEA publications. 3) Some EEA references are not the most current one, e.g. Climate change, impacts and vulnerability in Europe 2012 is referenced although there is 2016 report.	References have been systematically checked and standardised throughout the document using the Mendeley bibliographic software.
EU: Frank Wugt Larsen (EEA)	0	0	0			As during last review, we would like to point you to relevant information hosted by the EEA for which we believe a consultation by authors could improve the ECA report. In general, we will also refer to the EEA/ETC BD document 'Information note to IPBES secretariat on EEA and EU information'(http://bd.eionet.europa.eu/Reports/ETCBDTechnicalWorkingpapers/PDF/Information_IPBES_on_EEA_EU.pdf) , which was shared with the ECA TSU in 2015. Several reports provide a good starting point to find relevant information, incl. EEA, 2015 European environment — state and outlook 2015 (SOER 2015, in particular, thematic briefings and SOER synthesis); EEA 2016. Mapping and assessing the condition of Europe's ecosystems. Progress and challenges; EEA, 2015, State of Nature Report 2015; EEA, 2015, State of Europe's Seas; EEA, 2016. European forest ecosystems – state and trends. In general, the EEA website (http://www.eea.europa.eu) also provides access to a wealth of relevant indicators and assessments.	EEA sources are highly appreciated and cited throughput the assessment.
Thomas Brooks	0	0	0			Overall: the ECA assessment is looking really good - many congratulations to all the authors. I have focused the great bulk of my comments on issues directly related to data mobilised for the ECA against IUCN standards, especially in the light of the provision of these data for IPBES in https://www.nature.com/articles/sdata20167, and of IUCN's strategic partnership with IPBES in general.	Thanks for the comment
Switzerland: José Romero	0	0	0			General: establish a gloassary as part of this report and include in the glossary words like "cohesiveness"; "regulatory", "material", "non-material" NCPs; "trofic level"; "biotic homogenisation",	A glossary has been created as suggested
Switzerland: José Romero	0	0	0			General: in this report, the concept of "trade-off" is used in a rather negative sense, while generally a trade-off is a situation reached for the satisfaction of divergent views and interests, which is considered to be a positive solution. We wonder if this rather negative use of trade-off in the report would be correctly translated in the other non-English languages. For example, in French, we would rather think of a happy outcome when a trade-off (e.g. a compromise, a good deal) is done in front of irreconcilable antagonisms. If the use in this report is more in a negative sense, then why not qualify trade-offs as e.g. "harmful". We hope that the English speakers authors understand our point and find a way out to address it in English as well as in the other non-English languages.	Trade-off is here consistently meant to indicate a negative relation between two variables of interest, e.g. between two NCPs. Mitigation of a trade-off would correspond toyour "happy outcome".
The Netherlands: Astrid Hilgers	0	0	0	0	0	(Financial) cost-benefit analyses for policymakers/society are missing, as it is important to name such considerations explicitly. Also, certain concepts should be defined more precisely. This goes, among others things, for Natural Capital.	Discussion of the economics of ES (valuation) has been increased in the document, especially in Ch2
Ramsar Secretariat	0	0	0	0	0	We recommend that as in the regional assessments for Africa and the Americas, the area of Ramsar Sites, wetlands protected under the Ramsar Convention as internationally important by sub-region, be included in this assessment as an indicator. See: https://rsis.ramsar.org/	Done in chapter 3.
IPBES Knowledge and Data Task Force (KD TF)/ Task Group on Indicators (TGI)	0	0	0			This review provides feedback from the IPBES Knowledge and Data Task Force (KD TF) / Task Group on Indicators (TGI) on the use of IPBES core indicators in your assessment. We see potential for inclusion of additional core indicators and for the more consistent use of the standardized visuals provided. For information on core indicators potentially relevant to a given chapter, please see http://www.ipbes.net/indicators (or see the tab named, "core indicators" in this spreadsheet) and check the indicator trend graphs shared by your TSU. For the trends of IPBES core indicator, standardized visualizations should be used as much as possible to ensure the consistency between and within the assessments. The KD TF/TGI aim to follow up with specific recommendations in the near future. In the meantime, do not hesitate to reach out to them through your TSU or the KD TF TSU (ipbes.kdtsu@gmail.com).	Chapter author teams made use of the core indicators as far as possible given the delivery late in the process.
Kremena Gocheva	0	0	0			The draft assessment is an impressive and very informative work. It can, also, be seen that the drafting and peer review process are flexible enough to incorporate very recent work despite the long drafting cycle. It would be helpful to incorporate a feedback mechanism from stakeholders as well, for collecting new information that becomes available on a running basis. For example, the Bulgarian mapping and assessment outside NATURA 2000 - some 66% of the country - for ecosystem condition and biophysical valuation of ecosystem services was completed in April, 2017. IBER-BAS has mappe six of the nine ecosystem types in Bulgaria, and had the lead role in developing the underlying methodological framework. However, the final reports are under verificatrion and publications upon it are still to follow, with findings being systematized. Similarly, work is underway in other countries too. Therefore, at the current stage the comments are somewhat generic and limited to the general approach (Chapter 1) but it would be suitable, if such a mechanism existed, to keep contributing beyond June 26 until the report is ready. It may be good to allow for submitting links to new publications on a regular basis, so the report authors would get up-to-date information in a timely manner.	Thank you for the suggestion concerning new literature. The IPBES guidelines requires us to establish a cut-off date for literature (April 2017), but we have attempted to be flexible in incorporating more recent, but highly important, material.

Kremena Gocheva	0	0	0			The assessment's description in Chapter 1 appears anthropocentric without a clear focus on humans as part of Nature. Since the Assessment clearly notes (Table 1.1, Figure 1.2) that the IPBES has a scope overarching earlier assessments suchas MA, TEEB, MAES by providing a holistic view on Nature, the intdorudction, too, may need to put more emhasis on the socieo-ecologic system as a single entity rather than merely a source of benefits to humans. This could lead onto introducing insights at the win-win and lose-lose options, including the ecosystem disservices, as well as a more systemic view at the continuum of states in which the socio-ecologic system is evolving over time. It would bring out more clearly the NATURE component of the IPBES CF, in particular its Mother Earth and Systems Values categories which appear to be underrepresented in the current draft. Their equivalent in Western science appears to be not the entire body of knowledge on biodiversity and ecosstems but rather the parts of ecology that treat ecosystems from the energy/emergy/entropy/information theory points of view.	Chapter 1 has been edited considerably to adopt a more comprehensive socio-ecological systems approach as well as recognising the intrinsic value of nature and pointing out non-material relational values.
Mark Rounsevell	Ch.3	0	0			Overall very comprehensive and good development since the FOD. The chapter is however very long, and would benefiot from editing down in length. In particular there is a lot of descriptive text, and sections that read more like a literature rview than an assessment. A more synthetic treatment of the texto would help in reducing the overall length.	we have removed all descriptive text and merged together all the tables on status and trends. This considerably shortened the chapter, however the status and trends and future scenarios of all taxonomic groups and Units of Analyses is not something that can be dealt with 50 pages of text without resorting to general statements and losing important information. This chapter is not comparable with the others in that its scope is much larger than all the other, and the quantity of information to synthesize is enormous. We believe to have striken a balance between length and amount of information provided.
Amor Torre-Marin	Ch.3	0	0			Most part of the references still need to be added to mendeley and reference list	done
Amor Torre-Marin	Ch.3	0	0			Please make sure all references are in Mendeley	done
Amor Torre-Marin	Ch.3	0	0			Several figures need references in the text	addressed
Bruno Fady	Ch.3	0	0	0	0	Genetic diversity is mentionned there, but few trends are reported particularly for land plants. They are well known from the phylogeographic literature and deserve to be mentioned. They result from past climate events, recolonization, local adaptation and possibly human impact.	Genetic diversity is mentioned for cultivated plants and animals and it is also mentioend for several wild taxa throughout the sections 3.3 and 3.4.
Germany	Ch.3	0	0			We urgently request the chapter authors to ensure that all facts and figures contained in the chapters are accurately cited and adequately referenced with up-to-date sources. We also encourage chapter authors to cross-check whether the same facts and figures on a specific theme are being used throughout the assessment.	We have rigorously checked all facts and figures and the co-chairs have cross-checked chapters.
Germany	Ch.3	0	0			The following references might be useful: Mäder et al. (2002) Soil Fertility and Biodiversity in Organic Farming. Science 296, 1694; Bond et al. (2015). Ancient grassland at risk. Science 351, 120-122; Strokey et. Al. (2015) Grassland biodiversity bounces back from long-term nitrogen addition. Nature 528, 401 Tittensor et al. (2016) A mid-term analysis of progress toward international biodiversity targets. Science 346, 241-244	Thank you, however the scope for adding references was limited and we had to prioritize additions, the authors of the respective sections determined that these were not priority for adition.
EU: Ole Ostermann, JRC	Ch.3	0	0	0	0	Despite the invitation not to check editing, some reading is painful because of edits that could have been eliminated by an automatic spell check. There are namely numerous cases in which blanks between words have disappeared. Sometimes grammar is meaningless.	The document was entirey edited by native english speakers and these problems should have disappeared.
EU: Ole Ostermann, JRC	Ch.3	0	0	0	0	Please adopt one way of referencing citations. Sometimes three or four names are spelled out (e.g. p.55 1643), in other cases just Name et al. And there are very many references absent from the references list (despite that it is twofold).	All references issues have been addressed: sections with insufficient number (relative to available and pertinent publications) have been carefully reviewed to address this; when there were too many references the less important ones were moved to a shado
Allan Watt	Ch.3	0	0			This Chapter has improved since the FOD but still requires much additional work, including basic editing. Some other general points follow:	Thank you for the constructive review, we have addressed all comments, see below
Allan Watt	Ch.3	0	0			1. Some sections are very well-advanced but others lack information. Compare, for example, the detail in lines 903-909 (page 29) on Amur Bay with the lack of information on invertebrates in Section 3.2.3.6.	Generally, the amount of information in the assessment reflects the amount of information available. Systematic assessments of marine invertebrates do not exists except for some molluscs and anthozoans. For terrestrial invertebrates all available assessments for the region were considered. If there were reviews and assessments we missed we would have appreciated being pointed out to them.
Allan Watt	Ch.3	0	0			2. In many places, sources of information (references) need to be added. In other cases, the number of references is very low, suggesting that a comprehensive assessment has not been done. In other places, references in the text are missing from the list or are incorrect (Section 3.6). Only a few of these are highlighted below. Others include the STOA 2013 reference.	All references issues have been addressed: sections with insufficient number (relative to available and pertinent publications) have been carefully reviewed to address this; when there were too many references the less important ones were moved to a shadow reference list, of publications consulted and relevant.
Allan Watt	Ch.3	0	0			3. The Chapter lacks a narrative / storyline, which should be set out clearly in the Introduction and followed throughout, until a final concluding section is presented. Although some sections are thematically linked (those on systems and on different taxa), these are not well linked to those on dynamics, links between biodiversity and function, and gaps in knowledge.	The introduction now sets the scene for the chapter, and explains the narrative. We have improved internal linkages through cross-referencing sections.
Olesya Petrovych	Ch.3	0	0			Not everything in this capter is up to my expectations e.g. about comprehensive description of dependency of ecosystem services on the biodiversity or their monetary valuation.	This is a matter for chapter 2
Andrew Wade	Ch.3	0	0			Congratulations to all the authors and review editors on excellent work to collate and present the material. The chapter is impressive.	Thank you
André Mader	Ch.3	0	0			For the sake of consistency and information, it is suggested to have introductory sections to, for example, major systems. In the case of marine there is none, while in the case of terrestrial there is an intro.	agreed, we have done so, and also added a concluding section reporting on progress towards multilateral environmental agreements for UoAs and taxa
André Mader	Ch.3	0	0			Why is 3.2.2.4 (protected area coverage) under 3.2.2 (Trends by major system)? It is actually by subregion, end excludes inland surface water	this has been now moved to chapter 4
André Mader	Ch.3	0	0			There is a confusing variety of titles in sub-sections on systems and taxa	these have been armonized throughout
André Mader	Ch.3	0	0			Not quite clear what indicator tables mean. Suggest to provide more explicit information on what they contian, in the text or caption	this refers to a summary table of trends at the end of the UoAs section and taxa section
André Mader	Ch.3	0	0			There are maps for some systems but not for others. It is suggested to be consistent in this regard.	there is now a single map for all UoAs in chapter 1
André Mader	Ch.3	0	0			Maps may need to be harmonized to avoid overlap between different major system	see comment above
André Mader	Ch.3	0	0			Drivers are discussed quite a lot, but only direct drivers. It might be worth explaining that these are only direct drivers, and referring to chapter 4's treatment of both direct and indirect drivers	The scoping document requests CH3 to address the attribution of biodiversity trends to direct drivers. CH4 addresses the relations of trends in the direct drivers with underlying indirect drivers. We explai this now more clearly in introduction.
André Mader	Ch.3	0	0			There is a sort of overview for most systems and sub-systems, but not for taxa. Consider making intro text more consistent?	done

André Mader	Ch.3	0	0			The text often mentions "Europe" without saying which area is actually being referred to. Certainly it does not seem to include Eastern Europe (which includes that entre Russian Federation)	we have clarifeied where possible using IPBES subregions, although in many instances the data/publications used do not conform with it. When that was the case, e.g. EEA definition of Europe, we have clarified.
André Mader	Ch.3	0	0			Categories in the various indicator tables are not consistent between tables	this has been armonized in the common summary table at the end of UoAs and taxa section
André Mader	Ch.3	0	0			Pteridophytes are not mentioned anywhere in the chapter	they are within the vascular plant section, assessed with other vascular plants
ECA values liaison group	Ch.3	0	0			When applicable, i.e. when different value types are mentioned or discussed, please refer to the values table and definitions in Chapter 1 that introduces and defines all value types in the assessment. This will be suggested to each ECA chapter	chapter 3 reporting on status and trends of biodiversity doesn't expose itself to value-laden assessment.
ECA values liaison group	Ch.3	0	0			Check that all subregions are covered roughly equally in terms of values.	see above response
Kristina Raab	Ch.3	0	0	0	0	In my opinion the guideline to reviewers not to comment on editorial issues is not in the best interest of IPBES, because sometimes small mistakes or changes in punctuation can lead to different meaning of a sentence which may not be intended by the authors. I feel that in an assessment in English with many authors and reviewers who are not English native speakers, this is an issue that needs consideration by IPBES for the next assessments and the upcoming SPMs reviews.	we had a native english speaker reviewing the document and we expect these issues to be now solved
Kristina Raab	Ch.3	0	0	0	0	I would strongly suggest/request the word jellyfish (which comprises taxa in several phyla like chordates, cnidarians, ctenophores, etc.) be replaced with gelatinous zooplankton throughout the assessment. The term 'jellyfish' is ambiguous as some use it to refer exclusively to gelatinous cnidarians (but some cnidarians are non-gelatinous, like corals), others use it to refer to all gelatinous organisms. And it is a misnomer anyway seeing as jellyfish are not fish.	addressed
Kristina Raab	Ch.3	0	0	0	0	Looking at the table of contents, I see that in the 3.2.3 section species trends are reported only for large animals and plants. I miss information on plankton and (even just general information on) bacterial communities and their impacts. Please include this to represent these biological components.	they are covered in marine units of analyses in terms of changes in biomass, community composition and phenology. Assessment of population trends and extinctionr risk of planktonic taxa do not exists for the region and this is specified as a knowledge gap
Kristina Raab	Ch.3	0	0	0	0	It seems that of the habitats, species, genes aspects of biodiversity only the first to are reported on in the assessment (section 3.2.2 Major systems can be considered as reporting on habitats; section 3.2.3 is on species; genes are missing.) I would suggest including this - at least in a minimal way.	we have included an assessment of status and trends in phylogenetic diversity in the first section. Genetic diversity at the population level has been assessed only for few species, making impossible any general conclusion for the region or sub-regions. The exception is trends for genetic resources of domestic plants and animals dealt with in section 3.3.2.9 and 3.4.14
Kristina Raab	Ch.3	0	0	0	0	Please add a section on phytoplankton under 3.2.3. - the status and trends of primary productivity in the oceans affects the rest of marine biodiversity in a major way and should be included here.	done
Kristina Raab	Ch.3	0	0	0	0	*(similar to PESC but more references)Please add a section on marine invertebrates to complement sections on terrestrial inverts 3.2.3.6. and freshwater inverts 3.2.3.7. Gelatinous zooplankton GZ, is understudied in most ecosystems despite a high number of species (including fish) relying on these organisms for food, shelter and transport (Purcell & Arai 2001 Hydrobiologia 451(1):27-44). Long considered a 'trophic dead-end', GZ appear more like an 'energy roundabout' distributing energy among various taxa and lower trophic levels Robinson et al 2014 Oceanography 27(4):104–115 (see also Hamilton Nature News 2016,531: 432). Even less work has been done on pelagic tunicates which, in contrast to predatory GZ, act as highly efficient energy transfers from microzooplankton to higher trophic levels (Deibel & Lee 1992 MEPS, 81:25-30). They form an important feature of e.g. Baltic Sea plankton diversity (Ojaveer et al 2010 PLoS ONE, 5(9):e12467) , can compete with copepods (Purcell et al 2005 In Gorsky et al (Eds.) Contemporary Publishing International, Paris, pp. 359-435.) , and may contribute more to secondary production than is commonly acknowledged (Jaspers et al 2009 J. Plankton Res. 31(5):525–540.). More information (also a little on genetics: Licandro et al Earth Syst. Sci. Data, 7, 173–191, 2015 doi:10.5194/essd-7-173-2015)*	the taxa section is specifically about conservation status of group of species which requires that most species have been assessed in terms of population trends, geographic extent, etc. This isn't the case for non-vertebrate marine animal taxa, protozoans and for marine plants and algae. However, plankton and non-vertebrate taxa are covered at the community level when discussing ecosystem functioning and intactness within the UoAs text. The knowledge gaps section deals extensively with these taxa and reports also the little that is known as well as highlighting the known unknowns
Mark Snethlage	Ch.3	0	0			In this table, suggestions are made for maps to illustrate some sections of the different chapters. A document with a number of examples (referred to below) is available at: https://tinyurl.com/ECA-Maps ECA sharepoint site login required	thank you very much, we have made extensive use of this data and GIS templates for our final document
Mark Snethlage	Ch.3	0	0			the assessment tables for trends and drivers of units of analysis use both "habitat degradation" and "habitat condition" as one of the indicators of ecosystem status. "habitat degradation" (by far the most common) is also the one that confuses interpretation. In all other indicators, a downward pointing arrow signifies a worsening state or condition of the ecosystem. When using habitat degradation, a downward trend signifies an improvement of the condition (double negative leads to less clarity). Also in the case of urban ecosystems, it seems that this double negative has not been applied. Worsening habitat condition has been indicated by reduced habitat degradation (see below). Recommendation: change all the "Habitat degradation" indicators to "Habitat condition", and reverse the trend assessments (except for Urban Ecosystems)	we have revised to biodiversity status across all UoAs
Mark Snethlage	Ch.3	0	0			Indicators assessed in the tables for the various ecosystems differ quite substantially. E.g. Northeast Atlantic and Mediterranean, two indicators are assessed (ecosystem intactness and ecosystem function), while for other marine ecosystems such as Baltic and Black Sea, the number of indicators is far greater, and only partially coincides with the former. There is no core set of indicators used throughout. Therefore comparison of the marine ecosystems is difficult. Also, some indicators are a bit confusing: is "ecosystem alteration" (table 3.4.) exactly the opposite of "ecosystem intactness" (tables 3.1. and 3.2.) and "habitat conditions" (table 3.7.), i.e. can the trends of one be compared with the opposite of trends of the other (see also discussions about habitat degradation vs habitat condition, above). Some more harmony in the indicators for the marine ecosystems / seas would be helpful.	see comment above
Mark Snethlage	Ch.3	0	0			General reference: J.A.M. Janssen, J.S. Rodwell, M. García Criado, S. Gubbay, T. Haynes, A. Nieto, N. Sanders, F. Landucci, J. Loidi, A. Ssymank, T. Tahvanainen, M. Valderrabano, A. Acosta, M. Aronsson, G. Arts, F. Attorre, E. Bergmeier, R.-J. Bijlsma, F. Bioret, C. Biță-Nicolae, I. Biurrun, M. Calix, J. Capelo, A. Čarni, M. Chytrý, J. Dengler, P. Dimopoulos, F. Essl, H. Gardfjell, D. Gigante, G. Giusso del Galdo, M. Hájek, F. Jansen, J. Jansen, J. Kapfer, A. Mickolajczak, J.A. Molina, Z. Molnár, D. Paternoster, A. Piernik, B. Poulin, B. Renaux, J.H.J. Schaminée, K. Šumberová, H. Toivonen, T. Tonteri, I. Tsiripidis, R. Tzonev and M. Valachovič, 2016, European Red List of Habitats - Part 2. Terrestrial and freshwater habitats. Luxembourg: Publications Office of the European Union http://ec.europa.eu/environment/nature/knowledge/redlist_en.htm	Thank you, it was used at least in Heathlands
Mark Snethlage	Ch.3	0	0			General reference: S. Gubbay, N. Sanders, T. Haynes, J.A.M. Janssen, J.R. Rodwell, A. Nieto, M. García Criado, S. Beal, J. Borg, M. Kennedy, D. Micu, M. Otero, G. Saunders and M. Calix, 2016, European Red List of Habitats - Part 1. Marine habitats. Luxembourg: Publications Office of the European Union http://ec.europa.eu/environment/nature/knowledge/redlist_en.htm	This very helpful citation is now used in several places.
ECA values liaison group	Ch.3	0	0			Please double check the use of the term 'worldview' to ensure it is used consistently, and consistently with IPBES wording and meaning, or at least it is clear from the context what exactly is meant.	thank you we have done so now

Dan Faith	Ch.3	0	0		6995	Comments specific to particular lines follow further below, but the initial following comments I think are relevant to both chapters 2 and 3. The scoping for chapter 2 indicates that it will assess NCPs including the status/trends of the NCPs. The scoping for chapter 3 indicates that it will build on the chapter 2 assessment of NCPs and look at the status/trends of biodiversity and ecosystems with an eye to how that influences NCPs. These tasks normally are a close fit, but are in fact overlapping in the case of NCP18. NCP18 is mostly about the contribution of biodiversity itself in providing "maintenance of options" or "option value". For example, NCP18 refers to "Benefits (including those of future generations) associated with the continued existence of a wide variety…" Living variety is of course another way of saying "biodiversity". This NCP18 benefits statement echoes the oldest discussions of the value of biodiversity itself as a benefit (following e.g. Haskins 1974; reviewed in Faith 2017*). *Faith 2017 summarised: "this link between biodiversity and human well-being actually traces back to the "pre-history" of "biodiversity" (roughly, the history of the term before it was invented). Haskins (1974: 646) summarised an important discussion meeting where participants called for "an Ethic of Biotic Diversity in which such diversity is viewed as a value in itself and is tied in with the survival and fitness of the human race". Haskins (1974: 646) warned, "Plants and animals that may now be regarded as dispensable may one day emerge as valuable resources" and that extinction "threatens to narrow down future choices for mankind". Roush (1977: 9) similarly argued that "diversity increases the possibility of future benefits" (for review, see Farnham 1997). IUCN's (1980: section 3) arguments for the conservation of diversity (referring to "the range of genetic material found in the world's organisms") echoed Haskins: "we may learn that many species that seem dispensable are capable of providing important products, such as pharmaceuticals, or are vital parts of life-support systems on which we depend." Later philosophical discussions supported these perspectives. Norton (1986) argued that diversity itself has utilitarian value. Randall (1986: 103) similarly considered unit species and proposed that all species not already distinguished in having recognised human-use values "would be treated as having a positive but unknown expected value." These ideas flowed on to discussions around the new term "biodiversity". McNeely (1988) and Reid and Miller (1989) referred to "option values" of biodiversity. E. O. Wilson (1988) highlighted values for biodiversity reflecting our lack of knowledge about the components of life's variation and their importance to humankind. The MEA (2005a: 32) concluded that "the value individuals place on keeping biodiversity for future generations— the option value—can be significant." Gascon et al. (2015) reviewed the many, sometimes surprising, benefits of species to argue for the importance of option value (and pointed to PD as a candidate measure of option value). The Encyclical Letter "On Care for Our Common Home" (Francis 2015) addressed the loss of biodiversity, arguing for the importance of not only intrinsic values of species but also the option values of biodiversity: "The loss of forests and woodlands entails the loss of species which may constitute extremely important resources in the future, not only for food but also for curing disease and other uses. Different species contain genes which could be key resources in years ahead for meeting human needs and regulating environmental problems….Maclaurin and Sterelny concluded: "The crucial point about option value is that it makes diversity valuable. As we do not know in advance which species will prove to be important, we should try to conserve as rich and representative a sample as possible" (2008:154)." Maintenance of options, or option value, has been described well in the IPBES conceptual framework, in the preliminary guidelines, and in the IPBES catalogue of assessments. NCP 18 nicely echoes the Millennium Ecosystem Assessment (MEA; Biodiversity synthesis): "Biodiversity loss is important in its own right because … it represents unexplored options for the future (option values)." and "The loss of biodiversity in some instances is irreversible, and the value individuals place on keeping biodiversity for future generations—the option value—can be significant." So, from the NCP18 perspective, any status report on biodiversity is also a status report on NCP18 – because variety is the benefit. My comments below therefore link to both chapters 2 and 3. The reference list for all comments is provided at the bottom. Chapter 2 is to address how biodiversity (and ecosystem functions and services) contribute to good quality of life and address the trends in nature's contribution and the link between nature's contributions to people and their quality of life. The scoping notes links to CBD Strategy/Goal D – enhancing benefits to all, and with reference to intergenerational equity issues. Thus, it is important to discuss NCP 18. The current drafts of chapters 2 and 3 report on the status and trends of biodiversity broadly – e.g. reporting red list status for many different species – but these assessments regarding global biodiversity are not yet well-linked to NCPs. This would be accomplished by linking the red list status to the status of NCP18 (see below). In chapter 2, the assessment relating to good quality of life arising from NCP18's "Benefits (including those of future generations) associated with the continued existence of a wide variety" could begin by noting recent examples. The chapter could point to some of the actual recent discoveries and benefits that have emerged from "maintenance of options". For example, Chassagnon et al (2017) reported this year that the venom of the Darling Downs funnel web spider (Hadronyche infensa) is the unlikely source for a drug to ward off brain damage caused by strokes. Also this past year, Peel et al (2016) reported that the milk from Tasmanian devils surprisingly provides a weapon against antibiotic-resistant bacteria. There are many more recent examples in all the regions of these unanticipated benefits that fit under NCP18. These stories and others have been reported in the popular press, reinforcing people's relational value linking biodiversity to welfare of future generations (see Faith 2017). Option value of biodiversity has been promoted well by conservation NGOs (for perspective see Gascon et al. (2015) who provide many examples of surprising benefits from biodiversity). Gascon et al. also noted the measurement problem and point to "phylogenetic diversity" as a likely good measure of option value (see below). Over the past decade or more, a strong case (reviewed in Faith 2017) has been made for an indicator of "maintenance of options" as the estimate, over multiple taxonomic groups, of the maintenance of phylogenetic diversity ("PD" sensu Faith 1992). Larsen et al. (2012) argued that a big challenge in biodiversity conservation is to find a "robust proxy" for global option values that effectively captures potential future values to society. They concluded that "maximizing the retention of phylogenetic diversity (PD) should also maximize option value." Cadotte and Davies (2010) argued that "maximizing the preservation of PD will also tend to maximize the preservation of feature diversity." Jetz et al (2014) argued "While any particular trait may be phylogenetically labile, PD captures the integrated genotype and phenotype of a lineage and so represents both measured (e.g., present) and unmeasured (e.g., future) function and capacity." (see also Laity et al 2015; Mouillot et al 2016; Pollock et al 2017). Support for PD as a measure of option value is found also in philosophy of science work (e.g. Maclaurin and Sterelny 2008) and among economists (e.g. Nehring, K., and C. Puppe 2004). Arrieta et al 2010 has explored how recent discoveries link to phylogenetic diversity. Fig 2 http://www.pnas.org/content/107/43/18318.full The IPBES catalogue of assessments illustrates the link of PD to option value, based on the many foods and medicines discovered in plants. http://catalog.ipbes.net/assessments/144 "Phylogeny and the sustainable use of biodiversity: an assessment based on the	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3 and all of these comments are now addressed through his additions to the chapters.

						Survey of Economic Plants for Arid and Semi-Arid Lands." Forest et al. (2007) explored PD and option value using an estimated phylogenetic tree for genera found in the Cape hotspot of South Africa. Forest et al. (2007) demonstrated that, if we did not know about those medicinal, food, and other uses, then preserving sets of species with high PD would be a good way to preserve these unknown benefits. PD captures option values well because it reflects "feature diversity". This link is well corroborated through the many tests (moderate to high confidence based on many published PTP tests that corroborate the PD model; e.g. Slowinski and Crother (1998); Wilkinson et al 2002). A well-established framework for quantifying such global option values of biodiversity is "phylogenetic diversity". Status and trends in biodiversity and NCP18 could look at status and trends in PD in two ways. 1) How well is PD represented well in the regional and global protected areas system? 2) How much PD is in peril given the known imperilled species from red list assessments? 1) Pollock et al (2017; Extended Data Figure 3) show the global and regional priorities for expanding protected areas to benefit the bird versus mammal phylogenetic diversity. See Extended Data Figure 3f https://www.nature.com/nature/journal/v546/n7656/fig_tab/nature22368_ft.html Mouillot et al (2016) found hotspots areas having lots of poorly protected PD, for fish and for corals: Fig 3 b and c http://www.nature.com/articles/ncomms10359 2) The studies above address the "maintenance of options" challenge of securely representing PD in protected areas. A complement to those efforts is to assess, for many taxonomic groups, how much PD currently is imperilled (based on red list assessments of imperilled species). The assessment of imperilled PD is well-established in the EDGE program. The value to people of NCP18 is illustrated well by this successful global program, EDGE (see references), based on preservation of PD. The EDGE of Existence programme highlights and conserves phylogenetically distinctive species that are "imperilled" or on the verge of extinction. This program and the many related regional and global studies (listed in references) provides the existing data useful for this assessment of NCP18. Typically these studies, over many different taxonomic groups, integrate red list assessment with estimates of Evolutionary Distinctiveness (ED) of species. Evolutionary Distinctiveness (ED) measures the proportion of total phylogenetic diversity (PD; measured as the sum of branch lengths in millions of years) by giving the species credit for a branch inverse-weighted by the number of species sharing that branch) (Isaac et al., 2007). Globally, for multiple taxonomic groups, we now have tabulated published lists of ED associated with good phylogenies, and have red list assessments of the species. We could add-up total ED values or count number of EDGE species in the region. But the most useful summary of this available information is simply sum of the tabulated ED values of the threatened species, as this approximates threatened or "imperilled" PD – thus, providing information linking biodiversity status and change to change in NCP18. *Technical comment – tabulations for all groups focus on so-called ED values (evolutionary distinctiveness: the total PD is divided up among the species where the ED score for a species is the sum of its ancestral branch lengths, each divided by the number of descendants of that branch). Thus, each species gets partial credit for overall PD ..this is dominated naturally by terminal branch length….but includes a fractional part of each deeper ancestral branch. Available tabulations of ED scores for species therefore are informative – the total of all ED scores is the total PD and the total of the ED scores for all imperilled species approximates nicely the total imperilled PD (an estimate of expected loss of PD). This use of the available tabulations, with its links to red list categories, is more informative that popular simple summing up in a region of all ED values (this has been shown to be a relatively weak indicator of total regional PD (Faith 2016)). Thus, NCP18 can be assessed through the integration of two bits of existing information: the accepted core indicator information on red list, and information on a recognised measure of biodiversity that links to option value. Below, are the draft assessments for multiple taxonomic groups (and I have emailed this to one or more of the ALAs). The portion of imperilled PD allocated to the region is notional in these draft diagrams; it is not yet tabulated as a portion of the overall tabulated global imperilled PD for a given group. I can provide this, plus more descriptive text as needed.	
Dan Faith	Ch.3	0	0		7000	good re Tons of general red list, many grps, but still need link to NCP18	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Arrieta, Jesús M., Sophie Arnaud-Haondb, and Carlos M. Duartea (2010) What lies underneath: Conserving the oceans' genetic resources. PNAS www.pnas.org/cgi/doi/10.1073/pnas.0911897107	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Barker, GM 2002 Phylogenetic diversity: a quantitative framework for measurement of priority and achievement in biodiversity conservation BIOLOGICAL JOURNAL OF THE LINNEAN SOCIETY Volume: 76 Issue: 2 Pages: 165-194	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Brooks TM, Akçakaya HR, Burgess ND, Butchart SHM, Hilton-Taylor C, Hoffmann M, Juffe-Bignoli D, Kingston N, MacSharry B, Parr M, Perianin L, Regan EC, Rodrigues ASL, Rondinini C, Shennan-Farpon Y, Young BE (2016) Analysing biodiversity and conservation knowledge products to support regional environmental assessments. Scientific Data 3: 160007.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	http://dx.doi.org/10.1038/sdata.2016.7	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Brooks TM, Akçakaya HR, Burgess ND, Butchart SHM, Hilton-Taylor C, Hoffmann M, Juffe-Bignoli D, Kingston N, MacSharry B, Parr M, Perianin L, Regan EC, Rodrigues ASL, Rondinini C, Shennan-Farpon Y, Young BE (2016) Data from: Analysing biodiversity and conservation knowledge products to support regional environmental assessments. Dryad Digital Repository.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	http://dx.doi.org/10.5061/dryad.6gb90.2	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.

Dan Faith	Ch.3	0	0		6995	Bruford, Michael W., Neil Davies, Mohammad Ehsan Dulloo, Daniel P. Faith, Michele Walters (2017) Monitoring Changes in Genetic Diversity. In: The GEO Handbook on Biodiversity Observation Networks. pp 107-128. available at: http://link.springer.com/chapter/10.1007/978-3-319-27288-7_5/fulltext.html	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Cadotte MW and JT Davies (2010) Rarest of the rare: advances in combining evolutionary distinctiveness and scarcity to inform conservation at biogeographical scales. Diversity and Distributions, 16, 376–385	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Chassagnon, Irène R., Claudia A. McCarthyb,c, Yanni K.-Y. China, Sandy S. Pinedaa, Angelo Keramidasd, Mehdi Moblie, Vi Phamb,c, T. Michael De Silvab,c, Joseph W. Lynchd, Robert E. Widdopb,c, Lachlan D. Rasha,f,1, and Glenn F. Kinga, (2017) Potent neuroprotection after stroke afforded by a double-knot spider-venom peptide that inhibits acid-sensing ion channel 1a 1114 no. 14 3750–3755, doi: 10.1073/pnas.1614728114	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Daru, B.H., Bank, M. & Davies, T.J. (2015) Spatial incongruence among hotspots and	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	complementary areas of tree diversity in southern Africa. Diversity and Distributions, 21(7), 447 769-780.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Daru, B.H., Yessoufou, K., Mankga, L.T. & Davies, T.J. (2013) A global trend towards the loss of evolutionarily unique species in mangrove ecosystems. PLoS ONE, 8, e66686.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	EDGE of Existence	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	https://www.edgeofexistence.org/ ZSL, London.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Faith, D. P. (1992). Conservation evaluation and phylogenetic diversity. Biological Conservation, 61, 1–10.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Faith DP, Ferrier, S., Williams, KJ (2008) Getting biodiversity intactness indices right: ensuring that "biodiversity" reflects "diversity" Global Change Biology 14, 207-217.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Faith, D. P. (2011). Higher-Level Targets for Ecosystem Services and Biodiversity Should Focus on Regional Capacity for Effective Trade-Offs. Diversity 2011, 3, 1-7; doi:10.3390/d3010001	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	· Faith Daniel P. (2014) Ecosystem services can promote conservation over conversion and protect local biodiversity, but these local win-wins can be a regional disaster. Australian Zoologist Online pp1-10. DOI 10.7882/AZ.2014.031 available at: http://catalog.ipbes.net/system/assessment/141/references/files/710/original/Faith_Australian_Zoologist_2014.pdf?1422606347	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.

Dan Faith	Ch.3	0	0		6995	Faith DP (2017) A general model for biodiversity and its value. in The Routledge Handbook of Philosophy of Biodiversity (Eds. J Garson, A Plutynski, S Sarkar)	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	https://www.routledge.com/products/9781138827738	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Faith, D.P.,Magallón, S., Hendry, A.P., Conti, E., Yahara, T., Donoghue,M.J., 2010. Evosystem services: an evolutionary perspective on the links between biodiversity and human well-being. Current Opinion in Environmental Sustainability 2, 66–74.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Forest, F., Grenyer, R., Rouget, M., Davies, T.J., Cowling, R.M., Faith, D.P., Balmford, A., Manning, J.C., Proches,, S., van derBank, M., Reeves, G., Hedderson, T.A. & Savolainen, V. (2007) Preserving the evolutionary potential of floras in biodiversity hotspots. Nature, 445, 757–760.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Francis (2015) Encyclical Letter Laudato Si' of the Holy Father Francis: On Care for Our Common Home [English language version]. The Vatican.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Gascon C., Thomas M. Brooks, Topiltzin Contreras-MacBeath, Nicolas Heard, William Konstant, John Lamoreux, Frederic Launay, Michael Maunder, Russell A. Mittermeier, Sanjay Molur, Razan Khalifa Al Mubarak, Michael J. Parr, Anders G.J. Rhodin, Anthony B. Rylands, Pritpal Soorae, James G. Sanderson, Jean-Christophe Vié (2015) "The Importance and Benefits of Species," Current Biology. 25: R431–R438.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	González-Orozco, Carlos E. Laura J. Pollock, Andrew H. Thornhill, Brent D. Mishler, Nunzio Knerr, Shawn W. Laffan, Joseph T. Miller, Dan F. Rosauer, Daniel P. Faith, David A. Nipperess, Heini Kujala, Simon Linke, Nathalie Butt, Carsten Külheim, Michael D. Crisp & Bernd Gruber (2016) Phylogenetic approaches reveal biodiversity threats under climate change. Nature Climate Change 6, 1110-1114.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Haskins, C. (1974) "Scientists Talk of the Need for Conservation and an Ethic of Biotic Diversity to Slow Species Extinction", Science, 184: 646-47.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Isaac, N.J.B., Turvey, S.T., Collen, B., Waterman, C., Baillie, J.E.M., 2007. Mammals on the EDGE: conservation priorities based on threat and phylogeny. PloS One 2, e296.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Jetz, W., G. H. Thomas, J. B. Joy, D. W. Redding, K. Hartmann, and A. Ø. Mooers. 2014. Global distribution and conservation of evolutionary distinctness in birds. Curr. Biol. 24:919–930.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Laity, Tania, Shawn W. Laffan, Carlos E. González-Orozco, Daniel P. Faith, Dan F. Rosauer, Margaret Byrne, Joseph T. Miller, Darren Crayn, Craig Costion, Craig C. Moritz, Karl Newport (2015) Phylodiversity to inform conservation policy: An Australian example. Science of The Total Environment, Volume 534, 15 November, Pages 131-143	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Larsen, F.W., W.R. Turner, T.M.Brooks, et al. (2012). Conserving critical sites for biodiversity provides disproportionate benefits to people. PLoS One 7: e36971.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.

Dan Faith	Ch.3	0	0		6995	Maclaurin J, Sterelny K (2008) What is biodiversity? University of Chicago Press.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Millennium Ecosystem Assessment, 2005. Ecosystems and Human Well-being: Biodiversity Synthesis. World Resources Institute, Washington, DC.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Millennium Ecosystem Assessment, 2005. Chapter 4: Biodiversity. World Resources Institute, Washington, DC.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Mouillot, D., Parravicini, V., Bellwood, D. R., Leprieur, F., Huang, D., Cowman, P. F., Albouy, C., Hughes, T. P., Thuiller, W., & Guilhaumon, F. (2016). Global marine protected areas do not secure the evolutionary history of tropical corals and fishes. Nature Communication,7, 10359.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Mukherjee, Supratim, Rekha Seshadri, Neha J Varghese, Emiley A Eloe-Fadrosh, Jan P Meier-Kolthoff, MARKUS Göker, R Cameron Coates, Michalis Hadjithomas, Georgios A Pavlopoulos, David Paez-Espino, Yasuo Yoshikuni, Axel Visel, William B Whitman, George M Garrity, Jonathan A Eisen, Philip Hugenholtz, Amrita Pati, Natalia N Ivanova, Tanja Woyke, Hans-Peter Klenk & Nikos C Kyrpides (2017) 1,003 reference genomes of bacterial and archaeal isolates expand coverage of the tree of life Nature Biotechnology	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Nehring, K., and C. Puppe (2004). Modelling phylogenetic diversity. Resource and Energy Economics 26(2): 205–235.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Peel E. , Y. Cheng, J. T. Djordjevic, S. Fox, T. C. Sorrell & K. Belov (2016) Cathelicidins in the Tasmanian devil (Sarcophilus harrisii) Scientific Reports 6, Article number: 35019. doi:10.1038/srep35019	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Pollock, Laura J. Wilfried Thuiller1 & Walter Jetz (2017) Large conservation gains possible for global biodiversity facets. Nature	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Roush, G. (1977) "Why save diversity?" Nature Conservancy News 21: 9-12.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Safi K, Armour-Marshall K, Baillie JEM, Isaac NJB (2013) Global Patterns of Evolutionary Distinct and Globally Endangered Amphibians and Mammals. PLOS ONE 8(5): e63582.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Slowinski Joseph B. and Brian I. Crother (1998) Is the PTP Test Useful? Cladistics 14, 297]302	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Sonnenburg1,*, Erica D., Samuel A. Smits1,*, Mikhail Tikhonov2, Steven K. Higginbottom1, Ned S. Wingreen3, and Justin L. Sonnenburg1 Diet-induced extinction in the gut microbiota compounds over generations Nature. 2016 January 14; 529(7585): 212–215	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.

Dan Faith	Ch.3	0	0		6995	Thuiller, Wilfried Sébastien Lavergne, Cristina Roquet, Isabelle Boulangeat, Bruno Lafourcade & Miguel. B. Araujo (24 February 2011) Consequences of climate change on the tree of life in Europe Nature 470, 531–534 doi:10.1038/nature09705	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Tonini, J. F. R., K. H. Beard, R. B. Ferreira, W. Jetz, and R. A. Pyron. 2016. Fully-sampled phylogenies of squamates reveal evolutionary patterns in threat status. Biol. Conserv. 204:23–31.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Veron et al. (2016) Loss and conservation of evolutionary history in the Mediterranean Basin. BMC Ecol 16:43	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	WILKINSON, MARK, PEDRO R. PERES-NETO, PETER G. FOSTER, AND CLIVE B. MONCRIEFF (2002) Type 1 Error Rates of the Parsimony Permutation Tail Probability Test Syst. Biol. 51(3):524–527.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Zhang Jian, Scott E. Nielsen, Youhua Chen, Damien Georges, Yuchu Qin,Si-Shuo Wang, Jens-Christian Svenning and Wilfried Thuiller (2016) Extinction risk of North American seed plants elevated by climate and land-use change. Journal of Applied Ecology 2016.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Yessoufou, Kowiyou, Barnabas H. Daru2,3 | Respinah Tafirei1 |Hosam O. Elansary4 | Isaac Rampedi1 (2017) Integrating biogeography, threat and evolutionary data to explore extinction crisis in the taxonomic group of cycads Ecology and Evolution. 2017;7:2735–2746.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
Dan Faith	Ch.3	0	0		6995	Yessoufou K. ∗, G.H. Stoffberg (2016) Biogeography, threats and phylogenetic structure of mangrove forest globally and in South Africa: A review. South African Journal of Botany 107 114–120.	Thank you for the valuable input. We have invited the reviewer to contribute to both chapters 2 and 3. Most of his comments were on the optional value of biodiversity (NCP 18) and are addressed in Chapter 2. In chapter 3 it is mentioned that phylogenetic diversity is considered as indicator for NCP 18 and phylogenetic diversity is considered in many places in the trend sections in 3.3 and 3.4.
PESC-4: Jonas Geschke	Ch.3	0	0	0	0	The chapter overall is particularly long and could be shortened by cutting the extensive descriptive text (e.g. describing each unit of analysis) and by focussing on policy-relevant status and trends.	see reply at line 2
PESC-4: Jonas Geschke	Ch.3	0	0	0	0	There is no paragraph providing a general summary of status and trends of UoAs for marine and terrestrial systems. This section should say for which UoA we are on track to achieve international level targets and which not and what are the reasons. Without this section, one cannot get an overview of how biodiversity and ecosystem functions overall are fairing in ECA and its subregions.	thank you for the valuable comment, we now have 3 paragraphs, one for each realm, reporting on progress towards CBD, EU biodiversity strategy, OSPAR and RAMSAR convention.
PESC-4: Jonas Geschke	Ch.3	0	0	0	0	Most terrestrial UoAs lack quantitative trends, with the exception of productive systems. All sections have mainly qualitative statements despite trends are known.	we have addressed this gap for the EU part of WE and CE using the Status of Nature Report, summarizing statusand trends of habitats listed in the EU Habitat Directive. For ther other subregions and UoAs not matching habitats in the directive we could not find quantitative data on trends in extent and intactness.
PESC-4: Jonas Geschke	Ch.3	0	0	0	0	There is confusion between status and trends and drivers of change. The section on trends often discusses trends in drivers rather than biodiversity (which instead should be in chapter 4), and the section on drivers sometimes includes text on biodiversity trends and some other times attributes these to drivers should be about drivers whereas the status and trends should be abou status and trends of biodiversity.	very good point, this has been addressed now
PESC-4: Jonas Geschke	Ch.3	0	0	0	0	Several sections are very undeveloped, specifically past and current trends of: Mediterranean Sea (thin in terms of status and trends despite the vast amount of literature and dedicated text in the global ocean assessment (section 7.2); Arctic Ocean (ditto); Black and Azov Sea (ditto, extensive work done in the global ocean assessment which could be complemented with more recent literature and synthesis work in the context of global policy targets); Northwest Pacific Ocean; Enclosed seas; Tropical and subtropical dry and humid forests; Mediterranean forests, woodland and scrub; Tundra; Drylands and Deserts; Wetlands, Peatlands, Mire and Bogs; Ice-dominated systems (we would have expected lots of material from the IPCC here on trends of ecosystem extent and intactness); Amphibians; Marine Fishes (this section is particularly disappointing); Fungi.	The World Ocean Assessment was used as a source of previous assessment data and relevant data and information was included in the chapter. For some sections we could not find much information e.g. NorthWest Pacific (EEZ from Russia) and for the Balck and Azov Seas. A subtantive effort was done to obtain more information including by contacting several researchers from the regions and having 2 as Controbuting Authours. As for other sections more information on trends was included but since there is strict space limitations we could not devote the same space there was in the WOA for each marine section.
PESC-4: Jonas Geschke	Ch.3	0	0	0	0	Future trends are not provided for all units of analyses. It would therefore make sense to have an overall section of future trends for ECA rather than attempting to assess them for each UoA given the limited evidence available.	We agree and have done so for the final document

Gregory Insarov	Ch.3	1	1	224	6995	Author team have done great work for accessing biodiversity in the ECA region. Comments below hopefully facilitate further improvement. 1.Continent Europe should not be cofused with territory of EU countries. Example I: Figure 3.2.3, p. 70. Proportion of current peatland area... in Europe.Continent Europe until Urals on the East is drawn. Example II: p. 51, lines 1555 - 1559. 'European forests"term is used after the report by Bastrup-Birk, Reker, & Zal, 2016. This report is about EU forests. Give definitions in the beginning and follow them in the chapter. 2. Carefuly check all Latin names of organisms and geographical terms. 3. Check references. Many quoted papers are not in the list of references By the way, this embarrass review process of the SOD. 4. Check all numbers. If a number is not taken directly from the literature source quoted, explain how if was obtained. 5. There is a lot of tables of the same type describing trends and drivers of biodiversity in different biomes, habitats etc.Author team may wish to ensure that data in every cell of each table are supported by a text in the chapter and reference(s). Otherwise it may looks likeexpert judgements not supported by literature. If no literature for data some cells, you may want to live them blank.	1. we referred to IPBES subregions when appropriate and otherwise we clarified where a statement applied. Europe is a problematic term as is not geographically defined always in the same way. No database follows IPBES regions and subregions which further complicates things. 2. done. 3. done 4. done 5. they were merged into one for taxa and one for units of analyses
Allan Watt	Ch.3	1	2			This is the only place that nature's contributions to people (NCPs) is mentioned in the chapter. Note comment on Chapter 2, page 9, above, which implies that the assessment covers capacity to provide NCPs.	Section 3.2 addresses how biodiversity underpins ecosystem services.
Anatoliy Khapugin	Ch.3	1	12	1	12	Correct name of author is "Oksana Lipka" (not Likpa!)	corrected
Anatoliy Khapugin	Ch.3	1	25	1	25	Please, correct "Russian Federsation" to "Russian Federation"	corrected
Anatoliy Khapugin	Ch.3	1	25	1	25	Maybe, name "Oxana" should be written as "Oksana" as it is for Oksana Lipka	corrected
André Mader	Ch.3	2	34	2	52	There seems a need for consistency inn use of terms such as, for example, "major systems" and "units of analysis". This is relevant here but also throughout the document	corrected
UNEP-WCMC: Elise Belle	Ch.3	3	57	191	5695	Throughout the document, the size - and in some cases the resolution or quality - of most figures should be increased (e.g. Figures 3.12, 3.16, 3.20, 3.22, 3.24, 3.27, 3.29, 3.30, 3.31, 3.34, 3.41, 3.46, 3.55, 3.58, 3.61, 3.62 and 3.71).	corrected
Hanna Skryhan	Ch.3	3	57	7	232	the summary doesn't reflect clearly the content of Ch.3, the summary should be more closer to the content of the chapter	it now follows the same structure of the chapter
Dmitry Schigel	Ch.3	3	57		89	Executive summary of Ch.3 is satisfactory, but seems to focus not on the status of biodiversity as such (which is expected), but only on the threatened or harvestable elements.	we report status and trends of all species for which there are data, e.g. number of species declining, stable or increasing 3.4.13 and executive summary.
EU: Ole Ostermann, JRC	Ch.3	3	58	3	61	Please start with a general statement comprising terrestrial and aquatic ecosystems, before concentrating on marine systems, e.g. the first paragraph of the introduction, p8 lines 236-241.	we follow the chapter structure in the executive summary
Thomas Brooks	Ch.3	3	58	3	58	Very important to retain consistency with IPBES definition of "biodiversity", which includes "ecosystems" (http://www.ipbes.net/sites/default/files/downloads/IPBES_2_INF_2_Add.1.pdf; also Pollination assessment p481, and Africa assessment SOD Chapter 1, Page 5, Lines 142-145). Therefore, delete "and ecosystems" here. This applies throughout the rest of the Chapter (e.g. line 237, line 243, line 244, line 251, line 257, line 276).	The IPBES Conceptual Framework according to IPBES decision-2/4 has a bos "Nature", which paraphrases biodiversity and ecosystems. This understanding is applied consistently in the chapter.
ECA values liaison group	Ch.3	3	58			Replacement of biodiversity and ecosystems with: Nature (biodiversity and ecosystems)	we have adopted the terminology of the literature we have used, and there was no specific obligation in the scoping document or from MEP and Bureau on use of NCP and Nature as opposed to Biodiversity and Ecosystem Services
PESC-4: Kristina Raab	Ch.3	3	58	7	232	Some of the bold statements in the Executive Summary don't have the qualifying statements (like 'well-established'). It would be better if each statement were consistently accompanied by a qualifying statement. (Or consistently unaccompanied)	done
Anatoliy Khapugin	Ch.3	3	67	3	67	"Data and knowledge is not available" should be corrected as "Data and knowledge are not available"	done
PESC-4: Kristina Raab	Ch.3	3	78	3	78	Please clarify this sentence. As it stands, it can be interpreted as only the positive trends being 'well established'. Please delete this 'well established', or add the appropriate qualifying statement to the information about general negative trends too, so as to represent the situation correctly.	This message has been rewritten and confidence language attrubuted more specifically.
Anatoliy Khapugin	Ch.3	3	81	3	81	Is "red sea" it "Red Sea"?	corrected
UNEP-WCMC: Elise Belle	Ch.3	3	81	3	81	"from the Red Sea"	corrected
Gregory Insarov	Ch.3	3	81	3	81	Should be Red, not red	corrected
MARKUS Fischer	Ch.3	3	83	3	83	ECA? In any case specify subregions and they, in case there are no data for some subregions.	corrected
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	Ch.3	3	83	3	85	Excellent use of these data disaggregating ECA Red List for marine species; very important to retain.	thanks we did
EU: Ole Ostermann, JRC	Ch.3	3	83	3	87	The total sums up to more than 100%. Please check.	sentence removed. However the sum of the trends approximates 100% the threatened figure doesn't have to do with having stable, increasing,declining or unkown trends
Thomas Brooks	Ch.3	3	83	3	85	Excellent use of these data disaggregating ECA Red List for marine species; very important to retain.	thanks, we did
Mark Rounsevell	Ch.3	3	86	3	86	Europe or ECA?	Throughout the chapter all references to "Europe" have been carefully checked and specified.
Anatoliy Khapugin	Ch.3	3	91	3	91	"non-native alien species" should be re-written as "alien species" or as "non-native species" because an alien species is a non-native species	Re-written as alien species
UNEP-WCMC: Elise Belle	Ch.3	3	98		98	Such as? Give at least one example of these significant changes.	The section was completely rewritten.
PESC-4: Kristina Raab	Ch.3	4	101	4	101	exec. Summary: Vulnerable Marine Ecosystem with capital letters is also a technical term unlikely to be understood by general audience. I would suggest using a more general formulation (even using same words uncapitalised could be OK but ambiguous whether referring to the technical term or not) in the exec summary. To what extent should non-experts understand the text? => can you just say "vulnerable ecosystems"?	Is not used anymore.
PESC-4: Bakhtiyor Karimov	Ch.3	4	105	4	105	"domestic and food production" should be changed to "industrial, domestic and food production"	The message was rewriiten and the comment does not apply any more.
Andrew Wade	Ch.3	4	106	4	106	In the list of pollutants , it would be appropriate to include nutrients as significant pollutants.	The message has been rewriten, so the comment does not apply any more. Pollutants, incl. nutrients, are considered in the text, however.
Mark Rounsevell	Ch.3	4	109	4	110	Do the specific targets need to be listed here, or in the non-bold text?	I have included the targets in brackets (i.e. targets, 2-4,6-12,14)
Germany	Ch.3	4	109	4	110	"respective Aichi biodiversity targets" - please specify the targets concerned	see above response
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	Ch.3	4	113	4	115	Excellent use of these data disaggregating ECA Red List for freshwater species; very important to retain.	It has been retained
Thomas Brooks	Ch.3	4	113	4	115	Excellent use of these data disaggregating ECA Red List for freshwater species; very important to retain.	It has been retained
PESC-4: Bakhtiyor Karimov	Ch.3	4	117	4	117	"many small lakes": also large lakes affected?!We suggest to simply put "lakes" (all lakes in arid areas are disappearing)	Agreed, many small lakes, has now been replaced with lakes
PESC-4: Bakhtiyor Karimov	Ch.3	4	118	4	119	add a specific point on the Aral Sea (check with ch.2)	A specific point about the Aral Sea has nos been included.
Amor Torre-Marin	Ch.3	4	119	4	119	This is the only time a quantitative confidence term is used. Replace by qualitative for consistency?	removed

UNEP-WCMC: Elise Belle	Ch.3	4	124	4	124	Over which time period?	the sentence has been removed
UNEP-WCMC: Elise Belle	Ch.3	4	131		131	Same question as above.	the sentence has been removed
PESC-4: Bakhtiyor Karimov	Ch.3	4	159	4	161	"due to climate change" => poor water and land use is the main cause (climate change is on top of that)	Drylands and deserts in Central Asia were significantly transformed into fields and suffer because of overgrazing. They are expanding due to climate change (well established) and progressing land degradation (3.2.2.3.6). Desertification can be reduced by adaptation measures in agriculture and water management, by 160 restoration and by maintaining riparian scrublands.
PESC-4: Rainer Schliep	Ch.3	4	159	4	161	"due to climate change" => poor water and land use is the main cause (climate change is on top of that)	Drylands and deserts in Central Asia were significantly transformed into fields and suffer because of overgrazing. They are expanding due to climate change (well established) and progressing land degradation (3.2.2.3.6). Desertification can be reduced by adaptation measures in agriculture and water management, by 160 restoration and by maintaining riparian scrublands.
PESC-4: Sophiko Akhobadze	Ch.3	4	159	4	161	"due to climate change" => poor water and land use is the main cause (climate change is on top of that)	Drylands and deserts in Central Asia were significantly transformed into fields and suffer because of overgrazing. They are expanding due to climate change (well established) and progressing land degradation (3.2.2.3.6). Desertification can be reduced by adaptation measures in agriculture and water management, by 160 restoration and by maintaining riparian scrublands.
PESC-4: Susanna Hakobyan	Ch.3	4	159	4	161	"due to climate change" => poor water and land use is the main cause (climate change is on top of that)	Drylands and deserts in Central Asia were significantly transformed into fields and suffer because of overgrazing. They are expanding due to climate change (well established) and progressing land degradation (3.2.2.3.6). Desertification can be reduced by adaptation measures in agriculture and water management, by 160 restoration and by maintaining riparian scrublands.
PESC-4: Bakhtiyor Karimov	Ch.3	4	160	4	160	mitagtion instead of adaptation	According to IPCC 5AR even if mitigation measures will be so successful, that we will reach carbon neutrality right now, a positive effect will be markable only at the second part of the century. According to Paris Agreement INDCs we can't expect it. Only adaptation measures can give positive results in a short time
Mark Rounsevell	Ch.3	5	140	5	144	This key finding is not clearly written, especially in terms of what is transformed into what. Is this deforestation to create grasslands? I thought that there is also an on-going process of grasslands becoming reforested? The point about climate change doesn't say what is being shifted upwards.	A word "subalpine' is missed in the text, that made the statement wrong. Yes, the trends are different: deforestation because of human activity, aforestation of abondoned territories, Shifting of a tree line and the upper boundary of the alpine belt upward in mountains because of climate changes.
MARKUS Fischer	Ch.3	5	140	5	144	3.2.2.3.4. refers to land above tree line (i.e. only alpine, not subalpine). Needs to be chgnaged in 3.2.2.3.4	It is crucially important to describe the subalpine belt because of high biological diversity, endemism and rare species. The best place to tell about it is in this UoA together with forest-tundra ecotone.
Anatoliy Khapugin	Ch.3	5	141	5	141	"and decline of rare species" should be re-written as "and decline of rare species populations" or as "and decline of populations of rare species" because species don't decline but species populations can be declined (through their vitality, quality/quantity)	Changed to 'and decline of populations of rare species'
EU: Ole Ostermann, JRC	Ch.3	5	145	5	147	"...increased in primary production and species richness. At the same time rare and endangered tundra species have declined (unresolved)". This seems to be presented as opposing trends, but one is not antagonistic to the other.	Yes, trends are opposite. Warming in Arctic is positive for productivity (effect of 'greening' tundra) and let to come more southern species. Extremal weather events and ice melting are negative for polar bear and reindeers particularly.
Mark Rounsevell	Ch.3	5	154	5	156	This isn't really a bold key finding, since it doesn't say anything about status and trends. These comments currently come at the end of the paragraph and would better form the bold texto.	we revised the whole executive summary and checked what sections should be bolded or not, taking this comment into account
UNEP-WCMC: Elise Belle	Ch.3	5	156	5	157	"not recognized enough as ecosystems providing important services (such as carbon accumulation"	text was re-written and considerably shortened. It is mentioned that unique functions of peatlands such as carbon storage, water regulation and biodiversity maintenance are increasingly lost by drainage and over-utilization.
ECA values liaison group	Ch.3	5	156	5	157	It is suggested to use 'contributions' as opposed to services in this sentence and also check that the terminology of the examples given under parenthesis reflect NCP categories for improved IPBES coherence.	see comment at line 110 terminology
Harald Pauli	Ch.3	5	158	5	158	you may add after '...over-utilized': 'and may become a carbon source through progressive climate change, causing detrimental feedback mechanisms.'	the text was shortened for the executive summary, this was deleted
UNEP-WCMC: Elise Belle	Ch.3	5	159		159	"Drylands and deserts are not very common in the ECA region but are found in Central Asia and are expanding"	"Not very common' can be said about many UoAs or their parts, so it is not written to make the text shorter.
PESC-4: Sophiko Akhobadze	Ch.3	5	160	5	160	not only desertification, add land degradation	Drylands and deserts in Central Asia were significantly transformed into fields and suffer because of overgrazing. They are expanding due to climate change (well established) and progressing land degradation (3.2.2.3.6). Desertification can be reduced by adaptation measures in agriculture and water management, by 160 restoration and by maintaining riparian scrublands.
Mark Rounsevell	Ch.3	5	166	5	167	"...climate change...": Presumably the previous statement about glaciers also refers to climate chnage, in which case this should be stated.	The extent of glaciers has decreased during the last decades due to climate change, with the nival belt shifting to higher altitudes (well established). Similarly the extent of polar deserts reduced due to climate change (well established). As a consequence, local biodiversity and vegetation productivity have slowly increased (established but incomplete), but the number of some rare species has declined (established but incomplete) (3.2.2.3.10).

UNEP-WCMC: Elise Belle	Ch.3	5	166		166	"of polar deserts has reduced"	Corrected
UNEP-WCMC: Elise Belle	Ch.3	5	167		168	Explain how biodiversity could have increased if the number of species has declined. Add reference.	Yes, trends are opposite. Warming in Arctic is positive for productivity (effect of 'greening' tundra) and let to come more southern species. Extremal weather events and ice melting are negative for polar bear and reindeers particularly. Referencies are in the tkext of the UoA.
EU: Ole Ostermann, JRC	Ch.3	5	168	5	168	The statement "...but the total number of species has declined" is not in line with the previous statement on tundra biome species richness, p5 lines 145-146. Please review.	Yes, trends are opposite. Warming in Arctic is positive for productivity (effect of 'greening' tundra) and let to come more southern species. Extremal weather events and ice melting are negative for polar bear and reindeers particularly. Referencies are in the tkext of the UoA.
Anatoliy Khapugin	Ch.3	5	170	5	170	"Protected areas" should be re-written as "Protected Areas"	changed and checked by the language editor
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	Ch.3	5	170	5	176	Excellent use of these data on protected areas and key biodiversity areas; very important to retain.	thank you
Thomas Brooks	Ch.3	5	170	5	176	Excellent use of these data on protected areas and key biodiversity areas; very important to retain.	thank you
PESC-4: Kristina Raab	Ch.3	5	170	5	176	exec. Summary: 'Key Biodiversity Areas' and 'Alliance for Zero Extinction sites' , Bird and Biodiversity Areas' are not understandable to a general audience and in my opinion do not belong in the executive summary: too technical. To what extent should non-experts understand the text? => Can you just rephrase to 'protected areas cover x % of areas designated by xx as important for xx' instead?	this text was re-written
Anatoliy Khapugin	Ch.3	5	172	5	173	"protected areas" should be re-written as "Protected Areas"	done
PESC-4: Kristina Raab	Ch.3	5	173	5	176	Please add a statement synthesizing your findings on protected areas in the marine realm - so far you cover only the terrestrial realm in this paragraph.	done
Anatoliy Khapugin	Ch.3	5	174	5	174	"protected areas" should be re-written as "Protected Areas"	done
UNEP-WCMC: Elise Belle	Ch.3	5	175		176	"followed by Eastern Europe and Central Asia"	done
PESC-4: Bakhtiyor Karimov	Ch.3	5	175	5	175	"more than a quarter" can you please provide the actual figure?	done
Anatoliy Khapugin	Ch.3	5	177	5	178	"with extinction" can be re-written as "with extinction risk"	the correct term is threatened with extinction, we have kept the original wording
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	Ch.3	5	177	6	187	Excellent use of these data on the Red List across ECA and its subregions; very important to retain.	thank you
EU: Ole Ostermann, JRC	Ch.3	5	177	5	181	The figures on endemic species are not clear (the highest percentage of species threatened, but not highest percentage of endemic)	we are not sure what is not clear, endemic is different from threatened, so there should not be an expection of ha sub-region having primacy on both
Thomas Brooks	Ch.3	5	177	6	187	Excellent use of these data on the Red List across ECA and its subregions; very important to retain.	thank you we have done so
Stuart Butchart	Ch.3	5	177			Important to keep this text on status and trends in extinction risk.	as above
UNEP-WCMC: Elise Belle	Ch.3	6	185	6	186	"reveal that the taxa the most affected by an increase in extinction risk vary"	removed
UNEP-WCMC: Elise Belle	Ch.3	6	188		188	"Future dynamics in"	paragraph removed
ECA values liaison group	Ch.3	6	188			Replacement of biodiversity and ecosystems with: Nature (biodiversity and ecosystems)	see comment at line 110 terminology
Anatoliy Khapugin	Ch.3	6	190	6	190	"is likely" should be re-written as "are likely"	sentence removed
Thomas Brooks	Ch.3	6	191	6	192	The Aichi Targets do not belong to the CBD alone (so delete "Convention on Biological Diversity" here).	done
UNEP-WCMC: Elise Belle	Ch.3	6	193		193	"are likely to be met for"	key message removed
Mark Rounsevell	Ch.3	6	198	6	198	Confidence statement needed here?	key message removed
MARKUS Fischer	Ch.3	6	198	6	198	Confidence statement needed here? And ideally also say whether this list is according to declining importance?	key message removed
MARKUS Fischer	Ch.3	6	202	6	202	CC is definitely relevant, but for BD land-use change asf matters at least as much.	key message removed
ECA values liaison group	Ch.3	6	204			For maintaining coherence with the IPBES conceptual framework, it is suggested to use 'Relationship between Nature (biodiversity and ecosystems) and its Contributions to People' instead of 'Relationship between biodiversity and ecosystems functions and services'	Subheadings were removed from the executive summary.
Mark Rounsevell	Ch.3	6	205	6	205	Why 'modern'? Not sure as well that a 'theory' should be a key finding. PErhaps re-write to relate more to status and trends? The last sentence seems more like a key finding.	"Modern" is not mentioned any longer and the message rephrased to focus on suggested key finding.
EU: Ole Ostermann, JRC	Ch.3	6	205	6	205	BES stands for biodiversity and ecosystem services, not for "biodiversity-ecosystem functioning" (BES). See also p170, line 4885. The work of Loreau (2010) does not use this abreviation.	We do not explicitly distinguish between BD-ES and BD-EF issues any more, but focus on concrete statements and now we use appropriate terms throughout.
PESC-4: Kristina Raab	Ch.3	6	205	6	205	abbreviation "BES" means "biodiversity and ecosystem services" in the IPBES context/acronym, please change the abbreviation to "BEF" here.	Such abbreviations are not used any more in the new executive summary.
PESC-4: Bakhtiyor Karimov	Ch.3	6	205	6	205	abbreviation "BES" means "biodiversity and ecosystem services" in the IPBES context/acronym, please change the abbreviation to "BEF" here.	Such abbreviations are not used any more in the new executive summary.
ECA values liaison group	Ch.3	6	206			It is suggested to replace ecosystem services by Nature's Contributions to People and Good Quality of Life	Now the term nature's contributions to people is used.
Mark Rounsevell	Ch.3	6	207	6	208	Not very clear	This has been rephrased completely.
Mark Rounsevell	Ch.3	6	212	6	212	"...BES theory predictions...": Spell out what these are? Also consider combining this key finding with the previous one.	The message has been completely rewritten.
EU: Ole Ostermann, JRC	Ch.3	6	217	6	218	Can there be ecosystem functioning without biodiversity? reformulate! Maybe consider high or lowdiversity, or alpha beta gamma diversity?	Now we refer to biodiversity loss or use terms such as higher or lower biodiversity, as suggested.
UNEP-WCMC: Elise Belle	Ch.3	6	222		222	"intraspecific diversity (local"	The message was rewritten and points on intraspecific variation made more clear.
UNEP-WCMC: Elise Belle	Ch.3	7	223	7	223	"species) and inter-specific diversity within"	The message was rewritten and points on intraspecific variation made more clear.

ECA values liaison group	Ch.3	7	225			It is suggested to replace ecosystem services by Nature's Contributions to People and Good Quality of Life	Now the term nature's contributions to people is used.
EU: Ole Ostermann, JRC	Ch.3	7	227	7	230	"...the positive effect of biodiversity on temporal stability..." Better the positive effect of high biodiversity, or the positive correlation of high biodiversity.	Now we state that higher biodiversity faciliates stable ecosystem functioning.
Anatoliy Khapugin	Ch.3	7	228	7	228	The abbreviation "ES" should be explained in the text	Abbreviations are now avoided.
ECA values liaison group	Ch.3	7	232			It is suggested to replace ecosystem services by 'their contributions to people and their link to a good quality of life	Now the term nature's contributions to people is used.
Gregory Insarov	Ch.3	7	282	7	282	For convinient of readers, these IPBES sub-regions should be described in the beginning of the chapter. Is Siberia part of the Eastern Europe sub-region? This is a natural question from a chapter readerwho is not familiar with IPBES definition of sub-regions . See also the first comment above.	A map of the subregions and table of countries per subregion is in Chapter 1 and thus not repeated in Ch3.
ECA values liaison group	Ch.3	8	236	8	237	In order to maintain consistency with Chapter 1 section 1.2.3 on how various chapters address the various elements of the IPBES CF, the introduction here should use the same terminology. 'This chapter assesses the existing knowledge related to the status, trends and future dynamics of Nature (biodiversity and ecosystems) underpinning nature's contributions to people' is better adapted.	The ECA team agreed to use nature's contributions to people and nature when summarising assessed information and to speak about ecosystem services or biodiversity when directly refering to literature where these terms are used and wheer statemenets would be too general otherwise.
André Mader	Ch.3	8	237			Note "benefits" should be "contributions"	This has been checked carefully throughout the chapter.
Harald Pauli	Ch.3	8	239	8	239	...animals and plants)...'	This has been generalised, i.e. the comment does not apply any longer.
UNEP-WCMC: Elise Belle	Ch.3	8	242	8	242	"There is no single baseline"	This has been generalised and shortened, i.e. the comment does not apply any longer.
Allan Watt	Ch.3	8	243			What are ecosystems traits? Misprint?	This has been changed completely.
ECA values liaison group	Ch.3	8	244			Replacement of biodiversity and ecosystems with: Nature (biodiversity and ecosystems)	The ECA team agreed to use nature's contributions to people and nature when summarising assessed information and to speak about ecosystem services or biodiversity when directly refering to literature where these terms are used and wheer statemenets would be too general otherwise.
Allan Watt	Ch.3	8	247			Functional diversity and other terms should be explained or defined. In the previous version an (incomplete) attempt was made to define them (Table 3.3: Indicators used for identification of past and current trends at taxa level). A definition of functional diversity is provided (hidden) on 4981-4982. This, or similar, should be included earlier. In any case, terms that many readers will be unfamilar with should be clearly defined when first mentioned.	We attempt to write as simple as possible and to define terms at first mention, unless they are in the glossary.
UNEP-WCMC: Elise Belle	Ch.3	8	248		248	"ecosystems are resilient under"	This has been changed completely.
Anatoliy Khapugin	Ch.3	8	259	8	259	"flux" should be changed on "migration"	The introduction has been shortened and this part deleted.
Anatoliy Khapugin	Ch.3	8	261	8	261	"2000); Dar &Reshi, 2014" should be corrected as "2000; Dar & Reshi, 2014"	The introduction has been shortened and this part deleted.
Anatoliy Khapugin	Ch.3	8	264	8	264	"Botkin et al., 2007, Bijlsma&Loeschcke, 2012" should be corrected as "Botkin et al., 2007; Bijlsma & Loeschcke, 2012"	The introduction has been shortened and this part deleted.
Anatoliy Khapugin	Ch.3	8	268	8	268	Reference (Bellard et al. 2012) should be re-placed at the end of the sentece	The introduction has been shortened and this part deleted.
Anatoliy Khapugin	Ch.3	8	270	8	270	"analysis of the impact of drivers'" should be re-written as "analysis of the drivers' impact" or as "analysis of the impact of drivers"	The introduction has been shortened and this part reworded.
ECA values liaison group	Ch.3	8	271	8	275	State that in across Chapter 3, the use of the term value refers predominantly to biophysical values as understood by the IPBES Values Guide. OR possibly a new paragraph could be created here to add text on the issue of intrinsic values cfr chapter 1 section on values	In chapter 3 ecosystem services are named explicitly in the section on the biodiversity - ecosystem service relation. The section on inherent/intrinsic value has been deleted.
ECA values liaison group	Ch.3	8	272			Replacement of biodiversity and ecosystems with: Nature (biodiversity and ecosystems)	The introduction has been shortened and this part reworded.
ECA values liaison group	Ch.3	8	273	8	275	Some wording adaptations are suggested: 'Link between biodiversity and ecosystem functioning and their eventual contribution to people and a good quality of life highlighting the possible influence of biodiversity change on the maintenance of these contributions.'	The introduction has been shortened and this part reworded.
ECA values liaison group	Ch.3	8	274			Consider the possibility to use the term 'nature's contribution to people' instead of 'ecosystem service provision' to allign with other chapters and the CF	The ECA team agreed to use nature's contributions to people and nature when summarising assessed information and to speak about ecosystem services or biodiversity when directly refering to literature where these terms are used and wheer statemenets would be too general otherwise.
ECA values liaison group	Ch.3	8	275			Since the FOD, the text regarding the intrinsic values seems to have been taken out. It is recommended to recognise these values of Nature and use the definition of the intrinsic values as used in Chapter 1 and state that IPBES acknowledges instrinsic values at its core using the CH 1 text as a basis. Please note that Chapter 2 only deals with anthropocentric values and Chapter 3 is the place to mention and recognise non-anthropocentric values.	Intrinsic values are now addressed in Chapter 1, in response to earluer reviewer comments.
ECA values liaison group	Ch.3	9	276			Replacement of biodiversity and ecosystems with: Nature (biodiversity and ecosystems)	The ECA team agreed to use nature's contributions to people and nature when summarising assessed information and to speak about ecosystem services or biodiversity when directly refering to literature where these terms are used and wheer statemenets would be too general otherwise.
ECA values liaison group	Ch.3	9	278			Replacement of biodiversity and ecosystems with: Nature (biodiversity and ecosystems)	The ECA team agreed to use nature's contributions to people and nature when summarising assessed information and to speak about ecosystem services or biodiversity when directly refering to literature where these terms are used and wheer statemenets would be too general otherwise.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	Ch.3	9	284	9	284	"endangered" has a specific technical meaning; please replace with "threatened". This applies throughout the rest of the Chapter (e.g. Tables 3.7, 3.8, 3.10, 3.11, 3.12, 3.13, 3.14, 3.15, 3.16, 3.18, 3.19, 3.20, 3.21, 3.22, 3.23, 3.24, 3.25, 3.26, 3.28, 3.29, 3.30, 3.38, 3.40, 3.41, 3.43, 3.46, 3.49; also line 3329).	These tables were all taken out and replaced by a single table were this indicator is not used anymore.
Thomas Brooks	Ch.3	9	284	9	284	"endangered" has a specific technical meaning; please replace with "threatened". This applies throughout the rest of the Chapter (e.g. Tables 3.7, 3.8, 3.10, 3.11, 3.12, 3.13, 3.14, 3.15, 3.16, 3.18, 3.19, 3.20, 3.21, 3.22, 3.23, 3.24, 3.25, 3.26, 3.28, 3.29, 3.30, 3.38, 3.40, 3.41, 3.43, 3.46, 3.49; also line 3329).	These tables were all taken out and replaced by a single table were this indicator is not used anymore.
Anatoliy Khapugin	Ch.3	9	285	9	285	"protected areas" should be re-written as "Protected Areas"	The term was replaced.
Mark Snethlage	Ch.3	9	285			here a map could be shown depicting the units of analysis, e.g. the terrestrial, freshwater and marine ecoregions of the world (if the correspondence is 1 to 1). Also a map of dominant land cover could be included. There are various options such as: e.g.: Global Land Cover Project http://forobs.jrc.ec.europa.eu/products/glc2000/glc2000.php; the Global Land Cover SHARE database http://www.glcn.org/databases/lc_glcshare_en.jsp. For each subsection, and overlay could be made including ecoregion (dim background) and actual land cover, based on the same map layers. see below	The general map of the regionis presented in Chapter 1. Specific maps concerning different units of analysis are included throughout Chapter 3.
Kristina Raab	Ch.3	9	288	10	318	Section titles are very similar and it is unclear what the difference is between them. Please clarify in text or remove one of these section(title)s	Corrected
Mark Snethlage	Ch.3	9	288			"3.2.2.1.1 Northeastern Atlantic Ocean" -> "3.2.2.1.1 Introduction" ?	Corrected

Mark Snethlage	Ch.3	9	288			here to show the marine environment diversity, Global Seafloor Geomorphic Features Map http://geonode.grida.no/maps/79/ for ECA EEZ could be included. In order to show more detail, sub maps (Atlantic, Baltic, North Sea, Mediterranean, etc) could be shown instead of one comprehensive map for the whole ECA region.	A map of ECA Marine areas is in Chapter 1. Separate more detailed maps were included in relevant sections of Chapter 3.
Allan Watt	Ch.3	9	291			Use of "feature(s)" in this paragraph confusing (as pointed out in review of the FOD).	taken out
PESC-4: Kristina Raab	Ch.3	9	300	9	300	Change 226000 to 0.226 million (for consistency / better comparison to previous numbers you state)	Here the numbers were removed, as they referred to marine species in general, not just NE Atlantic. In general, numbers were checked to be unambiguous.
PESC-4: Kristina Raab	Ch.3	9	306	9	306	Please explain why pelagic and soft-sediment ecosystems have long term datasets - is it always fisheries ? Please also add a sentence: Due to the scarcity of data from scientific monitoring schemes, vessels of opportunity have been used in some areas to monitor plankton communities (Warner & Hays 1994 https://doi.org/10.1016/0079-6611(94)90011-6 ; Richardson et al. 2006 https://doi.org/10.1016/j.pocean.2005.09.011)	text was completely rewritten and significantly shortened so these additions were not introduced
PESC-4: Kristina Raab	Ch.3	9	308	9	310	Please add: 'Even within the relatively well documented pelagic systems the role of gelationous zooplankton (comprising taxa from several phyla) is virtually unknown, despite increasing recognition of their importance in marine food webs' (e.g. JOURNAL OF PLANKTON RESEARCH, VOLUME 31 j NUMBER 5, PAGES 525–540, 2009; TREE: http://www.cell.com/trends/ecology-evolution/fulltext/S0169-5347(16)30076-3#). See also https://www.researchgate.net/publication/281618169_Interactions_of_gelatinous_zooplankton_within_marine_food_webs	text was completely rewritten and significantly shortened so these additions were not introduced
Allan Watt	Ch.3	9	311	9	317	Evidence needed, either references or links to subsequent sections (as pointed out in review of the FOD).	Evidence is provided in the text on the units, especially for the Atlantic
EU: Ole Ostermann, JRC	Ch.3	9	314	9	315	"...changes in species abundance with opposite patterns observed according to species; " Not clear: meaning that depending on the species, abundance may go up or down?	Sentence was taken out
Kristina Raab	Ch.3	9	316	9	317	If marine protected areas capitalised here have a special meaning, please clarify	No special meaning here - in general, capitilisation of all terms has been checked and harmonised for all chapters.
UNEP-WCMC: Elise Belle	Ch.3	9	317	9	317	You could also add that: "In the ECA region, protected area coverage for coastal and marine areas under national jurisdiction has more than quadrupled in the last decades, from 1.2% (232,802 km2) in 1990 to 4.9% (980,042 km2) in 2017 (UNEP-WCMC and IUCN, 2017). Reference: UNEP-WCMC and IUCN (2017). Protected Planet. Cambridge, UK: UNEP-WCMC and IUCN. Available at: www.protectedplanet.net.	We used this data, but did not have space for the full sentence.
Nadine Goris	Ch.3	10	326	10	326	should be “Past and current trends”	No longer apply as this heading has been removed
UNEP-WCMC: Elise Belle	Ch.3	10	331	10	331	Title of graph: "Documented changes (species numbers) per functional group"	Corrected
UNEP-WCMC: Elise Belle	Ch.3	10	333		333	"in distribution, abundance or functioning"	Corrected
Anatoliy Khapugin	Ch.3	10	336	10	336	As I can see, the dotted line is not "dark green". It is rather dark blue. I suggest just delete indicating of colour for dotted line	Done. "dark green" has been deleted
Amor Torre-Marin	Ch.3	10	339	10	339	"well established": Confidence term? If so it should go between brackets. If not alternative wording should be used.	This is a confidence term: it now goes between brackets
Anatoliy Khapugin	Ch.3	10	339	10	341	The mentioning on figure 3.1 should be replaced to above the figure 3.1	Done. The paragraph has been moved above the figure.
Diana Bowler	Ch.3	10	342	10	242	Hiddink et al. 2014. Temperature tracking by North Sea benthic invertebrates in response to climate change. Global Change Biology. 21: 117-129 - this would also be nicely cited here.	The reference (Hiddink et al. 2015) is now included in this paragraph. It is indeed relevant in context and provides a robust example for marine invertebrates (thus addressing comments regarding the need to expand references to marine invertebrates (comments by K. Raab))
Anatoliy Khapugin	Ch.3	11	345	11	345	"-1" in "23 km.yr-1" should be presented in superscript	Done.
Kristina Raab	Ch.3	11	347	11	347	Please insert information on phytoplankton (changes in intactness and function) and non-copepod zooplankton. In the North Sea for instance the dominance of dinoflagellates relative to diatoms in North Sea phytoplankton appears to have increased during the 1980s (McQuatters-Gollop et al. 2007a). Overall phytoplankton biomass appears to have increased in the same period however (Reid et al. 1998, McQuatters-Gollop et al. 2007b). In terms of effects on the food web/function: diatoms are considered to be a better food source than dinoflagellates. It is therefore possible that the food quality for grazing zooplankton may have decreased in terms of energetic content for instance...(but the overall increase may make up for the relative decrease of diatoms). Reid PC, Edwards M, Hunt HG, Warner AJ (1998) Phytoplankton change in the North Atlantic. Nature 391:546-546; McQuatters-Gollop A, Raitsos DE, Edwards M, Attrill MJ (2007a) Spatial patterns of diatom and dinoflagellate seasonal cycles in the NE Atlantic Ocean. Mar Ecol Prog Ser 339:301-306 McQuatters-Gollop A, Raitsos DE, Edwards M, Pradhan Y, Mee LD, Lavender SJ, Attrill MJ (2007b) A Long-Term Chlorophyll Data set Reveals Regime Shift in North Sea Phytoplankton Biomass Unconnected to Nutrient Trends. Limnol Oceanogr 52:635-648	Because of length limitations, we could not detail the example provided by the reviewer. We however agree that changes on phytoplankton are important and can have important consequences on non-copepod zooplankton. We thus included and cited one reference suggested by the reviewer (McQuatters-Gollop et al. 2007a) to mention specifically changes in abundances of phytoplankton.
Diana Bowler	Ch.3	11	363	11	368	On the point about biotic homogenization, Magurran et al. (2015). Rapid biotic homogenization of marine fish assesmblages. Nature Communications, 8405 could also be cited. This paper suggests that climate change is causing spatial homogenization of North Atlantic groundfish assessmblages. Species richness at local scales hsa remain unchanged but there is has reorganization of communities.	The reference is now cited.
Anatoliy Khapugin	Ch.3	11	364	11	364	"influx" should be corrected as "invasion" or as "penetration"	"influx" was replaced by "introduction"
Anatoliy Khapugin	Ch.3	12	390	12	390	"and" used for references with two authors here. However, there are cases when "&" used for this purpose. One of these variants should be selected through the whole assessment	All citations are now cited with the same format (agreed across the whole ECA assessment). Final check will be done in the last version
PESC-4: Kristina Raab	Ch.3	12	391	12	391	sentence and figure 3.2 do not match => it should probably refer to Figure 3.1 instead	This was indeed an error:Fig.3.1 should habe been cited here.This is corrected
PESC-4: Kristina Raab	Ch.3	12	391	12	391	Before 'Altogether' please insert more information on phenological changes. These are crucial for match/mismatch of predators and prey, as well as for life history closure related to other factors than trophic ones (e.g. temperature/currents). Suggested text: 'Phenological changes can affect populations through various mechanisms and small changes can have large impacts on populations. Taking the example of fish, for instance, phenological changes may affect the match or mismatch in timing with food resources (Cushing 1990) or the (lack of) spatial overlap with suitable environmental conditions (Sinclair & Iles 1989). Even if the effects on growth or mortality are small, they can result in large population-level changes (Houde 1989). Only when each life history stage of the organism survives and makes it to the next stage until spawning is there life history closure (Petitgas et al 2010) allowing population survival.	We fully agree with the importance of phenological changes. Although we could not included all the text provided by the reviewer, we included part of it and also cited here one reference Thackeray et al. 2010 in whic many examples of impacts are provided with references.
PESC-4: Kristina Raab	Ch.3	12	392	12	392	Please delete 'although not for every taxa, region or ecosystem'. This need not be stated as it is obvious that not all taxa, regions, ecosystems respond in the same way, and it also minimizes/devalues the first part of the sentence.	Right. This was deleted.
EU: Ole Ostermann, JRC	Ch.3	12	394	12	394	The third dimension of the figure 3.2 only adds confusion, modify to 2D please.	Done. Figure is now in 2D
Anatoliy Khapugin	Ch.3	12	404	12	404	"protected areas" should be re-written as "Protected Areas"	Done
Anatoliy Khapugin	Ch.3	12	405	12	405	The space is needed between 174 and km	Done
EU: Sophie Condé	Ch.3	12	412		413	Dont understand where comes from the "10% of marine habitats"	sentence rephrased
EU: Ole Ostermann, JRC	Ch.3	12	417	12	417	"...they are thus graded 2 ..." Please replace by " they are thus graded 2, high impact, ... "	done
Diana Bowler	Ch.3	13	423	13	423	The above Hiddink paper suggests that, despite range shifting, organisms are lagging behind the pace of change.	We agree. But the sentence here is to highlight that the observed changes can be explained by climate change. It is not stated that the observed changes are enough to respond positively and efficiently to climate change. We thus kept the sentence as it is.

Anatoliy Khapugin	Ch.3	13	440	13	440	"(e.g. land defences, offshore structure; (European Environment Agency, 2015a)" should be corrected as "(e.g. land defences, offshore structure) (European Environment Agency, 2015a)"	done
Anatoliy Khapugin	Ch.3	13	443	13	443	"Overxploitation" should be corrected as "Overexploitation" in fourth columns of drivers of the Table 3.1	This table was removed (the information are now inluded in a table summarizing the findings over the whole chapter).
UNEP-WCMC: Elise Belle	Ch.3	13	443	165	4792	Table 3.1: For all Summary of trends tables in the document, I would suggest making them visually clearer by using for example a circle of different sizes to represent the strength of the impact (i.e. small for '1', large for '2') and colours for the direction of the impact (e.g. red for a decrease, green for an increase...), and then delete the first two columns of 'General Trends' (if they apply to all the drivers in the same way).	This table was removed (the information are now inluded in a table summarizing the findings over the whole chapter).
EU: Ole Ostermann, JRC	Ch.3	13	443	13	444	Table 3.1: Summary of trends and their drivers, this and the following trend tables: Please add P and C to the legend, or better fill "past" and "current" into all columns (as done in one of these tables).	This table was removed (the information are now inluded in a table summarizing the findings over the whole chapter).
Kristina Raab	Ch.3	13	443	13	446	tables 3.1, 3.2, 3.4, 3.5 and other equivalent tables: please change 'land use change' to 'sea use change' to avoid confusion. Also, please make consistent across tables the column names - currently some are (land) 'use change', some are just (land) 'use'.	Tables have been collated and changed completely.
PESC-4: Kristina Raab	Ch.3	13	443	13	446	table 3.1 and 3.2: information (i.e. the rows included) not as detailed as other equivalent tables like 3.4 and 3.5, please make this consistent across tables. Please merge tables to one big table to provide a better overview and use color-code rather than numbers. Please provide explanation for P and C, e.g. by putting them in brackets after 'Past' and 'Current' in the 2nd and 3rd column of the table.	These tables has been deleted and included in a global table
Kristina Raab	Ch.3	13	447	15	527	Please add information on algal blooms and gelatinous zooplankton blooms in the Mediterranean section.	Blooms are considered.
Mark Rounsevell	Ch.3	13	448	13	448	I don;t think all of this descriptive text is really needed for the assessment. Reduce?	done
EU: Ole Ostermann, JRC	Ch.3	14	454	14	454	What is "ca 5Ma"? Ca 5 million years ?	Numbers have been checked throughout the chapter and expressed unambiguously.
Anatoliy Khapugin	Ch.3	14	459	14	459	Units should be added here: "(38 to 39.5)"	Units were checked throughout the chapter.
EU: Ole Ostermann, JRC	Ch.3	14	459	14	459	"highly saline (38 to 39.5) concentration" Which unit? per mille ?	Units were checked throughout the chapter.
EU: Ole Ostermann, JRC	Ch.3	14	465	14	465	"...the sea is host..." Probably the Mediterranean sea ?	yes
Kristina Raab	Ch.3	14	481	14	481	Insert information on gelatinous zooplankton in the Mediterranean. Importance of gelatinous zooplankton in food webs generally: Hamilton Nature News 2016,5 3 1: 4 3 2; Hovin & Haddock 2017 DOI: 10.1038/srep44952. Mediterranean example: Compte MEPS Vol. 402: 147–159, 2010 doi: 10.33+G2654/meps08453. iv ; Brotz & pauly 2012 ACTA ADRIAT., 53(2): 211 - 230, 2012 Boero F. Review of jellyfish blooms in the Mediterranean and Black Sea. Studies and Reviews. General Fisheries Commission for the Mediterranean. No. 92. Rome, FAO 2013. 53 p.	Such blooms are now considered.
Anatoliy Khapugin	Ch.3	14	492	14	492	"protected areas" should be re-written as "Protected Areas"	Capitalisation has been unified througout chapters, thus protected area was left.
Anatoliy Khapugin	Ch.3	15	502	15	502	"protected areas" should be re-written as "Protected Areas"	Capitalisation has been unified througout chapters, thus protected area was left.
Anatoliy Khapugin	Ch.3	15	513	15	514	The order of references "Terlizzi et al., 2011; Deudero et al. 2011; Felline et al., 2014; Alomar et al., 2016" is chronological; however, in other places references may have alphabetical order, as it in lines 420-421: "Barceló et al., 2016; Beaugrand et al., 2013; Birchenough et al., 2015; Fossheim et al., 2015; Hiddink and Ter Hofstede, 2008; Montero-Serra et al., 2015; Poloczanska et al., 2016". Any one order should be used. This should be checked through the whole text of assessment. The same situation with comma usage. There are cases when "Author, Year" used and when "Author Year" used.	All references are checked and formattted in the same way across all chapters.
Anatoliy Khapugin	Ch.3	15	524	15	524	"Overxploitation" should be corrected as "Overexploitation" in fourth columns of drivers of the Table 3.2	Table completely changed.
Mark Rounsevell	Ch.3	16	529	16	529	Again, the descriptive texto could be reduced here and elsewhere in the chapter	Since our descriptive text is only 7 lines and fit in one paragraph, we did not reduce it at this stage.
Anatoliy Khapugin	Ch.3	16	539	16	539	"and fish" should be corrected as "and fishes"	corrected in the new version
Anatoliy Khapugin	Ch.3	16	561	16	561	"fish" should be corrected as "fishes"	corrected in the new version
Oliver Lindecke	Ch.3	16	566	585	17	There are several migratory bat species crossing the Baltic see in some regions or migrating directly along the coastline. These are all listed in the Bonn Convention of Migratory Animals are listed in red lists of every country surrounding the Baltic Sea. Although populations estimates are particulary hard to get for this taxon there is reason to be alarmed. Windturbine development which is especially enforced along coastlines, and off-shore in proximity to the shore, will account for anthropogenic induced losses among bats. see e.g. Voigt et al. 2012 The catchment area of wind farms for European bats: A plea for international regulations. Biol. Conserv. 153	A sentence regarding migratory bats was added to the new version. "In addition several migratory bat species populations are negatively impacted by wind turbine development (Voigt et al. 2012)."
Anatoliy Khapugin	Ch.3	17	568	17	568	""critically endangered" status" should be corrected as "Critically Endangered status"	corrected in the new version
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	Ch.3	17	568	17	569	Reference is Hammond et al. (2008) http://www.iucnredlist.org/details/17031/0	reference was added to the new version
Thomas Brooks	Ch.3	17	568	17	569	Reference is Hammond et al. (2008) http://www.iucnredlist.org/details/17031/0	reference was added to the new version
Thomas Brooks	Ch.3	17	571	17	571	It's not clear what "conservation" refers to here. Delete - unnecessary. This applies throughout the rest of the Chapter (e.g. line 575, line 3098, line 3332, Table 3.34, 3.37, 3.39, 3.48, 3.50).	the paragraph was changed in the new version
EU: Sophie Condé	Ch.3	17	575		576	"Conservation status of marine mammals in the Baltic considered as unfavourable for most of species assessed" I dont understand where comes from this statement,	the paragraph was changed in the new version
Finnish Government	Ch.3	17	604			you should use the latest HELCOM Red list assessment from 2013!!!	reference was changed in the new version
Kristina Raab	Ch.3	18	614	18	614	Information on alien jellyfish in the Baltic : Jaspers et al 2013 J. Plankton Res., 35:582-594... please note that 'Some of these IAS have been related to significant changes in other ecosystems'. (see Mnemiopsis in the Black Sea section)	In the Baltic Sea the alien jellyfish is only present in a small proportion of the southern Baltic Sea. There are much more wide spread invasive species (e.g. the round goby) with clear impacts in the Baltic Sea, that could be discussed in the invasive species section, thus jellyfish were not added to the report. If there is need to add more info on invasive species, we are happy to add to our text, but since text length is a limiting factor we did not add further more detailed information at this point.
Finnish Government	Ch.3	19	646		647	Should use new information, not almosti 8 years old data, altouhg in the refence list there is e.g. Red list 2013 publications include	In the 2013 Red list publication, the status of biodiversity is not assessed for different Baltic Sea areas and for larger communities. We added a column indicating available 2013 Red List Categories.

Mette Skern-Mauritzen	Ch.3	20	669	22	724	The section on Arctic oceans is lacking a description of major changes. The arctic systems are the systems with strongest warming; In the Barents Sea we see shift in species communities with a take-over by boreal species and retreat in arctic species (Fossheim et al. 2016 Nature Clim Change), increasing primary and secpondary production (Dalpadado et al. 2014) and in the pelagic compartments of the system (Eriksen et al. 2016), while the benthic compartment is decreasing (Jørgensen et al 2016). This rearrangement of the system alters the functional diversity (Weidmann et al.) and the structure of food webs (Korstsch et al.) that decrease compartmentalization of the system and increase system vulnerabiltiy toperturbations, such as climate change	I agree with this comment only partly. 1. most of the changes mentioned in the comment are already in the section. 2. the section is on the Eurasion Arctic Seas not on the Barents Sea, things look more simple and clear if we focus only on this sea and especially on the part of it experiencing the Gulf Stream impact - this the part where the most of the research was done. Picture is getting much more complicated when we move to the scale of the Eurasian Arctic. 3. I'd cite some of the publications I missed (or published after I finished my review) and will incorporate and clarify the statements I missed
Mark Snethlage	Ch.3	21	704			map of retreating Arctic Sea Ice? E.g. Extent of Arctic Sea Ice in September (time series:) ftp://sidads.colorado.edu/DATASETS/NOAA/G02135/shapefiles/Sep/shp_extent/	No map added due to space reasons.
UNEP-WCMC: Elise Belle	Ch.3	22	720	22	724	Table 3.4: See comments on Table 3.1. Also, you could replace empty cells with a 'U' for 'Unknown'.	Tables were collated and changed completely.
Andriy-Taras Bashta	Ch.3	22	729			422000 km²	Changed.
EU: Ole Ostermann, JRC	Ch.3	22	739	22	740	"The disturbance of the natural balance between the two layers could trigger irreversible damage to the people and ecosystem of the Black Sea (Rice et al. 2016)." Please add a word how this can happen.	Text was re-written
Kristina Raab	Ch.3	23	762	23	772	The nomenclature of the gelatinous zooplankton taxa and species is correct but for non experts likely very confusing as there is a mix of technical and common language used for the same groups/taxa in the same paragraph. I suggest reducing and simplifying the vocabulary used. So please change 'jellyfish' in line 766 to 'gelatinous zooplankton'. Please change 'comb jelly' in line 765 to 'ctenophore' for consistency with rest of paragraph. Please change 'jellyfish and ctenophores' to 'gelatinous zooplankton' or 'gelatinous zooplankton (including ctenophores)' or 'gelatinous zooplankton (including cnidarians and ctenophores)' if that is what is what you mean and want to specify.	Text was changed
PESC-4: Bakhtiyor Karimov	Ch.3	23	765	23	765	delete "caused by nutrient enrichment" (which is eutrophication)	Done
EU: Ole Ostermann, JRC	Ch.3	23	777	23	782	a verb is lacking in this sentence.	Done
Kristina Raab	Ch.3	24	798	24	798	I would suggest specifying which non-gelatinous zooplankton is meant here. I assume copepods, and fish eggs /larvae - as anchovy eggs are mentioned.	Not mentioned in the literature
Kristina Raab	Ch.3	24	800	24	800	Is this the non-gelatinous zooplankton ? If yes, please keep consistent how it is referred to in this paragraph.	ok
EU: Ole Ostermann, JRC	Ch.3	24	816	24	816	"It caused damage to the of anchovy and sprat populations" Something is missing here, or too much, e.g." It caused damage to the anchovy and sprat populations" ?	Changed.
EU: Ole Ostermann, JRC	Ch.3	24	824	24	824	Please explain "neritic".	coastal sea zone
EU: Ole Ostermann, JRC	Ch.3	25	831	25	832	Please explain "anadromous" and "catadromous".	standard terms
Kristina Raab	Ch.3	25	857	25	857	What does 'rr' mean in this table ? Please specify here and in any equivalent tables.	It was a mistake, changed
Mark Snethlage	Ch.3	26	859			Table 3.7. indicator "Fishing": does that mean fish landings and is it an indicator for fish abundance? Indicator "Habitat conditions": is it similar / equal to " ecosystem intactness"?	Tables were collated and changed completely.
Amor Torre-Marin	Ch.3	27	866	27	866	Figure needs caption	Added
UNEP-WCMC: Elise Belle	Ch.3	27	866	27	866	There is no figure legend. The figure could be deleted.	What type of legend? This is only a chart of the region
Hanna Skryhan	Ch.3	27	866	27	866	Is this picture necessary here?	I think that an illustration is needed here
UNEP-WCMC: Elise Belle	Ch.3	28	880	28	883	Add colour legend.	Figure has been replaced
Mark Snethlage	Ch.3	28	888			a bit confusing having a map showing land in blue and sea in white	This is an author's illustration. I can not change colors
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	Ch.3	29	911	29	911	Reference is Reilly et al. (2008) http://www.iucnredlist.org/details/8099/0	Cited as IUCN 2015
Thomas Brooks	Ch.3	29	911	29	911	Reference is Reilly et al. (2008) http://www.iucnredlist.org/details/8099/0	Cited as IUCN 2015
Kristina Raab	Ch.3	30	920	30	920	Harmful algal blooms are mentioned here but not in the Mediterranean section - why ? I am wondering whether it is too normative to call these algal blooms 'harmful' in a text section on status & trends, rather than in a section on effects on humans where such a judgement would be appropriate. I know it is a commonly used phrase but maybe worth considering whether to keep it or not.	Blooms now also in Mediterranean section.
Mark Snethlage	Ch.3	31	957			"Table 3.8: Species and ecosystem trends in Ice-dominated systems" should be "Table 3.8: Summary of trends and their drivers in the Northwest Pacific Ocean"	I agree. Thank you
Mark Rounsevell	Ch.3	31	960	31	960	Are there 'deep seas' within the territorial waters that ECA covers? If not then this section is not necessary.	there are many areas as can be seen in the map now
Mette Skern-Mauritzen	Ch.3	31	961	31	961	It should be defined which ecoregions are included in the Deep Sea category; the Norwegian Sea, the Greenland Sea….?	All deep sea in ECA is included
Hanna Skryhan	Ch.3	33	1022	35	1066	The Box about Aral sea is in the Ch.2. it has sense to unite this text with the text in the Ch.2	Chapter 2 is dedicated to ecosystem servicies, Chapter 3 - to state of biodiversity per Units of Analysis. The information and messages are different.
UNEP-WCMC: Elise Belle	Ch.3	34	1047	34	1049	Figure 3.10 not referenced in the text.	corrected
Mark Rounsevell	Ch.3	35	1056	35	1057	"…climate change…": Not also anthropogenic?	Yes, also antropogenic, but indirect
UNEP-WCMC: Elise Belle	Ch.3	36	1073	36	1074	Figure 3.11 not referenced in the text (but perhaps not needed).	corrected
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	Ch.3	37	1105	37	1105	No sufficient evidence to document extinction. The species is assessed as "Critically Endangered" (Rintelen & Van Damme 2011; http://www.iucnredlist.org/details/full/188971/0).	From the IUCN assessment: 'This species is thought to be extinct in both the Caspian and the Aral Sea. It has not been recorded in the Caspian Sea since the 1940s (Rosenberg and Ludyanskiy 1994, Starobogatov and Andreeva 1994). It was last recorded in the Aral Sea in 1980 (Aladin and Potts 1992), and was reported to be absent from the Aral Sea in 1989 (Andreev et al. 1992).' Will be changed to: Some of these drove endemic species (e.g. the bivalve Dreissena caspia) to almost total extinction (Dumont, 1998) The reference for IUCN is also added.

Thomas Brooks	Ch.3	37	1105	37	1105	No sufficient evidence to document extinction. The species is assessed as "Critically Endangered" (Rintelen & Van Damme 2011; http://www.iucnredlist.org/details/full/188971/0).	From the IUCN assessment: 'This species is thought to be extinct in both the Caspian and the Aral Sea. It has not been recorded in the Caspian Sea since the 1940s (Rosenberg and Ludyanskiy 1994, Starobogatov and Andreeva 1994). It was last recorded in the Aral Sea in 1980 (Aladin and Potts 1992), and was reported to be absent from the Aral Sea in 1989 (Andreev et al. 1992).' Will be changed to: Some of these drove endemic species (e.g. the bivalve Dreissena caspia) to almost total extinction (Dumont, 1998)
EU: Ole Ostermann, JRC	Ch.3	37	1116	37	1117	"...annual killing has been 20000 to 25000 whitecoat and moulted pups a year." Trend up or down? from how many? any comparison or baseline?	Added: Overall, the hind-casting analysis indicated a population reduction of about 66% during 1867-1964 and a further reduction of 73% during 1965-2005
UNEP-WCMC: Elise Belle	Ch.3	38	1146	38	1148	Figure 3.12 not referenced in the text. Also relatively old data so could be deleted.	The reference is added. As we assess not only current, but also past trends, we sometimes use reletively old data.
PESC-4: Bakhtiyor Karimov	Ch.3	39	1159	39	1159	brackish is indicated with the wrong range of salt (freshwater up to 1g/l / brackish up to 22g/l / sea water more than 22g/l). See references here: https://en.wikipedia.org/wiki/Salinity	Changed, according a special classification for lakes, to: Based on the salt content saline lakes can be classified as brackish (salt content in the range 1-35 g/l), saline (above 35 g/l) or hypersaline (above 50 g/l) lakes (Zheng, 1997).
Mark Snethlage	Ch.3	39	1174			"99 species of swimming and wetland birds" perhaps replace with: -> 99 species of water and wetland birds OR -> 99 species of wildfowl and shorebirds	Changed to '99 species of water and wetland birds'
UNEP-WCMC: Elise Belle	Ch.3	39	1182	39	1183	"Many of them are part of Ramsar sites or are covered, at least partly, by protected areas. For example,"	corrected
ECA values liaison group	Ch.3	39	1184			The correct name of the lake is Burdur not Buldur	corrected
UNEP-WCMC: Elise Belle	Ch.3	40	1186	40	1187	Figure 3.13 not referenced in the text (but perhaps not needed).	corrected
Hanna Skryhan	Ch.3	40	1187	40	1187	there is no link to the figure 3.13 in the text	corrected
PESC-4: Bakhtiyor Karimov	Ch.3	40	1197	40	1198	this content is not correct, Glazovsky and Orlov might be wrong. See: 1. Sanin, M.V., Kostjukovski, V.I., Shaporenko, S.I., 1991. Lake Sarykamish and accumulatory waterbodies of the collector-drainage waters. Nauka, Moscow, 149 pp. (in Russian). www.fao.org/docrep/v9529e/v9529E00.htm 2. Petr, T. (ed.) Inland fisheries under the impact of irrigated agriculture: Central Asia. FAO Fisheries Circular. No.894. Rome, FAO. 1995. 62 p.	We added these referencies into an additional list and mentioned, that 'According to many others, these lakes, despite been polluted with agricultural chemicals, are productive and very important for the biodiversity conservation, fisheries, migration birds and recreation'. If an information was published in scientific literature, we have to reflect both opinions.
Amor Torre-Marin	Ch.3	40	1212	40	1212	"well established": Confidence term? If so it should go between brackets. If not alternative wording should be used.	Analogous situation was observed well established for the Aydar-Arnasay lake system in middle reach of Syr Darya river basin (Karimov et al., 2009, Thorpe et al., 2011).
UNEP-WCMC: Elise Belle	Ch.3	41	1225	41	1230	Table 3.12: See comments on Table 3.1. Also, I find the separation of the 3 sub-regions by commas quite confusing. Perhaps, you could have one line for the whole region followed by a line for each subregion, and add before each figure (or circle) the initial of the sub-region (i.e. ECA, WE, CE, EE, and CA). This should be applied to all Summary of trends tables in the document.	The rules and indicators in the tables have been changed. All tables are summurised in one general for the chapter.
UNEP-WCMC: Elise Belle	Ch.3	41	1228		1228	"ECA-wide trends, bottom arrows indicate sub-regional"	The rules and indicators in the tables have been changed. All tables are summurised in one general for the chapter.
Sonja Jähnig	Ch.3	41	1232	42	1257	3.2.2.2 Inland surface water – I have difficulties following the sequence of statements in the overview section; nothing mentioned on invasive species?!	Part of it has been moved to the driver section and a point on invasive species as a driver of FW biodiversity decline included
Mark Snethlage	Ch.3	42	1242			"Out of three planetary biodiversity hotspots identified for the ECA region one that is the Mediterranean basin is applicable for freshwater systems." Meaning of this sentence not clear	This has now been amended
Mark Snethlage	Ch.3	42	1246			a map showing projected water demand or projected water stress could be illustrative here: http://www.wri.org/resources/data-sets/aqueduct-water-stress-projections-data. Many other maps on projected water use / water stress are available	Thanks. This is covered in chapter 2
Sonja Jähnig	Ch.3	42	1258	42	1259	Suggest to cite Shah DN, Tonkin JD, Haase P, Jähnig SC. 2015. Latitudinal patterns and determinants of aquatic insect richness across Europe. Limnologica 55:33–43; though nothing said on threat status in this article	We have now refered to Hof C., Brändle M., and Brandl R, (2008) Latitudinal variation of diversity in European freshwater animals is not concordant across habitat types. Global Ecology and Biogeography, 17, 539–546 for Latitudinal variation and to http://atlas.freshwaterbiodiversity.eu for the map of the distribution of FW threatened species.
Mark Snethlage	Ch.3	42	1258			possibility to add a map based on the WWF global lakes and wetlands database data download: http://www.worldwildlife.org/pages/global-lakes-and-wetlands-database. Also see https://tinyurl.com/ECA-Maps for example	New figures have been added.
Sonja Jähnig	Ch.3	42	1266	43	1322	Past-and current trends - I find it very confusing that different levels of biodiversity and different indicators are stated without introducing them. Clearly, species richness is only one part of biodiversity; the ecological status should not be seen as a substitute for, then both lakes and streams are mentioned followed by the habitat directive conservation status assessments.	We have now specified the species diversity was just one example of a biodiversity indices but we have not defined it to facilitate the reading and as we believe that is fairly intuitive.
PESC-4: Susanna Hakobyan	Ch.3	42	1276	43	1282	Caucasus region is a hotspot of biodiversity, information about lakes is missing, 1928 till now. One of the world's biodiversity hotspots, the Caucasus covers an area of more than 500,000 sq km between the Caspian Sea and the Black Sea, and includes Armenia, Azerbaijan and Georgia ,and parts of Iran, Russia and Turkey. Sevan is the largest freshwater lake in Armenia and the entire Caucasus region, and one of the largest freshwater high-altitude (alpine) lakes in Eurasia. The lake is situated at an altitude of 1,900 m above sea level. The total surface area of its basin is about 5,000km2. See: 1. Karen Jenderedjian & Susanna Hakobyan &Martin A. Stapanian. Trends in benthic macroinvertebrate community biomass and energy budgets in Lake Sevan, 1928–2004. Environmental Monitoring and Assessment (27 December 2011), pp. 1-25, doi:10.1007/s10661-011-2449-0 Key: citeulike:10186379 2. A. Babayan, S.Hakobyan, K.Jenderedjian, S. Muradyan, M. Voskanov. Lake Sevan Experience and lessons Learned http://www.worldlakes.org/uploads/21_Lake_Sevan_27February2006.pdf	This are precious information but somehow descriptive. We integrated information about large freshwater lakes as much as possible but at ECA the sub-region level
EU: Sophie Condé	Ch.3	43	1292		1293	OK for the 5% but I dont see where comes from the statement "the second largest proportional land cover change..."	From the reference EA Report No 5/2010 cited in the text as EEA 2010
EU: Sophie Condé	Ch.3	43	1298			The reference is (EEA,2015) instead of (EC, 2009a)	Done
EU: Sophie Condé	Ch.3	43	1300			Insert "assessements" : "30% of assessements..... and 45% of assessments...."	Done
UNEP-WCMC: Elise Belle	Ch.3	43	1303	43	1306	"differently than [...] ecological status [...] represents the target [...] to achieve in the near future." The web link could be deleted.	Done
Gregory Insarov	Ch.3	43	1303	43	1303	Not all European countries are represented. Change the figure name.	Done

Sonja Jähnig	Ch.3	43	1323	45	1359	Drivers: a few further suggested references: Kail J, Arle J, Jähnig SC. 2012. Limiting factors and thresholds for macroinvertebrate assemblages in European rivers: Empirical evidence from three datasets on water quality, catchment urbanization, and river restoration. Ecological Indicators 18:63-72. Tonkin JD, Sundermann A, Jähnig SC, Haase P. 2015. Environmental controls on river assemblages at the regional scale: an application of the Elements of Metacommunity Structure framework. PlosONE 10:e0135450. Tonkin JD, Heino J, Sundermann A, Haase P, Jähnig SC. 2016. Context dependency in biodiversity patterns of central German stream metacommunities. Freshwater Biology 61:607-620.	Thanks
EU: Ole Ostermann, JRC	Ch.3	44	1317	44	1317	Please harmonise spelling through the text: either Syrdarya and Amudarya or Syr Darya and Amu Darya.	Done
Mark Snethlage	Ch.3	44	1319			"Here we review the past and future trends for European and Central Asian freshwater biodiversity, including a synthesis on the importance of the various drivers on the ecological status of the different taxonomic groups." Not clear where "Here we review" refers to	Done it has been removed
Diana Bowler	Ch.3	44	1328	44	1328	It would be worth noting that there are signs of nutrient loading reduction now, e.g., Jeppesen et al. 2005. Lake responses to reduced nutrient loading - an analysis of contemporary long-term data from 35 case studies. Freshwater Biology 50: 1747-1771.	We have reported it and included now the reference of Jeppesen in support.
Diana Bowler	Ch.3	44	1328	44	1328	The following review discussing climate change impacts could also be cited here: Jeppesen et al. 2010. Impacts of climate warming on the long-term dynamics of key fish species in 24 European lakes. Hydrobiologia 694: 1-39.	We have included it later on in the Chapter uner Freswater Bioteas wher we specifically mention the issue of climate change (page 165)
PESC-4: Bakhtiyor Karimov	Ch.3	44	1331	44	1332	Lake Baikal and Selenga river are not in Central Asia, but Eastern Europe	Amended
Mark Snethlage	Ch.3	44	1343			threat due to river fragmentation could be illustrated by a map of existing or planned dams. There are various map layers available for this: Geo-referenced dams databases Data download: http://www.fao.org/nr/water/aquastat/dams/index.stm; River Fragmentation by Dams http://atlas.gwsp.org/index.php?option=com_content&task=view&id=83&Itemid=68; Global Reservoir and Dam (GRanD) Database http://atlas.gwsp.org/index.php?option=com_content&task=view&id=207&Itemid=68; Number of Large Dams Planned or Under Construction by Country https://databasin.org/galleries/2d2d35ae3bc34399976b598ed7893254; Global water threat due to dam density https://databasin.org/galleries/a91e93e98b8a4affa9106b6410f7a309#expand=13665	New figures have been added.
Mark Snethlage	Ch.3	44	1349			Water footprint network has some maps on pollution of freshwater Water Pollution Level (WPL) for N and P in the world's river basins (2000) Data download: http://waterfootprint.org/en/resources/water-footprint-statistics/#CP1 Global grey water footprint and Water Pollution Levels (WPL) related to anthropogenic Nitrogen loads to fresh water at 5 × 5 arc minute grid scale (2002-2010) Data download: http://waterfootprint.org/en/resources/water-footprint-statistics/#CP1	Covered in chapter 4
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	Ch.3	46	1377	46	1380	Fig 3.16: excellent use of data on critical catchments; important to retain. Likewise accompanying text lines 1403-1408.	Retained
Thomas Brooks	Ch.3	46	1377	46	1380	Fig 3.16: excellent use of data on critical catchments; important to retain. Likewise accompanying text lines 1403-1408.	Retained
EU: Ole Ostermann, JRC	Ch.3	46	1397	47	1398	some arrows in the Table 3.13 point backwards.	Amended
Mark Snethlage	Ch.3	46	1397			Current general trends for habitat area (inland surface water): ECA and subregions not clear. Normally first row in cell shows ECA and second row shows subregions. Here it is the other way around. Same for General trends in water quality	Amended
UNEP-WCMC: Elise Belle	Ch.3	47	1404		1406	"2017), protected areas do not currently [...] as freshwater Key Biodiversity Areas"	Done
Gregory Insarov	Ch.3	47	1409	105	3014	Authors may wish to use in section 3.2.2.3 TERRESTRIAL overview on impacts of climate change on terrestrial ecosystems in Russia: Korzukhin, M.D., D.G. Zamolodchikov, G.E. Insarov, G.N. Kraev, A.A. Minin, A.V. Pchelkin, A.A. Sirin, C.N. Titkina, A.Z. Shvidenko, S.G. Shiyatov, D.G. Schepaschenko. Terrestrial ecosystems. In: Second Roshydromet Assessment Report on Climate Change and Its Consequences in Russian Federation. Moscow, Planeta Publishers, pp. 459-507	Thank you, considered
Harald Pauli	Ch.3	47	1410	47	1416	...embraces...' and a number of further typo errors which, I take, will be corrected in a separate step	corrected
Anatoliy Khapugin	Ch.3	47	1410	47	1410	"bioms" should be corrected as "biomes"	corrected
Anatoliy Khapugin	Ch.3	47	1412	47	1412	"up tot he Ural" should be corrected as "up to the Ural"	corrected
Anatoliy Khapugin	Ch.3	47	1412	47	1412	"caracterised" should be corrected as "characterised"	corrected
Anatoliy Khapugin	Ch.3	47	1413	47	1413	"pupulation of people providing on one hand grwing" should be corrected as "populationof people providing on one handgrowing"	corrected
Anatoliy Khapugin	Ch.3	47	1415	47	1415	"oft he ECA" should be corrected as "of the ECA"	corrected
Anatoliy Khapugin	Ch.3	47	1417	47	1417	"Protected areas" should be re-written as "Protected Areas"	corrected
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	Ch.3	47	1417	48	1424	Excellent use of these data on protected areas and key biodiversity areas; very important to retain.	thank you, it was moved to chapter 4 though
Thomas Brooks	Ch.3	47	1417	48	1424	Excellent use of these data on protected areas and key biodiversity areas; very important to retain.	thank you, it was moved to chapter 4 though
Stuart Butchart	Ch.3	47	1417			Good text on protected areas and key biodiversity areas	thank you, it was moved to chapter 4 though
Anatoliy Khapugin	Ch.3	47	1420	47	1420	"protected areas" should be re-written as "Protected Areas"	corrected
UNEP-WCMC: Elise Belle	Ch.3	47	1421		1421	"all sub-regions (UNEP-WCMC and IUCN 2015)." Not in references list. Should be referenced as: UNEP-WCMC and IUCN (2017). Protected Planet. Cambridge, UK: UNEP-WCMC and IUCN. Available at: www.protectedplanet.net.	corrected
Anatoliy Khapugin	Ch.3	47	1422	47	1422	"protected areas" should be re-written as "Protected Areas"	corrected
UNEP-WCMC: Elise Belle	Ch.3	48	1437	48	1438	Figure 3.17 not referenced in the text.	corrected
Mark Snethlage	Ch.3	48	1438			to offer more consistency across the chapter, perhaps use as background instead of satellite image, the map of biomes (terrestrial ecoregions of the world) and land cover (see above)	As this is just to illustrate the situation of these forests, we left the graph as it was.
Kristina Raab	Ch.3	48	4217	48	4217	Section 3.3.3 title: Please list clearly in the text (or as a table) which units of analysis are and are not included in this section.	corrected
Germany	Ch.3	49	1450	49	1451	Please explain whether the here mentioned 21 species, or how much of them are endemic to the regions or whether these species, if not endemic, are globally threatened	All of them are globally threatened. Names of endemics are added into the text
Germany	Ch.3	49	1457	49	1458	would be helpful to include scientific references (family or genus)	Some species names have been added
Germany	Ch.3	49	1458	49	1459	the latin name is "Felis chaus" and the correct english name is jungle cat, reed cat or swamp cat	Changed to 'jungle cat (Felis chaus)'
Mark Rounsevell	Ch.3	49	1486	49	1486	Iran is not part of ECA	Has been eliminated from the text
EU: Ole Ostermann, JRC	Ch.3	49	1490	49	1490	fishing in wet forests may need an explanation	Has been eliminated from the text

Germany	Ch.3	50	1494	50	1495	please elaborate more on the "little incentive"	Changed to: Traditional logging of forests for firewood and construction materials accelerated the deforestation process and is connected with the problem of poverty. Especially large forest cuttings by local communities for subsistence needs were after the collapse of the Soviet Union
Germany	Ch.3	50	1515	50	1515	please explain "some countries" since the paragraph is about Azerbaijan, "placed" is probably not the correct term here, since it seems it is meant in the sence of "comparability"	Changed to: 'For today native subtropical forests occupy only small parts of their initial area, about 10% for Colchic, Hyrcanian and Amu Darya and Azerbaijan Tugai forests, and are very fragmented, sometimes – degradated because of overgrazing or replaced by Mediterranean type vegetation, like Tugais in Armenia'
Germany	Ch.3	50	1521	50	1521	is it really "reforestation" or should it read "restoration" at least in the first case?	Changed to: 'After a collaps of the Soviey Union many fields and plantaions were abandoned and a process of natural reforestation started' …. 'Programmes on forest restoration have started in some countries (ENPI-FLEG, 2015), what leads to recovery of species' habitats and their number. Due to implemented measures populations of some of threatened species became stable and even sloly grew, like Bukhara deer in Kazakhstan'
Allan Watt	Ch.3	51	1550			This Section remains very superficial compared with the Section on tropical and sub-tropical forests and compared with the available literature and diversity of this system.	the section was considerably edited, comment considered
Anatoliy Khapugin	Ch.3	51	1554	51	1554	The space is needed after "regime."	corrected
Gregory Insarov	Ch.3	51	1555	51	1558	European countries which are not EU countries are not included in Bastrup-Birk et al report. So, forest area of countries out of EU, like serbia, Ukraine etc. (except Russia) is missed in this section. Authors may want to add this information.	This was shortened and re-written
Germany	Ch.3	52	1559	52	1560	Start of the sentence is too abrupt; Maybe better to say they are carbon reservoirs, since deadwood is not a sink (no futher C uptalke in deadwood as such, however the deadwood C-pool can grow if more living aboveground biomass turns into deadwood), anyway it sounds more stringent using the word pool.	corrected
Anatoliy Khapugin	Ch.3	52	1559	52	1559	"Bastrup-Birk, Reker, & Zal, 2016" should be cited as "Bastrup-Birk et al., 2016"	corrected
Anatoliy Khapugin	Ch.3	52	1559	52	1560	The sentence "Due to their large cover serve as an important carbon sink (see Figure 3.19), not only in the form of living trees but mostly in the form of deadwood" need to be re-written	corrected
Anatoliy Khapugin	Ch.3	53	1575	53	1575	"regulatetraditional" should be re-written as "regulate traditional"	corrected
Anatoliy Khapugin	Ch.3	53	1579	53	1580	"exploration, Forestry service, Moscow 'Roslesozashchita' 2014)" should be corrected as "exploration (Forestry service, Moscow 'Roslesozashchita' 2014))"	corrected
EU: Sophie Condé	Ch.3	53	1581			Please replace by "forest species assessments"	corrected
EU: Sophie Condé	Ch.3	53	1582			Please replace by "forest habitats assessments"	corrected
EU: Ole Ostermann, JRC	Ch.3	53	1582	53	1583	"…listed in the EU's Habitats Directive, were in 'favourable nature conservation status.'" The correct term is 'favourable conservation status.'	corrected
Harald Pauli	Ch.3	53	1584	52	1586	Russia' needs to be added; 'fishing' is more related to the freshwater subsystem than to the forest	corrected
Anatoliy Khapugin	Ch.3	53	1584	53	1584	"Hermy, Honnay, Firbank, Grashof-Bokdam, & Lawesson, 1999" should be cited as "Hermy et al., 1999"	corrected
Anatoliy Khapugin	Ch.3	53	1585	53	1585	"Ucraine" should be corrected as "Ukraine"	corrected
Andriy-Taras Bashta	Ch.3	53	1585			Ukraine	corrected
Mark Snethlage	Ch.3	53	1586			"Old-growth mountain or boreal forests are the only source of livelihood for local people in distant forested areas, not only as a source of wood (planted forests cover about 10% of Europe, European Environment Agency, 2016), but also as a source of food." -> not clear what "(planted forests cover about 10% of Europe, European Environment Agency, 2016)" means in this context.	corrected
Anatoliy Khapugin	Ch.3	53	1588	53	1588	"Europe, European Environment Agency, 2016)" should be corrected as "Europe (European Environment Agency, 2016))"	corrected
Mark Snethlage	Ch.3	53	1595			"The lack of natural processes (e.g. floods in floodplain forests or fires in taiga forests) altered the function of main indicators." What does "altered the function of main indicators" mean in this context?	This was shortened and re-written
Germany	Ch.3	53	1599	53	1601	the last sentence can also be seen as something positive. Of course the pioneer species only occur after an (anthropogenic) disturbance, but it still gives room to a natural process of regeneration	the text was re-written at the next editing cycle
Anatoliy Khapugin	Ch.3	53	1599	53	1599	"Schelhaas, Nabuurs, & Schuck, 2003" should be cited as "Schelhaas et al., 2003"	corrected
Mark Snethlage	Ch.3	54	1602			Data from Hansen chould be used to make a similar map but covering the entire ECA region. From these data, maps of forest cover in 2000, 2012 can be made, but also highlighting areas of forest loss and forest gain Data dowload: http://earthenginepartners.appspot.com/science-2013-global-forest/download_v1.2.html Geospatial Information Authority of Japan, Chiba University and collaborating organizations. Data dowload: https://globalmaps.github.io/ptc.html Data dowload: http://data.globalforestwatch.org/datasets/7dc2af9bf4e2404393f673e603aa9351_4 Also see https://tinyurl.com/ECA-Maps for example	the map for ECA was made and put in Chapter 1
Anatoliy Khapugin	Ch.3	54	1608	54	1608	"east, (Western Europe, Central Europe, Eastern Europe, Central Asia)" should be corrected as "east in following order: Western Europe, Central Europe, Eastern Europe, Central Asia". Maybe, it will be better to understand the Table	corrected
EU: Ole Ostermann, JRC	Ch.3	55	1611	55	1611	The correct link to the initiative www.forestreplot.be is http://www.forestreplot.ugent.be .	corrected
Harald Pauli	Ch.3	55	1618	55	1624	low-level management/use of broadleaved forests, I would expect to leading to a more varied forest structure including old-growth trees, which I wouldn't expect to leading to increasing homogenization	this was changed and re-written at the next editing cycle
Anatoliy Khapugin	Ch.3	55	1621	55	1622	"Keith, Newton, Morecroft, Bealey, & Bullock, 2009" should be cited as "Keith et al., 2009"	corrected
Anatoliy Khapugin	Ch.3	55	1635	55	1635	"Hédl, Petřík, & Boublík, 2011, Lomský, Šrámek, & Novotný, 2012, Šebesta et al. 2011" should be re-written as "Hédl et al., 2011; Lomský et al., 2012; Šebesta et al. 2011"	corrected
Germany	Ch.3	55	1636	55	1636	Eurpoaen temperate and broadleaved forests	corrected
Anatoliy Khapugin	Ch.3	55	1636	55	1637	"Endangered" should be written with capitalisation if you mean the conservation status	corrected
Anatoliy Khapugin	Ch.3	55	1638	55	1638	"Sots pine" should be corrected as "Scots pine"	corrected
Anatoliy Khapugin	Ch.3	55	1639	55	1639	"protected areas" should be re-written as "Protected Areas"	corrected
Anatoliy Khapugin	Ch.3	55	1641	55	1641	The space is needed here: trees(e.g.	corrected
Anatoliy Khapugin	Ch.3	55	1642	55	1642	The space is needed here: nesters,(Gregory	corrected
Anatoliy Khapugin	Ch.3	55	1642	55	1644	"Gregory et al., 2007, Virkkala, Heikkinen, Leikola, & Luoto, 2008, Moning & Müller, 2009, Paillet et al., 2010, Bilz, Kell, Maxted, & Lansdown, 2011, Scheidegger, Bilovitz, Werth, Widmer, & Mayrhofer, 2012" should be re-written as "Gregory et al., 2007; Virkkala et al., 2008; Moning & Müller, 2009; Paillet et al., 2010; Bilz et al., 2011; Scheidegger et al., 2012"	corrected
Allan Watt	Ch.3	55	1644	55	1649	Although the references given cannot be checked, it would appear that the work done on management of productive forests for biodiversity (both research and policy) has not been adequately covered.	this part was re-written at the next editing cycle

UNEP-WCMC: Elise Belle	Ch.3	55	1645	55	1645	"even-aged agroforestry applied across the European forests"	this para was re-written
Anatoliy Khapugin	Ch.3	55	1647	55	1648	"Johansson, Hjältén, de Jong, & von Stedingket al., 2013" should be re-written as "Johansson et al., 2013"	corrected
Anatoliy Khapugin	Ch.3	55	1649	55	1649	"Konvicka, Fric, & Benes, 2006" should be re-written as "Konvicka et al., 2006"	corrected
Anatoliy Khapugin	Ch.3	55	1650	55	1651	"Brunet, Hedwall, Holmström, & Wahlgren, 2016" should be re-written as "Brunet et al., 2016"	corrected
Anatoliy Khapugin	Ch.3	55	1652	55	1653	"Pyšek, Křivánek, & Jarošík, 2009, Essl, Moser, Dullinger, Mang, & Hulme, 2010" should be re-written as "Pyšek et al., 2009; Essl et al., 2010"	corrected
Anatoliy Khapugin	Ch.3	55	1653	55	1653	"aliens" should be re-written as "alien"	corrected
Mark Snethlage	Ch.3	56	1656			Suggested further references for Mediterranean forests: EEA. (n.d.). Biogeographical Regions in Europe: The Mediterranean Region. Retrieved from http://www.eea.europa.eu/publications/report_2002_0524_154909/biogeographical-regions-in-europe/mediterranean_biogeografical_region.pdf Moreira, F., Viedma, O., Arianoutsou, M., Curt, T., Koutsias, N., Rigolot, E., … Bilgili, E. (2011). Landscape – wildfire interactions in southern Europe: Implications for landscape management. Journal of Environmental Management, 92(10), 2389–2402. http://doi.org/10.1016/j.jenvman.2011.06.028 Pausas, J. G., Llovet, J., Rodrigo, A., Vallejo, R., Arianoutsou, M., Thanos, C., … Zedler, P. (2008). Are wildfires a disaster in the Mediterranean basin? – A review. International Journal of Wildland Fire, 17(6), 713. http://doi.org/10.1071/WF07151 Médail, F., & Diadema, K. (2009). Glacial refugia influence plant diversity patterns in the Mediterranean Basin. Journal of Biogeography, 36(7), 1333–1345. http://doi.org/10.1111/j.1365-2699.2008.02051.x Gauquelin, T., Michon, G., Joffre, R., Duponnois, R., Génin, D., Fady, B., … Baldy, V. (2016). Mediterranean forests, land use and climate change: a social-ecological perspective. Regional Environmental Change, 16(5), 14. Retrieved from http://link.springer.com/article/10.1007/s10113-016-0994-3/fulltext.html Marull, J., Otero, I., Stefanescu, C., Tello, E., Miralles, M., Coll, F., … Diana, G. L. (2015). Exploring the links between forest transition and landscape changes in the Mediterranean. Does forest recovery really lead to better landscape quality? Agroforestry Systems, 89(4), 705–719. http://doi.org/10.1007/s10457-015-9808-8 Kouba, Y., Martínez-García, F., de Frutos, Á., Alados, C. L., Barbero, M., Bonin, G., … Alados, C. (2015). Effects of Previous Land-Use on Plant Species Composition and Diversity in Mediterranean Forests. PLOS ONE, 10(9), e0139031. http://doi.org/10.1371/journal.pone.0139031 Lieutier, F., & Paine, T. D. (2016). Responses of Mediterranean Forest Phytophagous Insects to Climate Change. In Insects and Diseases of Mediterranean Forest Systems (pp. 801–858). Cham: Springer International Publishing. http://doi.org/10.1007/978-3-319-24744-1_28 Lefèvre, F., & Fady, B. (2016). Introduction to Mediterranean Forest Systems: Mediterranean Basin. In Insects and Diseases of Mediterranean Forest Systems (pp. 7–28). Cham: Springer International Publishing. http://doi.org/10.1007/978-3-319-24744-1_2 Marull, J., Font, C., Tello, E., Fullana, N., Domene, E., Pons, M., & Galán, E. (2016). Towards an energy–landscape integrated analysis? Exploring the links between socio-metabolic disturbance and landscape ecology performance (Mallorca, Spain, 1956–2011). Landscape Ecology, 31(2), 317–336. http://doi.org/10.1007/s10980-015-0245-x Dias, F. S., Miller, D. L., Marques, T. A., Marcelino, J., Caldeira, M. C., Orestes Cerdeira, J., & Bugalho, M. N. (2016). Conservation zones promote oak regeneration and shrub diversity in certified Mediterranean oak woodlands. Biological Conservation, 195, 226–234. http://doi.org/10.1016/j.biocon.2016.01.009 Selvi, F., Carrari, E., & Coppi, A. (2016). Impact of pine invasion on the taxonomic and phylogenetic diversity of a relict Mediterranean forest ecosystem. Forest Ecology and Management, 367, 1–11. http://doi.org/10.1016/j.foreco.2016.02.013 Noce, S., Collalti, A., Valentini, R., & Santini, M. (2016). Hot spot maps of forest presence in the Mediterranean basin. Http://www.sisef.it/iforest, 9(5), 766. http://doi.org/10.3832/IFOR1802-009 Doblas-Miranda, E., Martínez-Vilalta, J., Lloret, F., Álvarez, A., Ávila, A., Bonet, F. J., … Retana, J. (2015). Reassessing global change research priorities in mediterranean terrestrial ecosystems: how far have we come and where do we go from here? Global Ecology and Biogeography, 24(1), 25–43. http://doi.org/10.1111/geb.12224	Thank you very much for the references. All were reviewed and added.
Harald Pauli	Ch.3	56	1659	56	1659	is it 'trees' or 'trees and shrubs'?	There are 200 endemic trees; this information was checked with the cited authors
Thomas Brooks	Ch.3	56	1663	56	1663	Please delete "IUCN" - these data are not maintained by IUCN.	Corrected
Harald Pauli	Ch.3	57	1706	57	1706	Allen 2014' missing in the refs.	According to figure 4.3 in Allen, 2014
Germany	Ch.3	57	1711	57	1712	Rewording needed. The decrease refers to primary forests whereas the increase at the best refers to natural forests however not primary forests	Changed to: Habitat loss and degradation. Fragmentation and land degradation, as well as and anthropogenic fires have caused primary forest cover to decrease, whereas land abandonment has induced an increase of secondary forests and shrablands
Mark Snethlage	Ch.3	57	1714			"Heil, Diemont, 1983 Raised nutrient levels change heathland into grassland": is not about the Mediterranean but about eutrophication in Dutch heathlands, also a very old reference. I also doubt that eutrophication (Nitrogen pollution) is the second most important threat for Mediterranean forests	Agreed and changed.
Germany	Ch.3	57	1717	57	1717	Substitute "important" with "negatively impacts"	Corrected
Germany	Ch.3	57	1723	57	1723	More clarity is needed what specifically describe a "human disturbance" since overexploitation, pollution, habitat loss are mentioned separatly	Changed to: Human disturbance (human presence, noise, light, negative attitude of human to some species) especially affects dragonflies, mammals, birds, reptiles and amphibians
EU: Ole Ostermann, JRC	Ch.3	58	1734	58	1740	Please explain why tundra "too great for a natural forest vegetation " can bear forest (forest-tundra).	Corrected to "Tundra is defined as an area with permafrost, or area where the temperature is too low, or precipitation high and winds too strong for growing of forests". The Unit of Analysis also includes forest-tundra as an ecotone zone.
Gregory Insarov	Ch.3	58	1740	58	1740	This table is based on Russia only, no information on mountain tundra in Nortern Europe and on Pamir and Tien Shan mountain tundra. This should be clearly indicated in the table heading. It is desirable also to include in this section data from Nortern Eurasia and Pamir and Tien Shan mountain tundra as separate tables.	Completed by data from Arctic Biodiversity Assessment. Mountain tundra is included into Alpine mountain belt. Unfortunately, such comprehensive data as for plain tundra have not been found in literature.
Mark Snethlage	Ch.3	58	1741			possibility to include a map showing the extent of the permafrost in ECA data download: http://www.gaez.iiasa.ac.at Also see https://tinyurl.com/ECA-Maps for example	The map of permafrost covers several Units of Analysis in ECA. We are too limited in space to include it. The second link does not work, ubfortunately.
Gregory Insarov	Ch.3	58	1751	58	1752	1. The Map of the Russian Biomes provides estimates of species richness for vascular plants, mosses and lichens as single numbers for sub-biomes of the Tundra Biome. Authors may want to include explaination what ranges of numbers in corresponding cells mean. 2.Are Northern tundra in the Table headig and Arctic tundra mentioned in line 1741 the same biomes? If yes, use better one term. If they are not the same, include explainations please.	The part was removed die to space reasons.
Gregory Insarov	Ch.3	59	1767	59	1769	This is repetition of the text in the previous para.	Corrected
Mark Snethlage	Ch.3	59	1767		1769	Paragraph / sentence is repeated from 1760 - 1762	Corrected
Mark Snethlage	Ch.3	60	1784		1786	more or less same as previous comment but slightly different and with references: merge?	Yes. Eleminated from this part.
Anatoliy Khapugin	Ch.3	60	1794	60	1794	"Red Books" should be corrected as "Red Data Books"	Corrected
Anatoliy Khapugin	Ch.3	60	1795	60	1795	"adventive" should be corrected as "alien"	Corrected

MARKUS Fischer	Ch.3	61	1809	61	1809	No, by definition subalpine is the belt just below tree line whereas alpine is the belt just above.	Yes, if the forest belt exist. In CA mountains the subalpine belt can be between steppe and alpine belts. In the Assesment the subalpine belt is considered as a very diverse ecotone zone with high level of endemism.
Eva Spehn	Ch.3	61	1809	61	1809	the term "subalpine" is unclear some authors use it as just synonym to the zone above the treeline, others as the climatic treeline ecotone, others as upper montane zone, where trees are replaced by grassland (Körner 2003, Alpine plant life, Springer Berlin). According to your definition given, I would call it lower alpine mountain belt and define it as just above the treeline, and the alpine mountain belt with higher alpine mountain belt.	We used the following definishion for subalpine belt: The subalpine belt is located below the alpine belt and above the mountain-forest belt in humid regions and above the steppe-mountain belt in arid regions. Four groups of associations constitute subalpine vegetation: (1) plants of tall-grass subalpine meadows, (2) low-growing shrubs and undergrowth, including dwarf pine, dwarf stone pine, birches, and rhododendrons, (3) grassy heaths and heath meadows, consisting of low-growing grasses, and (4) thinned park-type forests—subalpine thin forests and elfin woodlands.
Andriy-Taras Bashta	Ch.3	61	1817			add. Carpathians. Krichfalushiy V. 2003. Carpathian upper mountain forests and sustainable development. Works of Scientific Society named after T.Shevchenko XII: 309-315 (unUkrainian with English summary)	Unfortunately this publication is not available in open sources to work with it and include into the text. Was used: Kricsfalusy, V., Mróz, W., & Popov, S. (2008). Historical changes of the upper tree line in the Carpathian Mountains (Ukraine). In Mountain Forum Bulletin (Vol. 8).
Harald Pauli	Ch.3	61	1818	61	1818	you may add here 'Körner 2012, Alpine treelines, Springer'; Körner/Korner is missing in the refs.	Thank you for the reference. It has been added.
Harald Pauli	Ch.3	61	1823	61	1824	in the Central Asian mountains certainly far more than 393 species of vascular plant occur (I expect this is even the case when only considering the subalpine belt); ref. for Shukurov et al. 2017 is missing	Yes. 393 species are only in subalpine belt in Kyrgyzstan (Tien Shan). Changed to:The subalpine belt is one of the most diverse in ECA mountains and include a large part of endemic species. For example, iin Central Asia mountains more than 600 species of vascular plants were found and 50 of them are endemics (Shukurov et al., 2017) [1-10], in the Central Caucasus mountains, 203 of total 761 high mountain flowering plant species in the subalpine belt are endemic (Nakhutsrishvili, 2003).
Eva Spehn	Ch.3	61	1824	61	1824	for the Caucasus: of 1300 vascular plant species occur in the alpine belt (Kazbegi region) of the Great Caucasus, 370 are endemic (Grossheim AA 1936 The analysis of the Caucasian flora. Trudy Bot Inst Azerb AN SSR Izd AZ Fil AN SSR. Baku (in Russian); Nakhutsrishvili G. (2013) The vegetation of Georgia (South Caucasus). Springer, Berlin, p 235	George Nakhutsrishvili (in Nakhutsrishvili G. (2013) The vegetation of Georgia (South Caucasus). Springer, Berlin) specifies, that 1100 species of vascular plants are in the whole Kazbegi region. In subalpine zone - 595, from which 33,5% are endemics (p. 112). P. 235 is in the list of references
Harald Pauli	Ch.3	61	1825	61	1830	I see no need to distinguish between 'mountain tundra' and 'alpine'. They are often used as synonyms. If you do so, however, you should restrict it to the Arctic and sub-Arctic, and exclude the more southern parts of the Urals and the Tian Shan.	Mountain tundra is one vegetation type of the alpine belt. Alpine grasslands are other. In some mountains we have both kinds, where mountain grasslands are below tundra.
Eva Spehn	Ch.3	61	1825	61	1825	replace "alpine mountain belt" with "higher alpine mountain belt", to make it more consistent with the remark for line 1809.	We use terms: subalpine belt, alpine belt, subnival belt and nival belt.
Harald Pauli	Ch.3	61	1830	61	1832	...varies from seas level on Arctic Islands up to 2300 m in the Alps, Caucasus and Mediterranean mountains..'	Corrected
Harald Pauli	Ch.3	61	1833	61	1835	should be changed to: 'Alpine and subalpine ecosystems stand out for their extremely high biodiversity. 20% percent (~2500 species) of Europe's vascular plant flora were estimated to being predominantly alpine, i.e. occurring within only 3% of the continent's territory (Väre et al. 2003). Mountains around the Mediterranean basin, such as Sierra Nevada, Spain, are outstandingly rich in local endemic species (Pauli et al. 2003) and there is a general south-north gradient of decreasing endemism in mountains across Europe mountains (Favarger 1972). References: 'Väre H, Lampinen R, Humphries C, Williams P 2003. Taxonomic diversity of vascular plants in the European alpine areas. In Nagy L, Grabherr G, Körner C, Thompson DBA (eds). Alpine biodiversity in Europe, pp 133-148. Ecolgical Studies 167. Springer, Berlin.' 'Pauli H, Gottfried G, Dirnböck T, Dullinger S, Grabherr G 2003. Assessing the long-term dynamics of endemic plants at summit habitats. In Nagy L, Grabherr G, Körner C, Thompson DBA (eds). Alpine biodiversity in Europe, pp 195-207. Ecolgical Studies 167. Springer, Berlin.' 'Favarger C 1972. Endemism in the montane floras of Europe. In Valentine DH (ed). Taxonomy and Evolution, pp 191-204. Academic Press, London.'	Thank you very much for the refereces. The text with them is included.
Andriy-Taras Bashta	Ch.3	61	1836			Shukurov, 2017 - publication devoted to the Central Asia only	Yes, added about Tien Shan
Harald Pauli	Ch.3	61	1838	61	1838	For today large parts of mountain meadows...'	Corrected
Allan Watt	Ch.3	61	1842	61	1849	As pointed out in my review of the FOD, points made here should be carefully checked. The reference cited (Sitzia er al.) does not deal with conflict of any sort nor does the paper by Strijker seem to be accurately cited. Given the increasing awareness of the importance of conflict (in many ecosystems), it should be dealt with more comprehensively and accurately.	Changed to: At the same time, abandonment of traditional farming and rural depopulation has become an evident trend in European and Caucasus mountains (Keenleyside et al. 2010)). The consequence is natural reforestation (Sitzia et al. 2010), which reduces landscape heterogeneity, increases fire risks and exacerbates human-wildlife conflicts (Navarro et al. 2015). Rural development programs discourage outmigration because it has negative social consequences and compromises ecological sustainability (Grau and Aide, 2007). Yet, these programs are divisive as they need to include both developmental and conservational components (Nogués-Bravo et al. 2016), and some experts propose rewilding or assisted natural reforestation of grasslands as a more cost-effective and viable option (Navarro, Pereira, 2015).
Harald Pauli	Ch.3	61	1843	61	1843	please change to: '...trend in the montane and subalpine belts of European mountains including the Caucasus...'	Changed
Eva Spehn	Ch.3	61	1843	61	1843	abandonment is also a huge problem in the Carpathians	This part was deleted during the next draft development in order to shorten the text
Harald Pauli	Ch.3	61	1845	61	1836	This sentence does not make sense (it should be many more species), need to be deleted: 'Diversity of fauna riches 25-30 species of mammals and 60-90 of birds 1835 (Shukurov, 2017).' Reference is missing!	Eliminated from the text
Harald Pauli	Ch.3	61	1847	61	1849	Not easy to check if they actually meant subalpine forests: ref of Navarro, Pereira, 2015 missing!	The reference is added

Harald Pauli	Ch.3	62	1852	62	1852	add 'Grabherr et al. 2011).' Reference: Grabherr G., Gottfried M., Pauli H. 2010. Climatechange impacts in alpine environments. Geography Compass 4: 1133–1153. Further I suggest to keep the sentence from the FOD: 'Even though this program is global, the network in Europe is denser and exists for longer time; therefore, today the main results of the GLORIA represent basically the western part of the ECA region.'	Included into the text. The reference is included as 'Grabherr et al. 2010'
Harald Pauli	Ch.3	62	1854	62	1854	add after 'Gottfried et al. 2012).': 'Upward shifts of species ranges of alpine plants were repeatedly observed in mountains across Europe (Klanderud and Birks 2003; Pauli et al. 2012; Wipf et al. 2013), which led to increased species numbers on mountain tops in temperature and boreal Europe, but to declines on Mediterranean mountains, the latter being attributed to combined effects of climate warming and reduced water availability (Pauli et al. 2012; Jiménez-Alfaro et al. 2014). References: 'Klanderud K, Birks HJB 2003. Recent increases in species richness and shifts in altitudinal distributions of Norwegian mountain plants. The Holocene, 13, 1-6.' 'Pauli H, Gottfried M, Dullinger S et al. 2012. Recent plant diversity changes on Europe's mountain summits. Science, 336, 353-355.' 'Wipf S, Stöckli V, Herz K, Rixen C 2013. The oldest monitoring site of the Alps revisited: accelerated increase in plant species richness on Piz Linard summit since 1835. Plant Ecology and Diversity, 6, 447–455.' Jiménez-Alfaro B, Gavilán RG, Escudero A, Iriondo JM Fernández-González 2014. Decline of dry grassland specialists in Mediterranean high-mountain communities influenced by recent climate warming. Journal of Vegetation Science 25: 1394-1404.	Included into the text.
Eva Spehn	Ch.3	62	1855	62	1867	I would put land use change as a driver, with reforestation, overgrazing and abandoment as "subdrivers". The climate change driver should mention also less precipitation in summer (occurence of drought) and higher snow cover in the alpine belt due to predicted higher winter precipitation, which can change vegetation patterns significantly. Another important driver for mountain grasslands is Nitrogen deposition, as small additions of nitrogen can change species composition of mountian grasslands significantly (i.e. Bassin, S., Volk, M., Suter, M., Buchmann, N. and Fuhrer, J. (2007), Nitrogen deposition but not ozone affects productivity and community composition of subalpine grassland after 3 yr of treatment. New Phytologist, 175: 523–534. doi:10.1111/j.1469-8137.2007.02140.x	The order of drivers has been changed, the point about Nitrogen deposition and the reference are included
Harald Pauli	Ch.3	62	1856	62	1870	Suggest to change the rank of drivers (also to be constient with the above) and to revise: 'Overgrazing in subalpine and alpine grasslands has caused to land degradation and. As a result wild species were crowded out by livestock and their number has dramatically declined. Then the number of predators and scavengers also declined (snow leopard, vulture, etc.) (Shukurov, 2007). Climate change is a key-driver for shifting subalpine and alpine vegetation belts upwards in mountains. Although population dynamics may lag behind climatic changes due to the persistence of alpine plant species (Dullinger et al. 2012) and treeline advances may be suppressed through land use effects (Gehrig-Fasel et al. 2008), progressive losses of high-mountain habitats will be inevitable in the face of amplifying climate change. Natural reforestation can lead to loss of area of diverse subalpine pastures and meadows and ecosystem services (hay, medicinal, edible and otherwise useful herbs, knowledge of extensive herding, cultural landscapes, etc.), where traditional land-use practices were abandoned. The substituting subalpine forest flora is not as rich; however, forests provide important ecosystem services (water resources, protection of soils, carbon sequestration, etc.).' 'In Kyrgyzstan mining in high mountain ecosystems is very dangerous and has led to degradation and fragmentation of vulnerable subalpine and alpine grasslands (Shukurov, 2007).' Just to comment on this: Mining companies (such as Kumtor, the largest in Kyrgyzstan) also support (or pretend to support) the protection of wildlife and surrounding vegetation from overgrazing (altough I'm not really sympathizing with their operation in sensitive alpine/nival environments). 'Role of drivers is assessed in Table 3.19 below.'	The order of drivers has been changed as recommended
Harald Pauli	Ch.3	62	1871	62	1872	In Table 3.19 I have some difficulty with the decrease of habitat area from Past to Current, because climate change would accelerate habitat loss have not strongly decreased, or even increased in Central Asia, but also in some alpine regions of Europe (numbers of sheep in alpine areas, e.g. in the Alps, Pyrenees are very high owing to subsidies). Therefore the signs should be put in both Past and Current to 'strong increase' (if not put to a change from 'moderate' to 'strong change'); check also in the 'Land use' column	The principle of the table has been changed. A new version includes only 'extent' and 'biodiversity status'. Additional referencies are included
Eva Spehn	Ch.3	62	1871	62	1872	Not sure if N-deposition is considered, and where (pollution?)	The additional information is included into the text, thank you for the references
EU: Ole Ostermann, JRC	Ch.3	63	1887	63	1888	In Figure 3.21, the Baltic Sea is wrongly named Black Sea.	corrected
Anatoliy Khapugin	Ch.3	63	1895	63	1896	what for is "Kkm" (I found Kha, Mha in following text)? I suggest use widely known km	corrected
Olesya Petrovych	Ch.3	63	1896	63	1896	It should be noted that the steppes are mostly destroyed in the european part of the ECA and they are turned into agricultural fields.	corrected
Harald Pauli	Ch.3	64	1914	64	1915	Does the number of 826 species refer to plant occuring in steppe habitats of Ukaine? - please specify (The total number of vascular plants on a national level ranges between 3500 and 5100 species (Mosyakin and Fedoronchuk 1999. Vascular plants of Ukraine - a nomenclatural checklist. Nat. Acad. Sci. Ukaine, Kiev).	the figure is the number of plant species listed in the Ukrainian Red Data Book, not in naional flora. More clear wording is done.
UNEP-WCMC: Elise Belle	Ch.3	64	1916	64	1917	"European grasslands have been recognized as [...] biodiversity that emphasizes their high conservation"	corrected
UNEP-WCMC: Elise Belle	Ch.3	64	1919		1919	"or Endangered species (Janssen"	corrected
ECA values liaison group	Ch.3	64	1919	64	1920	It may be possible to exclude the term value in this sentence as it is implicit that biophysical values are meant.	done
Anatoliy Khapugin	Ch.3	64	1923	64	1926	"protected areas", "nature reserves", national parks" should be re-written as "Protected Areas", "Nature Reserves", "National Parks" respectively	we follow the IPBES Glossary of terms, no need for rewriting
ECA values liaison group	Ch.3	64	1927	64	1929	It is suggested to rephrase as follows: 'the biodiversity of invertebrate fauna and their contributions to people such as pollination, soil formation perhaps are the most poorly understood …'	done
Anatoliy Khapugin	Ch.3	64	1932	64	1932	"grasslandsdue" should be re-written as "grasslands due"	corrected
Harald Pauli	Ch.3	65	1945	65	1945	is it '...of the original total of...' ?	exactly, corrected
Ilja Gasan Osojnik Črnivec	Ch.3	65	1959		1961	… also, the diversity of plant species and varieties is strongly reduced, in partucularly of those which are endangered, as is discussed further ona at line 2624 - arable flora	we know no data to confirm this suggestion on regional level. As I can see (based on comparing lists of flora of different time) there is a little reduction (or change, to say better) but not crucial or even significant. Probably strong reduction have been occurred in specific subregions only (European ones)
Anatoliy Khapugin	Ch.3	65	1963	65	1963	"thearea" should be re-written as "the area"	corrected
Olesya Petrovych	Ch.3	65	1963	65	1967	The fragmentation of steppes should be mentioned as one of the most important direct drivers.	it is true for a part of the region (Central and Eastern Europe). For Kazakhstan, Kyrghyzstan, and Eastern Russia fragmentation is lesser important
Mark Snethlage	Ch.3	66	1991			Table 3.20 impacts need to be renumbered. They are now on a scale of 0 to 3 and should be renumbered to 0 to 2	corrected
PESC-4: Bakhtiyor Karimov	Ch.3	66	2000	66	2001	there are different definitions of deserts => comply with land degradation assessment and FAO definition	We used Koeppen-Geiger Classification - also included.

Harald Pauli	Ch.3	67	2019	67	2020	19 species of birds and 15 species of mammals were found in Tien Shan (Shukurov, 2017).' : The numbers appear unrealistically low for the drylands of Tianshan.	eliminated from the text
Gregory Insarov	Ch.3	67	2021	67	2022	Exclude areas outside IPBES CA region from the figure.	The picture is a copy from a publication. We can't change it
EU: Ole Ostermann, JRC	Ch.3	68	2049	68	2049	The reference should point to Table 3.21, not Table 3.20.	Corrected
André Mader	Ch.3	69	2066	75	2075	What about mires and bogs?	it was agreed to use the term peatlands. Mires are included as they are a part of peatlands. Bog is another term. All of them are included in peatlands
Mark Rounsevell	Ch.3	69	2089	69	2089	"Peatlands are found in every ECA country": Is that really correct? Malta? Israel?	See Chapter: Malta. in Mires and peatlands of Europe: Status, distribution and conservation. Joosten, H., Tanneberger, F. & Moen, A. Eds. Stuttgart: Schweizerbart Science Publishers. 2017. 780 pp. Israel, which is geographically not in Europe, is shown in Global Peatland Database/Greifswald Mire Centre and described in several publications as well.
André Mader	Ch.3	70	2095	70	2096	Figure is not very informative as a map. Suggest either to make it a figure or show a map that illustrates coverage of peatlands (more relevant)	The authors aspired to the maximum informativeness of the picture. We wanted to show the degree of peatland loss (main map) against their initial coverage (inset map). Table with the same values for the countries would be too long and difficult to read. We decided to put the peatland coverage map as a side one, as we assume that the demonstration of losses is the most important aspect that we want to draw attention.
Olesya Petrovych	Ch.3	71	2129	71	2143	I liked the structure of the part on wetlands because it has a small subpart on ecosystem services, while the other parts lack such subparts. It contain clear information about what ecosystem services are supplied by such ecosystems or groups of biodivercity. This is important because politicians generaly don't have this knowledge.	thank you
André Mader	Ch.3	71	2129	71	2143	Ecosystem services section too long. Suggest that is is just mentioned briefly what they are, and cross-reference to chapter 2	some text was moved to ch 2
ECA values liaison group	Ch.3	71	2129			Consider the possibility to use the sub-title 'peatlands' contribution to people' instead of 'ecosystem services'	We agree, that the wording proposed by the reviewer reflects the contents of this section more accurately. Although the term ecosystem services to more accurately corresponds to the name and objectives of the document.
Andriy-Taras Bashta	Ch.3	71	2129		2143	There is an analyse of ecosystem service in this sub-chapter only, not for others	see ch 2
Mark Snethlage	Ch.3	71	2130			Map of soil organic carbon (only top 1 meter, though) could be included here: Soil Organic Carbon (Atlas of the Biosphere) data download: http://nelson.wisc.edu/sage/data-and-models/atlas/	thank you
PESC-4: Frederic Lemaitre	Ch.3	72	2173	72	2174	it would be worth adding long-term N deposition in the drivers section of peatlands. Peatlands enriched with N accumulated over decades, even at modestly elevated levels, can change rapidly when the environment becomes more favorable for the invasion of grasses and shrubs through warming and drying (i.e. combination of long term N deposition and climate change is an important driver). As these vascular plants sequester far less carbon over the long term than peat-forming Sphagnum, the key peatland quality of removing and storing carbon over hundreds or thousands of years would be lost if this occurred. Evidence supporting this is as follows: Field C.D., Dise N.B., Payne R.J., Britton A.J., Emmett B.A., Helliwell R.C., Hughes S., Jones L., Lees S., Leake J.R., Leith I.D., Phoenix G.K., Power S.A., Sheppard L.J., Southon G.E., Stevens C.J., Caporn, S.J.M. (2014) The role of nitrogen deposition in widespread plant community change across semi-natural habitats. Ecosystems 17:846-877 Robroek B.J.M., Wubs E.R.J., Martí M., Zając K., Andersen J.P., Andersson A., Börjesson G., Bragazza L., Dise N.B., Keuskamp J.A., Larsson M., Lindgren P.-E., Mattiasson P., Solomonsson J., Sundberg C., Svensson B.H., Verhoeven J.T.A. (2014) Microclimatological consequences for plant and microbial composition in Sphagnum dominated peatlands Boreal Environment Research 19:195–208 Wu Y., Blodau C., Moore T.R., Bubier J., Juutinen S., Larmola T., (2015) Effects of experimental nitrogen deposition on peatland carbon pools and fluxes: a modelling analysis. Biogeosciences 11:1-23	This is a correct and important comment. Impact of the N-enrichement due to various antropogenous reasons can be seen especially under the climate change. The similar effect may be seen for acidification This should not be reflected in a summary table as they are being optimised, but has been considered while revising the text
Harald Pauli	Ch.3	72	2178	72	2185	I'm just surprised by the zero-impact of climate on carbon stock and sequestration at permafrost peatlands	Correct comment. Addressed in summary table for permafrost reatlands
Mark Snethlage	Ch.3	74	2194			Current impact of climate change on habitat area = "0 0,0,0-0" should be "0 0,0,0,-" (i.e. last dash to denote that CA has no temperate peatlands	Agree. Addressed accordingly
Mark Snethlage	Ch.3	74	2202			Table 3.25: General trends for habitat area and habitat degradation in Central Europe = space. Not clear if is that this means "unknown", or an omission	corrected
Allan Watt	Ch.3	75	2209	76	2248	A good example of the problem highlighted above of lack of references (only one in two pages).	thank you
André Mader	Ch.3	75	2211			This sentence seems to suggest that most cities are in biodiversity hotspots, which is not true. Suggest to say that there is a correlation between human habitation and biodiversity hotspots (and please provide a reference).	corrected. The section is significantly edited
Mark Snethlage	Ch.3	75	2223	76	2227	Not clear what this is about. It looks like a bullet point list, but the relation with the title or subsequent text is not clear. Is this a placeholder?	yes
PESC-4: Frederic Lemaitre	Ch.3	76	2232	76	2235	the statement for habitat loss in urban areas could be maybe a bit challenged by the following study done for the period between 1990 and 2006. The analysis of the development of urban green space provision, urban residential area, population and household number in 202 European cities shows an overall increase in urban green spaces from the year 2000 to the year 2006, mainly in cities in Western and Southern Europe, although this was not the case between 1990 and 2000. The study is referenced as follows: Kabisch N, Haase D (2013). Green spaces of European cities revisited for 1990–2006. Landscape and Urban Planning 110 p. 113-122	considered, corrected. The section is significantly edited
Mark Rounsevell	Ch.3	76	2239	76	2239	Over which time period?	1990-2000 and 2000-2006 corrected now
UNEP-WCMC: Elise Belle	Ch.3	76	2239	76	2239	Over which time period? Reference?	1990-2000 and 2000-2006 corrected now
Mark Snethlage	Ch.3	77	2256			Recent reference: Torres, A., Jaeger, J.A.G. & Alonso, J.C. (2016). Assessing large-scale wildlife responses to human infrastructure development. Proceedings of the National Academy of Sciences, 113 (30): 8472-8477. DOI:10.1073/pnas.1522488113	The text on urban ecosystems was significantly shortened, this issue was not covered
Andriy-Taras Bashta	Ch.3	77	2276			Zingel zingel is not an endemic of Danube river basin. It occurs in the Dnister river basin.	corrected. The section is significantly edited
Andriy-Taras Bashta	Ch.3	77	2285			including carp (Cyprinus spp), rainbow trout (Oncorynchus mykiss) and European eel (Anguilla anguilla),	corrected. The section is significantly edited
Andriy-Taras Bashta	Ch.3	77	2285			add. Silver carp (Hypophthalmichthys molitrix)	corrected. The section is significantly edited
PESC-4: Susanna Hakobyan	Ch.3	78	2294	78	2318	Landfills aren't mentioned in Chapter 3. At the same time, it is one of the main sources of pollution of habitats. See for example Regional Policy Report on the European Neighborhood Policy and Waste Management Armenia – Azerbaijan - Georgia 2007 http://www.epfound.ge/wp-content/uploads/2016/09/Waste-Management-Policy-Paper.pdf	agree, but landfills are not specially considered as a UoA
Germany	Ch.3	78	2299	78	2299	N.B.: DDT was widely used in Russia in the 1950s for the suppression of the Siberian silkworm. Although officially banned in the USSR in 1970, DDT continued to be used until the late 1980s. Significant amounts of DDT remain unused and unproperly stored.	considered
Diana Bowler	Ch.3	78	2305	78	2305	Because urban areas already tend to be warmer (due to the urban heat island effect), climate change impacts are likely to particular pronounced here. A nice recent paper showing this: Piano et al. 2016. Urbanization drives community shifts towards thermophilic and dispersive species at local and landscape scales. Global Change Biology.	considered. The section was rewritten

Mark Snethlage	Ch.3	78	2319			could this perhaps be developed a bit further and referenced? One would think that salinity is also a problem in northern cities as a result of the use of salt to combat icy conditions on roads and sidewalks	the section is considerably re-written
UNEP-WCMC: Elise Belle	Ch.3	79	2337	79	2337	Figure 3.25 not referenced in the text. Crop and focus on the ECA region, or delete.	the figure was referenced
Hanna Skryhan	Ch.3	79	2345	81	2440	it's necessary to clear identify the urban habitats and types of urban ecosystems and make the discription according to that types of the habitats and ecosystems	the definitions are added to CH 1
Mark Snethlage	Ch.3	79	2355		2357	combine with page 80, 2365 - 2367	done
Mark Snethlage	Ch.3	79	2375			Relation of sentence with the rest of the text unclear. Placeholder?	yes
Mark Rounsevell	Ch.3	80	2359	80	2359	The urban species are still 'wild'	agreed! The sentence was removed at any rate
UNEP-WCMC: Elise Belle	Ch.3	80	2379	80	2379	Missing section.	this was a placeholder, now there
Andriy-Taras Bashta	Ch.3	81	2407		2408	There also some species that have expanded their range via roosting in built-up areas, such as Kuhl's pipistrelle (Pipistrellus kuhlii) and Savi's pipistrelle (Hypsugo savii) (Sachanowicn, Wower & Bashta 2006, Tóth-Ronkay, ym., 2015, Uhrin et al. 2016). Uhrin M., Hüttmeir U., Kipson M., Estók P., Sachanowicz K., Bücs S., Karapandža B., Paunovič M., Presetnik P., Bashta A.-T. Maxinova E., Lehotska B., Lehotsky R., Barti L., Csösz I., Szodoray-Paradi F., Dombi I., Görföl T., Boldogh S.A., Jere C., Pocora I., Benda P. Status of Savi's pipistrelle Hypsugo savii (Chiroptera) and range expansion in Central and south-eastern Europe: a review // Mammal Review. – 2016. – 46. – P. 1-16. Sachanowicz K., Wower A., Bashta A.-T. Further range extension of Pipistrellus kuhlii (Kuhl, 1817) in central and eastern Europe // Acta Chiropterologica. – 2006. – V. 8 (2). – P. 543-548.	thank you for the references
PESC-4: Andriy-Taras Bashta	Ch.3	81	2408	81	2408	bats in general spread throughout ECA, not just Budapest	this was just an example
Mark Snethlage	Ch.3	82	2453			"Urban Planning" is perhaps not the most appropriate subtitle for this section of drivers. " Urban Infrastructure" might be more to the point.	the section is considerably re-written
Mark Snethlage	Ch.3	82	2453	83	2486	This entire section under the heading "Urban Planning" contains many sentences that do not seem to form a coherent text. They also cover a wide range of issues, not all of them specifically related to drivers and urban planning.	the section is considerably re-written
Hanna Skryhan	Ch.3	82	2453	82	2461	urban development - is not only water management!!! Urban development is also about Master plan, land use and green infrastructure. The paragraph should be completed full information on the topic	the section is considerably re-written
Mark Snethlage	Ch.3	82	2460		2465	Relation of sentences with the rest of the text unclear. Placeholder?	yes
PESC-4: Susanna Hakobyan	Ch.3	82	2470	82	2475	fish farming is not urban activity, but still has a negative effect on water quality	accepted
PESC-4: Frederic Lemaitre	Ch.3	82	2472	82	2473	there could be some more mainstream references on the emergence of the Chytrid fungus on line 2473, such as: Fisher MC, Henk DA, Briggs C, Brownstein JS, Madoff L, McCraw SL, Gurr S. (2012) Emerging fungal threats to animal, plant and ecosystem health. Nature 484: 186-194; Fisher MC, Stajich J, Farrer RA. Emergence of the chytrid fungus Batrachochytrium dendrobatidis and global amphibian declines (2012) in Evolution of Virulence in Eukaryotic Microbes. Eds Heitman J, Sibley D and Howlett B; Olson D.H., Aanensen D.M., Ronnenberg K.L., Powell C.I., Walker S.F., Bielby J., Garner T.W.J., Weaver G., The Bd-Mapping group, Fisher M.C.* (*equal contributors) (2013) Mapping the global emergence of Batrachochytrium dendrobatidis, the amphibian chytrid fungus. PLoS ONE 8(2):e56802. And for Salamanders, beyond amphibians: Martel A, Blooi M, Adriaensen C, Van Rooij P, Beukema W, Fisher MC, Farrer RA, Schmidt BR, Tobler U, Goka K, Lips KR, Muletz C, Zamudio K, Bosch J, Lötters S, Wombwell E, Garner TWJ, Cunningham AA, Spitzen-van der Sluijs A, Salvidio S, Ducatelle R, Nishikawa K, Nguyen TT, Kolby JE, Van Bocxlaer I, Bossuyt F, Pasmans F (2014). Recent introduction of a chytrid fungus endangers Western Palearctic salamanders. Science Vol. 346 no. 6209 pp. 630-631 DOI: 10.1126/science.1258268	the text was significantly shortened
Mark Rounsevell	Ch.3	83	2487	83	2487	I don't understand how habitat area has declined in the past, when urban areas have at this time increased (strongly)?	the habitats declined within the urban areas
Mark Snethlage	Ch.3	83	2487			not sure if the habitat degradation trends (all pointing downwards) are interpreted the same way as in the other tables. In general upward pointed arrows signify more degradation, and therefore a worsening condition. Cf general comment about habitat condition and habitat degradation	considered and explained
Lisa P. Sousa	Ch.3	84	2506	86	2556	It could be interesting to complement the analysis of agricultural areas with data from Corine Land Cover 2012	this sentence, and actually the footnote, just states that agroecosystems 'include croplands, orchards, horticultural systems and managed grasslands'; better to use this pragmatic definition than trying to find an acceptable definition (as many systems, even 'natural', are influenced by humans - e.g. many savanna systems are pyroclimax systems largely of anthropogenic origin)
Olesya Petrovych	Ch.3	84	2508	84	2510	This sentence introduces agroecosystems as the largest terrestrial biome over ECA. While agrocosystems should mostly be considered as biome which are actievely formed under the influence of antropogenic and natural influences, such a notion may cause a discussion and muct be backed up by a lot of research. Maybe in the context of IPBES agroecosystems are better viewed as ecosystems of anthropogenic origin which took place of the natural ecosystems?	the figure has been deleted
UNEP-WCMC: Elise Belle	Ch.3	84	2511	84	2512	Correct figure title and labels on X-axis.	the figure has been deleted
Lisa P. Sousa	Ch.3	84	2511	84	2514	Figure 3.26 - The year should be specified	we can drop Figure 3,26 here and chapter 1 should drop figure 3,27 as it presents core info on the temporal trends of agroecosystems over ECA
Mark Rounsevell	Ch.3	84	2513	84	2513	These figures are given in Ch1, so no need to repeat here.	agreed; the TSU will make the legend legible when preparing the final figure
Lisa P. Sousa	Ch.3	84	2515	84	2519	The map legend of Figure 3.27 is not legible	this sentence refers to changes in hedgerow length and connectivity, whereas the publication of Staley et al. (2013) assesses changes in plant community composition/diversity related to hedgerow management. The two references already provided thus seem adequate to support the sentence
Allan Watt	Ch.3	85	2554			As previously mentioned, studies on the relevance of changes in hedgerow management include: Changes in hedgerow floral diversity over 70 years in an English rural landscape, and the impacts of management (Staley et al., 2013 Biological Conservation 167, 97–105)	The Table format has been corrected
Mark Rounsevell	Ch.3	86	2569	86	2569	Something seems to have gone wrong with the table formatting.	We have replaced two trend indicators by single trend indicators
Mark Snethlage	Ch.3	86	2569			Table 3.27: the "current" "trends" assessments for "Avian Breeds" and "Mammal Breeds" at "ECA" level, seem to have two trend indicators: ↘↔, which can be interpreted as moderate decrease to stable. However, this kind of intermediate assessment is not applied in the other tables	this reference is now included (Lines 2596)
Diana Bowler	Ch.3	88	2596	88	2596	Such communities have also become more homogenised. See Eskildsen et a. 2015. Ecological specialization matters: long-term trends in butterfly species richness and assemblage composition depend on multiple functional traits. Diversity and Distributions.	the status of local breeds is now indicated (Lines 2614-2623)
Ilja Gasan Osojnik Črnivec	Ch.3	89	2614		2617	Along these reported %, the % of avian and mammalian breeds in ECA correpsonding to the total breeds at local scale has to ber cited, as well, in order to enable relevant interpretation.	the title of the sub-sectin has been revised as suggested
Ilja Gasan Osojnik Črnivec	Ch.3	89	2614		2623	General comment - it is not immediatelly apparent to an uniformed reader, whether in this reported number that are adressing breeds in the narrow sense (domestic breeds whose characteristics were artificially selected and maintained by humans) or wether this term is meant to cover all variation within individual specia (e.g. subspecies, which have joint genetic characteristics, but can interbreed freely or may be reproductivey isolated to some extent). If breeds are meant as domestic breeds, the paragraph can be titled e.g. "Animal genetic resources for Food and Agriculture" (as is established in FAO nomenclature).	'aboveground' corrected

UNEP-WCMC: Elise Belle	Ch.3	91	2663	91	2663	"several aboveground invertebrate"	would the reviewer indicate us an adequate reference quantifying this, we would be please to include it
Ilja Gasan Osojnik Črnivec	Ch.3	92	2689		2692	In light of this trends - increassed demand for honeybee pollination vs. Increase of honeybee stocks - it would be good to have a reference to an assessment that also estimates the number of honeybee families / unit of area that are suistainable to mannage from tho point of not having severe bee family losses over winter and from the point of not interfering with the wild bee populations whilst increasing honeybee stocks ...	the fact that organic has a positive effect particularly on pollinators and plants is now aknowledged
Ilja Gasan Osojnik Črnivec	Ch.3	92	2701		2720	the effect of organic farming on mannaged and wild pollinators could be shortly commented here, as this is especially important in e.g. organic famring "islands" in intensive famring areas	useful to keep the box here; many comments highlight that the SOD does not sufficiently policy-relevant aspects. It is even possible to include boxes highlighting particularly relevant elements for policy makers that will not be visible to them (largely lost in the STPM) otherwise? TBD
Mark Rounsevell	Ch.3	93	2721	93	2721	Not sure that this text warrants a box.	edited and taken out of the box
André Mader	Ch.3	93	2726			Word is missing from title - north of what?	changed to "Snow and ice doinated ecosystems"
Harald Pauli	Ch.3	93	2729	93	2734	For mountain glaciers outside of the Arctic 229500 km² appears strongly overestimated. According to Grinsted (2013) the total non-arctic glacierized area of North Asia, Scandinavia, Central Europe, Caucasus and Middle East and Central Asia ranges between 73728 and 124731 km² (three different inventores were used), where the bulk is in Central Asia (which I expect would also include Chinese Central Asia). Reference: Grinsted A 2013. An estimate of global glacier volume. The Cryosphere 7: 141-151.	Yes, this is a mistake of recalculation from ha into square km. Corrected
Harald Pauli	Ch.3	93	2735	93	2735	change to: '...(<3.5°C mean growing season temperature)...'	It was average annual temperature
Harald Pauli	Ch.3	93	2738	93	2739	...the higher plants form cushions or rosettes (Saxifraga oppositifolia, Papaver radicatum, Ranunculus glacialis) with...'	added
Harald Pauli	Ch.3	93	2742	93	2744	Needs to be specified to which region does this refers to; for the entire ECA, numbers are too low.	Information about animals is eliminated
Gregory Insarov	Ch.3	93	2749	93	2749	For my best knowledge, Cheluskin Peninsula is in Taimyr, not in Chukotka. Check please.	Yes, of course. Corrected.
Gregory Insarov	Ch.3	93	2757	97	2759	These estimates are taken from the map of Russian biomes, 2015, they are based on the Russian portion of polar deserts only, Svalbard and other areas ourside Russia are not considered. so the statement should be re-written. Author team may wish to include information on species richness of Polar deserts at other parts of ECA region as well.	The information about Iceland and Svalbard is not so aggregated in published literature.
Gregory Insarov	Ch.3	94	2773	94	2775	This phrase appeared in the 'Polar desrt" sub-section. Arctic deserts, in accordance with descriptions above, do not include mountains. Author team may want to move this phrase into 'Glaciers and Nival mountain belt' sub-sction above.	The part about past and current trends is about as polar deserts, as glaciers and nival belt.
Harald Pauli	Ch.3	94	2775	94	2775	You may add something from Europe, such as: 'In the Alps, glaciers lost 35% of their total area from 1850 to 1970 and almost 50% by 2000 (Zemp et al. 2006).' Reference: Zemp M, Haeberli W, Hoelzle M, Paul F 2006. Alpine glaciers to disappear within decades? Geophysical Research Letters 33, L 13504.	Added
Gregory Insarov	Ch.3	95	2785	95	2787	This phrase appeared in the 'Polar desrt" sub-section. Arctic deserts, in accordance with descriptions above, do not include mountains. Author team may want to move this phrase into 'Glaciers and Nival mountain belt' sub-sction above.	The part about past and current trends is about as polar deserts, as glaciers and nival belt.
André Mader	Ch.3	96	2809	105	3014	This section is very long, especially compared with most others. Also. There is quite a lot about taxa that could be under 3.2.3 instead	reduced and corrected
PESC-4: Susanna Hakobyan	Ch.3	96	2817	96	2817	You should specify that subterranean ecosystems as "one of the" most extensive biome	corrected
Gregory Insarov	Ch.3	98	2867	98	2874	Modify the figure and the figure capture, and delete information outside the ECA region.	done
André Mader	Ch.3	99	2887			Is this figure necessary? It is very specific and only subregionally relevant.	corrected
EU: Ole Ostermann, JRC	Ch.3	99	2903	100	2937	The sentence "Olm is the largest strictly cave adapted (stygobiont) species in the World 2903" appears twice.	deleted
André Mader	Ch.3	100	2918			Is this figure necessary? It is very specific and only subregionally relevant.	corrected
André Mader	Ch.3	101	2940			Is this figure necessary? It is very specific and only subregionally relevant.	corrected
EU: Ole Ostermann, JRC	Ch.3	101	2941	101	2941	"Figure 3.38: Hotspots of richness in stygobionts. Each cell across southwestern Europe is 0.2 x 0.2" Is the scale in degrees? Or Km ?	corrected
Mark Snethlage	Ch.3	101	2946	101	2950	paragraph repeats page 99, 2898 - 2906	deletd
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	Ch.3	101	2947	101	2948	Reference is Arntzen et al. (2009) http://www.iucnredlist.org/details/18377/0	added
Thomas Brooks	Ch.3	101	2947	101	2948	Reference is Arntzen et al. (2009) http://www.iucnredlist.org/details/18377/0	added
UNEP-WCMC: Elise Belle	Ch.3	101	2951	101	2953	What is the conclusion of the study?	conclusion added
UNEP-WCMC: Elise Belle	Ch.3	101	2952		2952	"Schwarz, 2012), included a detailed inventory"	done
EU: Ole Ostermann, JRC	Ch.3	102	2966	102	2975	The transition between these exemples does not appear obvious. It rather looks like a list of independent findings.	correctected in text
Mark Snethlage	Ch.3	103	3001			Table 3.29 & table 3.30: subterranean species and habitats. Both tables contain "species richness" and "endangered species" as indicators, but the assessments are different.	corrected
André Mader	Ch.3	104	3013	105	3014	Why soils here? Don't they belong under all terrestrial sub-sections?	this section was removed
ECA values liaison group	Ch.3	104	3013			It is suggested to change the first sentence as follows: 'Soils are a fundamental natural resource supporting and providing a range of contributions to people.'	this section was removed
Mark Snethlage	Ch.3	104	3013			suggestion also to include soil map data download: http://www.gaez.iiasa.ac.at and/or soil erosion map data download: http://www.fao.org/nr/lada/gladis/gladis/downl.php Also see https://tinyurl.com/ECA-Maps for example	this section was removed
Allan Watt	Ch.3	105	3013			Microbes are not invertebrates.	this section was removed
UNEP-WCMC: Elise Belle	Ch.3	105	3014	105	3014	Figure 3.41: Crop and focus map on the ECA region.	this section was removed
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	Ch.3	105	3015	108	3059	Excellent use of these data on protected areas and key biodiversity areas; very important to retain.	than you

EU: Ole Ostermann, JRC	Ch.3	105	3015	105	3023	The Digital Observatory for Protected Areas (DOPA) is a set of web services and applications that can be used to assess, monitor, report and possibly forecast the state of and the pressure on protected areas at multiple scales. The data, indicators, maps and tools provided by the DOPA are relevant to a number of end-users including policy makers, funding agencies, protected area agencies and managers, researchers and the Convention on Biological Diversity (CBD). The information can be used , for example, to support spatial planning, resource allocation, protected area development and management, and national and international reporting. Using global reference datasets, the DOPA supports global assessments but also provides a broad range of consistent and comparable indicators at country, ecoregion and protected area level. http://dopa.jrc.ec.europa.eu/en	the whole section on Protected Areas was edited based on new data from UNEP-WCMC and moved to chapter 4. all comments were considered and addressed
Allan Watt	Ch.3	105	3015			Protected areas are still not well covered: this section focuses only on coverage of protected areas in relation to KBAs, IBAs and AZEs. Consideration (here or elsewhere) of their importance in relation to ecosystem type, policy (particularly Natura 2000) and various drivers, e.g. climate change, should be included.	the whole section on Protected Areas was edited based on new data from UNEP-WCMC and moved to chapter 4. all comments were considered and addressed
Thomas Brooks	Ch.3	105	3015	108	3059	Excellent use of these data on protected areas and key biodiversity areas; very important to retain.	the whole section on Protected Areas was edited based on new data from UNEP-WCMC and moved to chapter 4. all comments were considered and addressed
Stuart Butchart	Ch.3	105	3015			Good text on protected areas and key biodiversity areas	the whole section on Protected Areas was edited based on new data from UNEP-WCMC and moved to chapter 4. all comments were considered and addressed
UNEP-WCMC: Elise Belle	Ch.3	105	3016		3017	"(WDPA) (UNEP-WCMC and IUCN 2017) is the most comprehensive and authoritative global database"	the whole section on Protected Areas was edited based on new data from UNEP-WCMC and moved to chapter 4. all comments were considered and addressed
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	Ch.3	105	3016	105	3016	Why use a 2015 version of the WDPA? There are versions produced every month.	the whole section on Protected Areas was edited based on new data from UNEP-WCMC and moved to chapter 4. all comments were considered and addressed
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	Ch.3	105	3018	105	3018	Data is provided every year by the EEA.	the whole section on Protected Areas was edited based on new data from UNEP-WCMC and moved to chapter 4. all comments were considered and addressed
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	Ch.3	105	3018	105	3018	Should use the same year as the WDPA version used	the whole section on Protected Areas was edited based on new data from UNEP-WCMC and moved to chapter 4. all comments were considered and addressed
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	Ch.3	105	3018	105	3018	The EEA provide data for the 33 member countries and six cooperting countries https://www.eea.europa.eu/about-us/countries-and-eionet/intro. In addiiton data for Europea covering specific Regional Sea conventions comes from the relevant secretariat e..g OSPAR, HELOCM, SPAMI	the whole section on Protected Areas was edited based on new data from UNEP-WCMC and moved to chapter 4. all comments were considered and addressed
UNEP-WCMC: Elise Belle	Ch.3	105	3019		3019	"other countries, as well as occasionally NGOs and communities."	the whole section on Protected Areas was edited based on new data from UNEP-WCMC and moved to chapter 4. all comments were considered and addressed
UNEP-WCMC: Elise Belle	Ch.3	105	3022		3023	"three datasets have been synthetised for"	the whole section on Protected Areas was edited based on new data from UNEP-WCMC and moved to chapter 4. all comments were considered and addressed
UNEP-WCMC: Elise Belle	Ch.3	106	3024	106	3025	You could instead present the most recent data in the WDPA, which is slightly different: "In the ECA region, protected areas now cover 13.4% (4,027,190 km2) of terrestrial areas and inland waters, and 4.9% (980,042 km2) of coastal and marine areas under national jurisdiction (UNEP-WCMC and IUCN, 2017)." Also update Figure 3.43 accordingly (see other comments below). Reference: UNEP-WCMC and IUCN (2017). Protected Planet. Cambridge, UK: UNEP-WCMC and IUCN. Available at: www.protectedplanet.net.	the whole section on Protected Areas was edited based on new data from UNEP-WCMC and moved to chapter 4. all comments were considered and addressed
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	Ch.3	106	3024	106	3024	Reference these figures, which publication, which version of the WDPA was used, month and year.	the whole section on Protected Areas was edited based on new data from UNEP-WCMC and moved to chapter 4. all comments were considered and addressed
PESC-4: Kristina Raab	Ch.3	106	3026	106	3029	The focus here is entirely terrestrial, please fix this imbalance. An equivalent graph for the marine environment would be % of EBSAs (CBD terminology) that are actually protected. It would be great if you could make the equivalent analysis for the marine realm.	the whole section on Protected Areas was edited based on new data from UNEP-WCMC and moved to chapter 4. all comments were considered and addressed
UNEP-WCMC: Elise Belle	Ch.3	106	3027		3027	"covered by protected areas and management effectiveness." Add the date in relation to Figure 3.43, i.e. " In 2015, KBAs covered"	the whole section on Protected Areas was edited based on new data from UNEP-WCMC and moved to chapter 4. all comments were considered and addressed
UNEP-WCMC: Elise Belle	Ch.3	106	3030	108	3037	Keep figure legends with figures.	the whole section on Protected Areas was edited based on new data from UNEP-WCMC and moved to chapter 4. all comments were considered and addressed
IPBES Knowledge and Data Task Force (KD TF)/ Task Group on Indicators (TGI)	Ch.3	106	3030	106		The graph of Percentage of areas covered by protected areas can be replaced to the graph which TGI provided	the whole section on Protected Areas was edited based on new data from UNEP-WCMC and moved to chapter 4. all comments were considered and addressed
Kristina Raab	Ch.3	107	3032	108	3037	*(already submitted via PESC-4 but had wrong page/line references - I clarified comment too)The focus here is entirely terrestrial, please fix this imbalance. Equivalent graphs (to figures 3.43 and 3.44) for the marine environment would be % of EBSAs (CBD terminology) that are actually protected. It would be great if you could make the equivalent analysis for the marine realm.*	the whole section on Protected Areas was edited based on new data from UNEP-WCMC and moved to chapter 4. all comments were considered and addressed
IPBES Knowledge and Data Task Force (KD TF)/ Task Group on Indicators (TGI)	Ch.3	107	3033	107		The graph of Protected area Coverage of Key Biodiversity Areas can be relpaced to the graph which TGI provided	the whole section on Protected Areas was edited based on new data from UNEP-WCMC and moved to chapter 4. all comments were considered and addressed
UNEP-WCMC: Elise Belle	Ch.3	107	3035	107	3035	In figure legend: "IBAs in EE sub-region"	the whole section on Protected Areas was edited based on new data from UNEP-WCMC and moved to chapter 4. all comments were considered and addressed

UNEP-WCMC: Elise Belle	Ch.3	108	3039	108	3040	For CWE: "protected areas is 14.6%, with 26.7% for terrestrial areas and inland waters, and 6.3% for coastal and marine areas under national jurisdiction (UNEP-WCMC and IUCN, 2017)."	the whole section on Protected Areas was edited based on new data from UNEP-WCMC and moved to chapter 4. all comments were considered and addressed
UNEP-WCMC: Elise Belle	Ch.3	108	3048		3049	For EE: "protected areas is 7.5%, with 9.5% for terrestrial areas and inland waters, and 3.0% for coastal and marine areas under national jurisdiction (UNEP-WCMC and IUCN, 2017)."	the whole section on Protected Areas was edited based on new data from UNEP-WCMC and moved to chapter 4. all comments were considered and addressed
UNEP-WCMC: Elise Belle	Ch.3	108	3054		3055	For CA: "protected areas is 4.1%, with 4.2% for terrestrial areas and inland waters, and 2.4% for coastal and marine areas under national jurisdiction (UNEP-WCMC and IUCN, 2017)."	the whole section on Protected Areas was edited based on new data from UNEP-WCMC and moved to chapter 4. all comments were considered and addressed
Germany	Ch.3	108	3060	109	3079	The IUCN assessments cover not more than 5 - 20% of plants and the selection of the reviewed species is triggered by a high probability of threat. Therefor a bias is inevitable when using these data to make general procentual assumptions. This should be stated clearly.	these statistics are only for comprehensively assessed taxa (i.e. taxa with at least 90% of known species assessed), these include conifers and sea grasses among plants
Germany	Ch.3	108	3060	143	4098	There is currently little information on algae - please add or explain why this is not covered.	there is no data on status or trends for macro or micro-algae for the region. Kelp forests were dealt with at the level of habitat extent and intactness, for NE Atlantic.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	Ch.3	108	3060	109	3079	Excellent use of these data on ECA Red List; very important to retain.	thank you
Thomas Brooks	Ch.3	108	3060	109	3079	Excellent use of these data on ECA Red List; very important to retain.	thank you
Stuart Butchart	Ch.3	108	3060			Important to keep this text on status and trends in extinction risk and Fig 3.45	thank you
Diana Bowler	Ch.3	108	3061	108	3061	Throughout this species section, I think the time scale of the trend data should be made clearer. Often the trends are only based on data over the last 3 or so decades, and therefore there is a baseline reference problem: we don't really have long enough data to capture the full impacts of human actvities and the impacts are mostly underestmates, especially for land use change. For discussion see https://www.nature.com/articles/srep41591?WT.feed_name=subjects_biological-sciences	very good point. Generally the status and trends are based on IUCN assessment, and the decline is reported over 3 generations or 10 years whichever the longer. For EEA data we have specified the reporting periods in paragraph 3.4.13. However we added this sentence at the end of 3.4.1 The time-period over which trend data are reported varies and is specified for the different taxa, but generally, data is available only for the last 3 decades. In absence of long-term trends there is a risk of underestimating the full impacts of human activities.
Allan Watt	Ch.3	109	3080			Coverage of mammals much better than in FOD.	Thank you, we further improved it now with additional data on marine mammals and more quantitative trends from EU long-term monitoring data
Mark Snethlage	Ch.3	109	3080			suggestion to include the mammal species richness and threatened mammals map of Jenkins data download: http://biodiversitymapping.org Also see https://tinyurl.com/ECA-Maps for example	done, thank you
Kristina Raab	Ch.3	109	3082	110	3129	*(addition to PESC-4 comment)marine mammals are missing, please add. Sea Mammal Research Unit in St Andrews, Scotland might be able to provide information, and here is a project on seals: https://www.researchgate.net/project/Harbour-Seal-Decline-Project*	done, there is now synthetic statistics on marine mammals and specific examples for the EU, for which more information is available. We have also covered migratory marine mammals in the CMS-related text
PESC-4: Kristina Raab	Ch.3	109	3082	110	3129	marine mammals are missing. I don't have references but here is a whole institute dealing with the topic, somebody is bound to be able to point you in the right direction: http://www.smru.st-andrews.ac.uk/news-and-events/	done, there is now synthetic statistics on marine mammals and specific examples for the EU, for which more information is available. We have also covered migratory marine mammals in the CMS-related text
André Mader	Ch.3	109	3095	109	3096	Don't these two percentages contradict one-another? If not, perhaps the wording can be improved to make that clear.	the mortality rate refers to the individuals affected. The 50% is of the whole population.
EU: Sophie Condé	Ch.3	110	3097		3114	Where come from all these data ? No idea of any EEA 2014 report related to this topic (not cited in the list of references)	European Environment Agency State of Nature Report. Is 2015, and it has been corrected. The citation is now in the reference list.
Diana Bowler	Ch.3	110	3101	110	3101	Recovery of bat populations might be highlighted more: https://www.eea.europa.eu/highlights/bat-population-recovering	there are several bat species who are declining, also at the EU level, therefore we did not feel that bats as a group are a good example of recovering species
André Mader	Ch.3	110	3106			It might be confusing for the reader to discover a new system of categorization here (and only for the EU)...	we have to be as precise as possible about the geographic coverage of the data we use. It so happens that most of the large-scale, long-term, coordinated monitoring data are at the EU level. If we ignored it, it would A) mean we ignore a good proportion of information on past trends B) miss the opportunity to discuss progress towards EU biodiversity targets. it's unfortunate that the Units of Analyses do not match the biogeographic regions of the EU, but this is the data we have and have to somehow use it
UNEP-WCMC: Elise Belle	Ch.3	110	3121	110	3121	Large carnivores, such as? Examples?	we have made examples
Oliver Lindecke	Ch.3	110	3122	3124	110	Large carnivore recovery, e.g. of wolf populations, is facilitated by the animals use of larger military controlled areas. There animals, prey and predator species, are less affected by antrhopogenic influences.	we could not find literature on this and according to recent papers this is certainly not among the main reasons for recovery so we did not include it
UNEP-WCMC: Elise Belle	Ch.3	110	3126		3126	"in the last thirty years"	corrected
Oliver Lindecke	Ch.3	110	3130	3132	110	Expansion of windfarms is threatening migratory bat species and open space foraging bat species.	thanks for the info. Mentioned in the migratory species section now.
UNEP-WCMC: Elise Belle	Ch.3	111	3136	111	3143	Table still needs to be completed.	done
Allan Watt	Ch.3	111	3144			Coverage of birds is still inadequate: much more detail for these well-studied species would be useful.	The text was modified, and reviewed by several bird experts who agreed that with the space requirements the level of detail was satisfying.

UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	Ch.3	111	3148	111	3148	The statement that "Probably more can be considered at risk but were not listed by IUCN" is not backed up with any documentation, and should be deleted.	the text was modified
Thomas Brooks	Ch.3	111	3148	111	3148	The statement that "Probably more can be considered at risk but were not listed by IUCN" is not backed up with any documentation, and should be deleted.	the text was modified
EU: Ole Ostermann, JRC	Ch.3	111	3153	111	3156	"High bird richness areas comprise Russia, Turkey, the Mediterranean, Black Sea and...", but fig 3.46 shows different evidence, namely for Turkey.	the high resolution figures helps seing that Turkey comprises areas of high diversity; these mapped values should not be taken as country totals
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	Ch.3	111	3156	112	3157	The underlying source of data (the IUCN Red List of Threatened Species) for Fig 3.46 should be provided.	we provided a reference
Thomas Brooks	Ch.3	111	3156	112	3157	The underlying source of data (the IUCN Red List of Threatened Species) for Fig 3.46 should be provided.	we provided a reference
EU: Sophie Condé	Ch.3	112	3158		3161	Please detail which EEA report 2014?	all the references were checked and updated
Kristina Raab	Ch.3	112	3174	112	3211	Are seabirds included here ? I see no mention of marine elements affecting bird populations (with the exception of wind turbines which could be on land or at sea), so it seems to me they are not included. Please add them if this is the case. Please also specify in table 3.34 'land and sea use change' to clarify. Changes in marine fish communities have been shown to have important effects on seabird populations is one aspect I'm aware of, I'm sure there is more.	Seabirds are included, and the text was edited to include them more
Diana Bowler	Ch.3	112	3186	112	3186	At least in europe, warming temperatures actually has positive effects on abundance. See SØGAARD JØRGENSEN et al. 2016. Continent-scale global change attribution in European birds - combining annual and decadal time scales. Global Change Biology. Also the many papers by James Pearce-Higgins at the BTO in the UK.	abundance, indeed
PESC-4: Susanna Hakobyan	Ch.3	112	3190	112	3192	Different types of pollution can affect birds in different ways. I would suggest to add a sentence about the organic waste at poultry farms and fish farms, which provides some species of birds with food and reduce their migratory activity. As an example, part of the population of white storks now remains wintering in many countries, including Armenia. See for example: 1. Flack A, Fiedler W, Blas J, Pokrovsky I, Kaatz M, Mitropolsky M, Aghababyan K, Fakriadis I, Makrigianni E, Jerzak L, Azafzaf H, Feltrup-Azafzaf C, Rotics S, Mokotjomela T.M1, Nathan R, Wikelski M., Costs of migratory decisions: A comparison across eight white stork populations. Science Advances 22 Jan 2016: Vol. 2, no. 1, e1500931 DOI: 10.1126/sciadv.1500931 2. Gábor Seress and András Liker. HABITAT URBANIZATION AND ITS EFFECTS ON BIRDS , Acta Zoologica Academiae Scientiarum Hungaricae 61(4), pp. 373–408, 2015 DOI: 10.17109/AZH.61.4.373.2015)	Interesting suggestion, but could not included due to lack of space.
Jean-Pierre Arnauduc	Ch.3	112	3193	112	3195	This paragraph should be removed because (legal) hunting and poaching are amalgamated, which is not acceptable. Illegal hunting is "poaching", is not hunting. The term poaching should be preferred over "illegal hunting". These practices must be evaluated and analyzed separately, the amalgam is not acceptable.Otherwise: delete "often" and replace "but is a seriuous threat....species" by : "but is may be a threat for certain .....species"	We acknowledge the difference and will use it for clarity
Mark Snethlage	Ch.3	112	3193			Birdlife International, 2015: reference does not appear in Literature list. Published article: BROCHET, A., VAN DEN BOSSCHE, W., JBOUR, S., NDANG'ANG'A, P., JONES, V., ABDOU, W., . . . BUTCHART, S. (2016). Preliminary assessment of the scope and scale of illegal killing and taking of birds in the Mediterranean. Bird Conservation International, 26(1), 1-28. doi:10.1017/S0959270915000416	The references have been udpdated. Thanks for the interesting reference.
Mark Snethlage	Ch.3	112	3193	112	3195	compare with chapter 4, lines 935 - 950	The text on this topic has been coordinated with Ch4
EU: Sophie Condé	Ch.3	113	3201		3204	Same comment	If this comment addresses seabirds, see response above
UNEP-WCMC: Elise Belle	Ch.3	114	3244	115	3245	Spell out abbreviations on first line (and merge cells where needed). You could also delete the last two columns.	This table has now been intensively reformatted (some cells were accidentally abbreviated during the merger of the individual sections into a full document).
PESC-4: Levon Aghasyan	Ch.3	115	3247	115	3250	There are other countries where snakes are endangered. See for example Aram Aghasyan, Levon Aghasyan, Eduard Yeghiasaryan, Silva Amiryan, Amphibians and Reptiles in the New Edition of the Animals' Red Data Book of Armenia, Agriculture, Forestry and Fisheries. Vol. 2, No. 2, 2013, pp. 77-88. doi: 10.11648/j.aff.20130202.14 Link: www.sciencepublishinggroup.com/journal/paperinfo?journalid=119&paperId=6001542	This section is a summary of the IUCN Red List data by assessment subregion - sadly, given space constraints, we are unable to carry out an in-depth country-by-country analysis of reptile status. Specific examples (by no means exhaustive) are given later in the text where we detail threats to species.
EU: Ole Ostermann, JRC	Ch.3	115	3263	115	3263	where does the [4] refer to ?	[4] refers to the reference for the statement - we accidentally appear to have used the wrong citation format. It has been corrected now
Andriy-Taras Bashta	Ch.3	115	3275			V.berus has have IUCN status - LC	This is indeed the case and has now been changed.
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	Ch.3	116	3277	117		I'm not sure the data in here is up-to-date as the records I have for reptiles in the LPD here are different. Please contact Louise McRae <Louise.Mcrae@ioz.ac.uk> if necessary	We have used the latest data from the LPD provided by Louise McRae
André Mader	Ch.3	116	3277	117	3293	Is it worth spending half a page on less than half of the ECA region? Suggest to use the same format as for the others, or leave this out (already done on pages 118/119	This has now been moved to the supplementary information as an overview of available time series data for reptiles as reported in the Living Planet Database
PESC-4: Levon Aghasyan	Ch.3	116	3277	117	3279	Reptiles: Armenia is rich in reptiles. There are 110 species of Amphibians and Reptiles in Caucasus, of which 59 in Armenia: Darevsky's viper (Pelias darevskii) is not mentioned as well as others from red list, endemic to Armenia. Reference: Aram Aghasyan, Levon Aghasyan, Eduard Yeghiasaryan, Silva Amiryan, Amphibians and Reptiles in the New Edition of the Animals' Red Data Book of Armenia, Agriculture, Forestry and Fisheries. Vol. 2, No. 2, 2013, pp. 77-88. doi: 10.11648/j.aff.20130202.14. Link to dowload. www.sciencepublishinggroup.com/journal/paperinfo?journalid=119&paperId=6001542 http://www.iucnredlist.org/details/23000/0	This table is a summary of population time series data held in the Living Planet Database (which has now been moved to the supplementary information as an overview of available time series data for reptiles as reported in the Living Planet Database). Sadly, given space constraints, we are unable to carry out an in-depth country-by-country analysis of reptile status. Specific examples (by no means exhaustive) are given later in the text where we detail threats to species.
UNEP-WCMC: Elise Belle	Ch.3	116	3278	117	3279	It would be visually better to use up or down arrow instead of 'increasing' or 'decreasing'.	Done
UNEP-WCMC: Elise Belle	Ch.3	118	3296	118	3296	Add endemic species as mentioned.	Done
Gregory Insarov	Ch.3	118	3317	118	3320	Provide reference(s) for this statement please.	Done
Mark Snethlage	Ch.3	119	3329			"Amphibians represent the first most endangered groups of vertebrates in Europe" vs page 123, line 3430: Freshwater fishes: "This is currently the second most threatened taxonomic group assessed, just after freshwater molluscs." Is this consistent or contradictory?	This is not contradictory as endangered and threatened are different IUCN categories in the evaluation process.
UNEP-WCMC: Elise Belle	Ch.3	119	3350	120	3351	Table is too dark, and could use arrows in green/red colours.	Table is now white but arrows remained black. It should be easy to read

Mark Snethlage	Ch.3	121	3370			suggestion to include the Jenkins amphibian species diversity and threatened species maps, to replace current map that does not cover the entire ECA region data download: http://biodiversitymapping.org Also see https://tinyurl.com/ECA-Maps for example	We are aiming to include new figures and as such made a a request to the TSU for the production of ECA specific figures
Mark Snethlage	Ch.3	121	3390		3398	This paragraph is about reptiles, while the section is about amphibians	It has now been moved to the reptile section
PESC-4: Kristina Raab	Ch.3	122	3399	126	3528	disproportional: 3x as much information on fresh water fish as on marine species => fix this inbalance	there is much more extensive text on marine fishes now
Mark Snethlage	Ch.3	122	3419			Fig 3.9 show fish species diversity for Western Europe only. Possibility to add / replace with map of fish species diversity map for entire ECA data download: www.aquamaps.org Also see https://tinyurl.com/ECA-Maps for example	we discussed this with Mark Snethlage and realized it wasn't possible due to lack of data.
UNEP-WCMC: Elise Belle	Ch.3	122	3420	122		Figure not referenced in the text.	addressed
Mark Snethlage	Ch.3	123	3447			"The level of threat to freshwater fishes is one of the highest just after freshwater molluscs (44%) but before amphibians (23%), reptiles (19%) mammals and some groups of invertebrates such as dragonflies (15%), birds (13%), butterflies (19%) and aquatic plants (7%)." What does level of threat (in percentage) really mean here? Why is the level of threat for freshwater fish not included in this comparison? See also previous comment	The total number of fish species and level of threat for fish is provided a couple of sentences above (i.e. 37% are threatened). The percentage allow comparison between groups as some groups are monre numerous than others but in proportion the level of threat may be lower..
Mark Snethlage	Ch.3	124	3456		3457	partially repeats page 123, line 3452	Amended accordingly
Mark Snethlage	Ch.3	124	3466			"The biological diversity": would it be more acurate to say: "Freshwater fish species diversity"?	Amended accordingly
Ilja Gasan Osojnik Črnivec	Ch.3	125	3491			.. as well as priority poluntants arising from various industrial activities (e.g. hormone distruptors from polimery and paint industries that cause reproductive disorders, in particularly in aquatic organisms).	It has now been added
Andrew Wade	Ch.3	125	3496	125	3498	What is the evidence for the improvement in water quality? Is this in terms of organic pollution from discharge of untreated effluent, rather than issues around nutrients, sediment or micro-organics?	this is in terms of organic pollution and nutriments/sediments not in terms of hormone distruptors
Diana Bowler	Ch.3	125	3503	125	3503	The following review discussing climate change impacts could also be cited here: Jeppesen et al. 2010. Impacts of climate warming on the long-term dynamics of key fish species in 24 European lakes. Hydrobiologia 694: 1-39.	We have cited Jeppesen et al. 2012 and we have included Jeppesen et al. 2010 later on in the Chapter uner Freswater Bioteas wher we specifically mention the issue of climate change (page 165)
Allan Watt	Ch.3	126	3529	127	3584	The section on terrestrial invertebrates is presumably a rough draft. It is very short compared to the number, and diversity (both taxonomic and functional) of invertebrates. Why the relatively small amount of information provided was chosen is unclear. Even groups that are well known such as butterflies and pollinators are very briefly dealt with: the superficial treatment of the latter is surprising given the amount of work done on them by IPBES already. The paragraph on pests suggests that only alien species are pests, which is clearly wrong (and much has been written about pests in Europe). Editing of the information presented is needed; and references are missing and/or wrong (e.g. Kennis and Hassal are incorrect - the authors are Kenis and Hassall).	The reviewer hasn't provided any reference to missing dataset or assessments so we are not sure what he means by well known and what he thinks is missing. Regarding pollinators (bees & butterflies), due to the limitation of space, we prefered citing the IPBES report about pollination. Regarding the pest, we agree but this chapter will be moved in the chapter about Nature's contribution to people.
ECA values liaison group	Ch.3	126	3541			Consider the possibility to use the term 'terrestrial invertebrates' contributions to people' instead of 'ecosystem services'	Terminology used was decided in a plenary
Diana Bowler	Ch.3	126	3551	126	3551	Consider here: Valtonen et al. 2017. Long-term species loss and homogenization of moth communities in Central Europe. Journal of Animal Ecology; Thomas et al. 2004. Comparative Losses of British Butterflies, Birds, and Plants and the Global Extinction Crisis. Science and Conrad et al. 2006. Rapid declines of common, widespread British moths provide evidence of an insect biodiversity crisis. Biological Conservation.	These three references have been added.
PESC-4: Frederic Lemaitre	Ch.3	126	3556	126	3556	Devictor et al (2012): the full reference is not reported in the reference list at the end of the chapter. That would be Devictor et al. (2012). Differences in the climatic debt of birds and butterflies at a continental scale, Nature Climate Change 2: 121-124.	Removed in the new draft.
Germany	Ch.3	126	3564	126	3564	The term modern agriculture is not defined, modern agriculture is not per se linked to pollution and pesticide use. Also organic and integrated crop production could also be called "modern agriculture".	Agreed. Reworded
Germany	Ch.3	126	3565	126	3565	"Pesticides and herbicides": not correct as pesticides include herbicides. Reference is missing for this particular statement.	The term 'Herbicides' has been removed
Allan Watt	Ch.3	127	3569			"coleopterans" are insects (and the term Coleoptera is more common)!	Removed in the new draft.
Allan Watt	Ch.3	127	3578	127	3579	The point about cascading effects is mentioned twice (and not explained).	Cascading is defined in the IPBES Glossary
ECA values liaison group	Ch.3	127	3578			Consider the possibility to use the term 'nature's contributions to people' instead of 'ecosystem services', unless ecosystem functions is meant, then phrase as such	OK Changed
UNEP-WCMC: Elise Belle	Ch.3	127	3584	127	3584	Figure legend missing.	Figure has been removed
Allan Watt	Ch.3	127	3585	127	3594	A much more rigorous review of this topic is needed: the short text is heavily biased towards one (unreferenced) study.	Agreed. This paragraph is completely changed and updated
Allan Watt	Ch.3	128	3595	128	3596	Very unclear from the first sentence, which implies that only some species reproduce!, onwards.	Agreed and rephrased
André Mader	Ch.3	128	3604	131	3710	Here is an example where there is probably too much information on drivers, which is chapter 4's domain	Thank you for the comments. It is ongoing process in cross-chapter 3-4.
Allan Watt	Ch.3	128	3606			Much is known about freshwater invertebrates in ECA so I am very surprised that no assessment was done.	there are 3 pages on invertebrates with status and trends for odonates, molluscs, crabs and crayfish
Sonja Jähnig	Ch.3	129	3645	129	3653	Drivers: a few further suggested references: Kail J, Arle J, Jähnig SC. 2012. Limiting factors and thresholds for macroinvertebrate assemblages in European rivers: Empirical evidence from three datasets on water quality, catchment urbanization, and river restoration. Ecological Indicators 18:63-72. Tonkin JD, Sundermann A, Jähnig SC, Haase P. 2015. Environmental controls on river assemblages at the regional scale: an application of the Elements of Metacommunity Structure framework. PlosONE 10:e0135450. Tonkin JD, Heino J, Sundermann A, Haase P, Jähnig SC. 2016. Context dependency in biodiversity patterns of central German stream metacommunities. Freshwater Biology 61:607-620.	thank you for the info, the reference were considered, but not added as other more specific literature was already cited
Sonja Jähnig	Ch.3	130	3671	130	3683	Applies to all taxa groups: Climate change effects appear here and are covered in the section "future dynamics" (after p144) - one location would be better; a few further suggested references: Domisch S, Araújo MB, Bonada N, Pauls SU, Jähnig SC, Haase P. 2013. Modelling distribution in European stream macroinvertebrates under future climates. Global Change Biology 19:752–762. Domisch S, Jähnig SC, Haase P. 2011. Climate-change winners and losers: stream macroinvertebrates of a submontane region in Central Europe. Freshwater Biology 56:2009–2020. Jähnig SC, Kuemmerlen M, Kiesel J, Domisch S, Cai Q, Schmalz B, Fohrer N. 2012. Modelling of riverine ecosystems by integrating models: conceptual approach, a case study and research agenda. Journal of Biogeography 39:2253–2263. Kuemmerlen M, Schmalz B, Guse B, Cai Q, Fohrer N, Jähnig SC. 2014. Integrating catchment properties in small scale species distribution models of stream macroinvertebrates. Ecological Modelling 277:77-86.	we reviewed climate change as a driver of both past, observed trends and future modelled ones. That is why climate change is in both sections. Thanks for the refs. We have included them.
PESC-4: Kristina Raab	Ch.3	131	3710	131	3710	add a section on marine invertebrates (would be 3.2.3.8) that includes gelatinous taxa, cephalopods and more. On gelatinous zooplankton: http://www.jstor.org/stable/10.1525/bio.2012.62.2.9?seq=1#page_scan_tab_contents ; https://www.researchgate.net/publication/281618169_Interactions_of_gelatinous_zooplankton_within_marine_food_webs	done

Germany	Ch.3	131	3711	134	3801	line 3712-3718: The IUCN assessments cover approx 5-20% of vascular plants and the selection of the reviewed species is triggered by a high probability of threat. Therefore a bias is inevitable when using these data to make general procentual assumptions. This should be stated clearly.	Here we partly disagree, as also very common/unthreatened species have been evaluated by IUCN. In national red lists the total numbers of threatened species are similar to the numbers indicated here. However, we now added a sentence indicating that these percentages might be biased: "However, these percentages might be biased as probably more threatened than unthreatened species have been evaluated by IUCN. Especially the total percentage of species with increasing population sizes is likely larger, as many generalists tend to expand their range sizes ((Bilz et al., 2011; IUCN, 2017); Table 3.40)"
Germany	Ch.3	131	3711	134	3801	line 3735-3746: The IUCN assessment covers approx 10% of vascular plants and the selection of the reviewed species is triggered by "policy species". Therefore a bias is inevitable when using these data to make general procentual assumptions. This should be stated clearly.	Here we partly disagree, as also very common species have been evaluated. In national red lists the total numbers of threatened species are similar to the numbers indicated here. However, we now added a sentence indicating that these percentages might be biased: "However, these percentages might be biased as probably more threatened than unthreatened species have been evaluated."
Anatoliy Khapugin	Ch.3	131	3713	131	3713	"2’483" should be re-written as "2483"	Done
Gregory Insarov	Ch.3	131	3713	131	3713	Provide reference(s) for number 32000t please.	As indicated, this number is estimated after we merged the checklists of Europe, Russia and the Central Asian countries.
André Mader	Ch.3	131	3719	131	3723	Is there no info available for the rest of the region?	We deleted the incomplete figure as the information can also be found in the text.
EU: Ole Ostermann, JRC	Ch.3	131	3721	131	3721	Figure 3.53 shows no data for some countries. The national red list for France is here: http://uicn.fr/liste-rouge-france/	Thank you, this is correct. We used an old map before the french red list with at least evaluated 1000 of the occurring plant species came out. However, we now deleted the incomplete figure as the information can also be found in the text.
Anatoliy Khapugin	Ch.3	131	3724	131	3724	The space is needed here: (46.2%)have	We reformulated the whole sentence.
Anatoliy Khapugin	Ch.3	131	3726	131	3726	Maybe, "Extinct and Endangered" will be better here	We now used small letters throughout the text for the threat categories.
EU: Ole Ostermann, JRC	Ch.3	131	3726	131	3727	Fig 1 not found	This figure has been deleted now.
Anatoliy Khapugin	Ch.3	131	3727	132	3734	It seems to me that there is a bit lack of recent references here	These are the national red lists. We are happy if you could indicate references were we missed a more recent publication.
Finnish Government	Ch.3	131	3732	131	3732	Use the latest redlist from Finland, i.e. instead of Ryttäri T. and al. 1997 use Rassi P. et al 2010. Rassi, P., Hyvärinen, E., Juslén, A. & Mannerkoski, I. (eds.) 2010: The 2010 Red List of Finnish Species. Ympäristöministeriö & Suomen ympäristökeskus, Helsinki. 685 p. Available at: http://www.environment.fi/redlist.	Thank you! We corrected this.
Anatoliy Khapugin	Ch.3	132	3739	132	3739	"1’826" should be re-written as "1826"	Done
Anatoliy Khapugin	Ch.3	132	3739	132	3740	The sentence "listed in policy instruments" is overestimated because a single reference is provided (Bilz et al., 2011 which, also, is absent in a reference list). Therefore, I suggest either to provide information about title of this policy instrument or to add more number of references on policy instruments here.	Here we disagree, as Bilz is the EU red list. All further explanations on all policy instruments can be found there.
Anatoliy Khapugin	Ch.3	132	3742	132	3742	"6’190" should be re-written as "6190"	Done
Anatoliy Khapugin	Ch.3	132	3744	132	3744	"3’000" should be re-written as "3000"	Done
Anatoliy Khapugin	Ch.3	132	3746	132	3746	The year "2011" is provided but, as it seems to me, Author is missed for unknown reference	We deleted 2011
Anatoliy Khapugin	Ch.3	132	3748	132	3749	"threatened ((Ministry of Natural Resources and Environment of the Russian Federation, 2015); in the IUCN Red List 53 species are included (IUCN, 2017))" should be re-written as "threatened (Ministry of Natural Resources and Environment of the Russian Federation, 2015); 53 species are included in the Global IUCN Red List (IUCN, 2017)"	We reformulated the whole sentence.
Anatoliy Khapugin	Ch.3	132	3750	132	3750	"7’000" should be re-written as "7000"	Done
Gregory Insarov	Ch.3	132	3750	132	3750	Provide reference(s) for this statement please.	This number derived from the references after the next sentence which was supposed to cover this statement, too.
Anatoliy Khapugin	Ch.3	132	3751	132	3751	"Chemomics" should be re-written as "Chemonics"	Done
Anatoliy Khapugin	Ch.3	132	3756	132	3757	"species(Silva et al., 2008).Particularly" should be re-written as "species (Silva et al., 2008). Particularly". The spaces were missed	Done
Anatoliy Khapugin	Ch.3	132	3758	132	3758	"orpoor" should be re-written as "or poor"	corrected
Anatoliy Khapugin	Ch.3	132	3763	132	3763	The problem with Author in reference "??ekercio??lu". The same problem at line 3779	Şekercioğlu et al., 2011 was displayed wrongly.
Anatoliy Khapugin	Ch.3	132	3770	132	3770	One of brackets should be deleted: "(("	Done
Anatoliy Khapugin	Ch.3	132	3772	132	3773	Additional information on the Table (Post-Soviet recovery of plant diversity Central Asian steppes: (Brinkert, Hölzel, Sidorova, & Kamp, 2015; Kämpf, Mathar, Kuzmin, Hölzel, & Kiehl, 2016)) will be more appropriate under the Table in Notes	We deleted parts of this sentence.
Anatoliy Khapugin	Ch.3	132	3778	132	3778	"tourismdevelopment" should be re-written as "tourism development"	Done
Anatoliy Khapugin	Ch.3	133	3781	133	3781	"speciesare" should be re-written as "species are"	Done
Anatoliy Khapugin	Ch.3	133	3786	133	3786	"(Table 3.40);(Arnell" should be re-written as "(Table 3.40) (Arnell"	This separated the Table reference from the others. We kept this.
Germany	Ch.3	133	3788	133	3792	The sentence "The 3788 projected habitat loss for 2’632 evaluated plant species across all major European mountain ranges 3789 suggests that 36–55% of alpine species, 31–51% of subalpine species and 19–46% of montanespecies 3790 will lose more than 80% of their suitable habitat by 2070–2100, depending on the climate-change 3791 scenario (Engler et al., 2011)." fits better to Chapter 3.3 "Future dynamics of biodiversity and ecosystems"	Was moved.
Anatoliy Khapugin	Ch.3	133	3789	133	3789	"2’632" should be re-written as "2632"	Done
Anatoliy Khapugin	Ch.3	133	3790	133	3790	"montanespecies" should be re-written as "montane species"	Done
Germany	Ch.3	133	3795	134	3795	Table 3.40: Moderate impact by current overexploitation for native species richness in Central Europe (we are not aware of a more than marginal exploitation of wild growing plants in this region) and moderate impact by current climate change for endangered species in Central Europe (climate change is not more than a marginal threat factor in this region, only for some species) are not comprehensible.	We kept this as there are examples of reduction in population sizes because of overuse (e.g. mediterranean orchids for salep production, etc.). Moreover many dryland or alpine species are already suffering directly from climate change (warming and droughts) or indirectly (encroachment of competitive species).
Anatoliy Khapugin	Ch.3	133	3795	133	3795	"Overxploitation" should be re-written as "Overexploitation" in 4th column of Direct Drivers of the Table	Done
Mark Rounsevell	Ch.3	136	3876	136	3876	Perhaps a colour system (e.g. traffic lights) could be used instead of the 0, 1 and 2 numbers in all of these tables? This would probably be easier to visualize for the reader.	good suggestion, we took it on board

Gregory Insarov	Ch.3	136	3883	139	3979	In sub-section 3.2.3.10 LICHENS impacts of climate change on lichens is missed. Authors may want to use material below to fullfill this gap. 1. (REVIEW) Insarov, G., Schroeter, B. Lichen Monitoring and Climate Change. Chapter 13 in: Nimis, P.L., Scheidegger, C., and Wolseley, P. A. (Eds.) Monitoring with Lichens - Monitoring Lichens, The Hague, The Netherlands, Kluwer Academic Publishers, 2002, pp. 183-201 2. Long-term monitoring in the Netherlands suggests that lichens respond to global warming. CM van Herk, A Aptroot, HF Van Dobben - The Lichenologist, 2002 3. Davydov, E.A., G.E Insarov, A.K. Sundetpaev. 2013. Lichen Monitoring In Katon-Karagai National Park, Eastern Kazakhstan, in Context of Climate Change. Problems of Ecological Monitoring and Ecosystem Modelling, 25: 428-441 (in Russian, with English abstract)	Thank you. The climate change effects were mentioned in the "future trends of lichen diversity" section, which now has not been included in the chapter. We now added some sentences on future risks including climate change and added the suggested references.
Gregory Insarov	Ch.3	137	3898	137	3898	Authors may want to include data on lichens of Russia. Available from: A checklist of the lichen flora of Russia. 2010. Sankt Petersburg, NAUKA Publishers, 194 pp. (in Russian)	We included the information that russia harbors 3388 species
Gregory Insarov	Ch.3	137	3912	137	3913	Authors may want to exclude information from outside of the ECE region.	We deleted the sentence on species outside the ECA region.
Germany	Ch.3	137	3916	137	3920	Table 3.42: The figures for Germany do not add up to the given sum. Please correct vulnerable (= German categories 3 + G) = 242 (12,5 %); least concern (= German categories * + R) = 723 (37,2 %).	We deleted the table as it did not contain the information for all countries.
Gregory Insarov	Ch.3	137	3916	137	3919	Authors may want to consider data from Red Data Books of Russia, both of national and sub-national levels, and Kazahstan. Check Red Data Books of other CA countries	We deleted the table as it did not contain the information for all countries.
Gregory Insarov	Ch.3	138	3952	138	3958	Authors may want to consider material on lichens & air pollution from: Insarov, G. and Insarova, I. 2013. Lichens and Plants in Urban Environment, Chapter to the book "Modeling of Land-Use and Ecological Dynamics". In: D. Malkinson et al. (eds.), Modeling of Land-Use and Ecological Dynamics, Cities and Nature, DOI 10.1007/978-3-642-40199-2_9, © Springer-Verlag Berlin Heidelberg 2013, pp. 167-193.	We added the suggested citation
Gregory Insarov	Ch.3	138	3959	138	3961	Authors may want to consider material on promotes nitrophytic species in disadvantage of acidophytic ones in Moscow, Russia: Insarov G., Moutchnik, E.,. Insarova, I. Epiphytic Lichens under Air Pollution Stress in Moscow: Methodology for Long-Term Monitoring. In: Problems of Ecological Monitoring and Ecosystem Modelling. Vol. XXIII, Moscow, IGCE, 2010, pp. 277-296 (in Russian)	We added the suggested citation
Germany	Ch.3	139	3980	140	4011	Please add an overview (table) with national red lists (according to lichenes) and draw assumptions.	we have entirely rewritten the fungi section and included all available information on Red Lists
Allan Watt	Ch.3	139	3980	140	4011	Although more readable than the first draft, a lot of information has been lost. It is also not clear why some studies are included and not others giving the impression in places (4005-4011 on nitrogen deposition) that this is less of a comprehensive assessment and more of a light, selective review. Also, references are missing (e.g. 3991-3998).	we have entirely rewritten the fungi section, having done a more in-depth review and assessment of status and trends. Unfortunately very little is known about status and trends of fungi, however, all there is is reported
UNEP-WCMC: The Biodiversity Indicators Partnership (BIP)	Ch.3	140	4012	143	4098	Excellent use of these data on ECA Red List; very important to retain.	thank you
Thomas Brooks	Ch.3	140	4012	143	4098	Excellent use of these data on ECA Red List; very important to retain.	thank you
Stuart Butchart	Ch.3	140	4012			Important to keep this text on status and trends in extinction risk and Fig 3.54	thank you
Mark Snethlage	Ch.3	140	4042			perhaps remove "Greenland" from the list fo countries, because it is not part of the ECA region	done
Thomas Brooks	Ch.3	141	4032	141	4035	Very nice examples. Add citations to the four respective information sources: Taylor et al. (2008; http://www.iucnredlist.org/details/full/41755/0), BirdLife International (2017; http://www.iucnredlist.org/details/full/22694927/0), Serra et al. (2009; http://www.iucnredlist.org/details/full/977/0), and Gessner et al. (2010; http://www.iucnredlist.org/details/full/232/0)	we decided to drop the examples due to space
Gregory Insarov	Ch.3	141	4044	141	4045	1. Give detailed explanation how this figure was obtained. alternatively, give reference(s) where this figure is taken from. 2. Explain what strips from both sides of region or sub-region curves mean.	the information is now in the caption
EU: Ole Ostermann, JRC	Ch.3	142	4049	142	4059	"Out of the 2,493 species that are present in the ECA region, ...", what does this refer to? species of which group? threatened? mammals? It probably takes up the number announced in line 4016 p140, but should then be named as " 2,493 species that have been analysed for this study in the ECA region..." Same for p142 line 4073 and p142 line 4087.	it is now specified that is the comphrenesively assessed taxa
Mark Snethlage	Ch.3	142	4058	143	4098	Could these data be presented as a map, table and/or figure?	3.4.1 contains a map now with pie-charts for sub-regions
Mark Snethlage	Ch.3	142	4059			"Out of the 2,493 species" -> perhaps remind again that this is the Red Listed species: "Out of the 2,493 Red Listed species"?	there is a footnote explaining what these are. Now this text only appears ones in paragrap 3.4.1
Thomas Brooks	Ch.3	142	4067	142	4071	Very nice examples. Add citations to the four respective information sources: Rodríguez & Calzada (2015; http://www.iucnredlist.org/details/full/12520/0), Mataruga et al. (2011; http://www.iucnredlist.org/details/full/30313/0), Andreone et al. (2009; http://www.iucnredlist.org/details/full/54450/0), and Hutterer (2008; http://www.iucnredlist.org/details/full/5560/0)	we decided to drop the examples due to space
Thomas Brooks	Ch.3	142	4079	142	4085	Very nice examples. Add citations to the three respective information sources: Tsytsulina et al. (2008; http://www.iucnredlist.org/details/full/20186/0), BirdLife International (2016; http://www.iucnredlist.org/details/full/22679814/0), and Abramov et al. (2016; http://www.iucnredlist.org/details/full/29680/0)	we decided to drop the examples due to space
Thomas Brooks	Ch.3	143	4093	143	4098	Very nice examples. Add citations to the four respective information sources: Mugue (2010; http://www.iucnredlist.org/details/full/18599/0); Tsytsulina (2008; http://www.iucnredlist.org/details/full/12827/0); Kuzmin et al. (2004; http://www.iucnredlist.org/details/full/19304/0), and BirdLife International (2016; http://www.iucnredlist.org/details/full/22693190/0)	we decided to drop the examples due to space
Mark Rounsevell	Ch.3	144	4100	144	4100	You might like to reflect on the balance in terms of quantity of text between sections 3.2 and 3.3. Section 3.2 (past/presente) has about 135 pages of texto, whereas Section 3.3 has about 27 pages. This implies that section 3.2 could be cut back by being much more synthetic.	Indeed but easier said than done
Mark Rounsevell	Ch.3	144	4100	144	4100	IT would be useful to check the literature cited in Ch5 for this section. There are several papers cited in Ch5, notably from the CLIMSAVE project, that have developed scenarios of species and ecosystems that do not seem to appear here. Ch5 also explores land use and land cover projections that woul dbe relevant to the UoAs in Ch3.	we have done so now
Allan Watt	Ch.3	144	4100	148	4202	Presumably early drafts, requiring substantial revision.	It has been revised taking into account all constructive comments made
ECA values liaison group	Ch.3	144	4100			Replacement of biodiversity and ecosystems with: Nature (biodiversity and ecosystems)	we have kept the term used in the literature cited
ECA values liaison group	Ch.3	144	4100			Title of the section could be altered to 'Future Dynamics of Nature (biodiversity and ecosystems)'	we have kept the term used in the literature cited
ECA values liaison group	Ch.3	144	4103			Not clear whether by 'ecosystem functions' it is meant ecosystem services here. If this is the case, then try using the IPBES jargon, contributions to people and their link to a good quality of life	we have kept the term used in the literature cited
ECA values liaison group	Ch.3	144	4104			Please add: 'which value types they are associated with' after which archetype they conform to	see comment at line 110 re terminology and values
Mark Rounsevell	Ch.3	144	4105	144	4105	"...ecological models...": Would it be useful to tabulate the main categories of models used, since I assume that these are very different in terms of model paradigms. The main aims/objectives of the models could be given along with example (key) references.	this has been done in the scenarios and model assessment, and we don't see a place here, especially since we've been asked to cut words and include only policy-relevant key findings
Mark Rounsevell	Ch.3	144	4108	144	4108	I would have thought that there are relatively few scenario studies on biodiversity and ecosystems.	there are hundreds of papers, while the underlying driver scenarios are the same, the biodiversity response modelled are a vast number (different taxa and biodiversity metrics)

Dmitry Schigel	Ch.3	144	4108		4108	Chapter 3 is very well written and taxonomically balanced, great job. I agree that exhaustive literature review is impossible, therefore clarity of the methods section earlier is essential, making sure that semi-random process of literature selection was in place.	thanks
UNEP-WCMC: Elise Belle	Ch.3	144	4113	144	4115	"part of this paragraph describes [...] second part describes [...] information is available."	this text has been removed
UNEP-WCMC: Elise Belle	Ch.3	144	4126		4126	"projections for a time period directly relevant to"	this text has been removed
UNEP-WCMC: Elise Belle	Ch.3	144	4137		4137	"that they cannot disperse"	corrected
Harald Pauli	Ch.3	144	4139	144	4139	...and for alpine plants...'	corrected
EU: Ole Ostermann, JRC	Ch.3	144	4139	144	4139	Range shifts for tree species in France are given, but for tree species in Europe see : http://forest.jrc.ec.europa.eu/european-atlas-of-forest-tree-species/	we didn't find any projections in that publication
UNEP-WCMC: Elise Belle	Ch.3	145	4141	145	4141	"On average, across all plant and animal groups"	corrected
UNEP-WCMC: Elise Belle	Ch.3	145	4143		4144	Explain briefly what happens in these regions and why.	done
Mark Snethlage	Ch.3	145	4147			Greenland is not part of the ECA region; the easternmost tip of Siberia has been truncated along the day line	corrected
UNEP-WCMC: Elise Belle	Ch.3	146	4151	146	4154	Figure not referenced in the text.	corrected
EU: Ole Ostermann, JRC	Ch.3	146	4151	146	4154	Figure 3.56 Trends in Mean Species Abundance, which species are analysed? The text does not refer to this figure.	the figure is now referred to in the text, the mean species abundance is across all species in a large meta-analysis, details in the cited paper. We felt it was unnecessary to explain MSA here
UNEP-WCMC: Elise Belle	Ch.3	146	4158		4158	You could explain a bit more Figure 3.57 (e.g. why would HG and DS not increase as well?).	figure removed
Amor Torre-Marin	Ch.3	146	4159	146	4159	"well established": Confidence term? If so it should go between brackets. If not alternative wording should be used.	words deleted
ECA values liaison group	Ch.3	146	4160			Consider the possibility to use the term 'nature's contributions to people' instead of 'ecosystem services'	we used the terms used in the literature we cited
UNEP-WCMC: Elise Belle	Ch.3	147	4180	147	4180	why are these exceptions?	now explained in the text
Mark Snethlage	Ch.3	148	4147			Greenland is not part of the ECA region; the easternmost tip of Siberia has been truncated along the day line	corrected
UNEP-WCMC: Elise Belle	Ch.3	148	4199	148	4199	Crop map on ECA region.	corrected
Allan Watt	Ch.3	148	4203	148	4216	As noted for the FOD, very brief coverage of huge topic with no introduction, rationale for the choice of studies etc.	we performed a systematic review and selected the most important references. Note that we were constrained by 35000 words for the whole chapter and future trends is largely covered by chapter 5, hence the need to synthetize to the main trends across the region and realms.
Finnish Government	Ch.3	148	4217	148	4217	Since the Arctic ocean, Atlantic and Black Sea are covered here, the Baltic Sea would deserve a similar treatment. There is comparable and even better data on all aspects (intactness, ecosystem function and loss drivers) treated in the text for the other sea areas	we have now added several examples from the Baltic
PESC-4: Kristina Raab	Ch.3	148	4220	148	4249	artic sea section misses the title "ecosystem intactness"	now not covered by UoA but by realms: terrestrial, fw, marine
Finnish Government	Ch.3	150	4287	150	4287	Ecosystem intactness needs to be defined properly. Perhaps Resilience would be a more common and useful term?	intactness is indeed defined in the introduction now
Finnish Government	Ch.3	154	4425	154	4425	The tables 3.44, 3.45. 3.46 should be presented as a single table making comparisons among sea areas easier.	all tables for future trends were dropped
Sonja Jähnig	Ch.3	154	4431	155	4465	As above, a few further suggested references: Domisch S, Araújo MB, Bonada N, Pauls SU, Jähnig SC, Haase P. 2013. Modelling distribution in European stream macroinvertebrates under future climates. Global Change Biology 19:752–762. Domisch S, Jähnig SC, Haase P. 2011. Climate-change winners and losers: stream macroinvertebrates of a submontane region in Central Europe. Freshwater Biology 56:2009–2020. Jähnig SC, Kuemmerlen M, Kiesel J, Domisch S, Cai Q, Schmalz B, Fohrer N. 2012. Modelling of riverine ecosystems by integrating models: conceptual approach, a case study and research agenda. Journal of Biogeography 39:2253–2263. Kuemmerlen M, Schmalz B, Guse B, Cai Q, Fohrer N, Jähnig SC. 2014. Integrating catchment properties in small scale species distribution models of stream macroinvertebrates. Ecological Modelling 277:77-86.	Done. In the Frewhater invertebrates section
Mark Snethlage	Ch.3	158	4560			perhaps replace with a cut out area corresponding to the ECA region http://www.riverthreat.net/data.html	New figures have been added.
EU: Ole Ostermann, JRC	Ch.3	158	4563	159	4581	These paragraphs do not cite any references, why?	The text has now been amended
Germany	Ch.3	160	4621	160	4621	climate change will likely	corrected
EU: Ole Ostermann, JRC	Ch.3	161	4648	161	4648	"Climate change and land use are a treat to biodiversity." This is not clear to me, and sounds too positive ?? Maybe "threat" ?	We meant threat. Corrected
Sonja Jähnig	Ch.3	161	4654	164	4774	Mountain ecosystems: here freshwater biota occurr separatly, but not in other ecosystems? suggested further reference: Balint M, Domisch S, Engelhardt CHM, Haase P, Lehrian S, Sauer J, Theissinger K, Pauls SU, Nowak C. 2011. Cryptic biodiversity loss linked to global climate change. Nature Climate Change 1:313-318.	since mountain systems will have complex feedback across realms, we choose to treat this as a box, giving more in-depth analyses of future impacts of climate change in ECA across realms.
Harald Pauli	Ch.3	161	4660	161	4661	please specify 'other areas' - do you mean 'low-elevation areas'	indeed
Harald Pauli	Ch.3	162	4664	162	4664	add after 'expected on biodiversity.': 'Combined effects of rising temperature and decreasing precipitation could strongly enhance biodiversity declines (McCain and Colwell 2011), which could be especially relevant for Mediterranean mountains with highly fragmented and small-sized low-temperature environments of high degrees of endemism.' Reference: McCain, CM, Colwell RK 2011. Assessing the threat to montane biodiversity from discordant shifts in temperature and precipitation in a changing climate. Ecology Letters 14: 1236-1245.	we have chosen not to add this reference as we already mention elsewhere the climate change impacts on mediterranenan mountains
Harald Pauli	Ch.3	162	4673	162	4676	I'm not sure if this hold true across the entire ECA. You therefore may add: 'Increasing livestock grazing pressures, such as in Central Asia, however, would delay treeline shifts. In the Alps, climate change-driven treeline advances are likely to be retarded through land use (Gehrig-Fasel et al., 2007), whereas in anthropogenically little affected regions, such as in the Ural mountains, upward shift could proceed at a faster pace, as was already observed during the 20th century (Moiseev and Shiyatov 2003). Reference: Moiseev PA, Shiyatov SG 2003. Vegetation dynamics at the treeline ecotone in the Ural highlands, Russia. In Nagy L, Grabherr G, Körner C, Thompson DBA (eds). Alpine biodiversity in Europe, pp 423-435. Ecolgical Studies 167. Springer, Berlin.	thanks for the info we have included text and reference

ECA values liaison group	Ch.3	162	4677			Consider the possibility to use the term 'nature's contributions to people' instead of 'ecosystem services'	see comment at line 110 re terminology and values
Harald Pauli	Ch.3	162	4696	162	4696	...of summer farms, especially in the subalpine belt...'	we kept the original sentence as this applies across altitude
Harald Pauli	Ch.3	162	4696	162	4696	suggest to add after '...(Dirnbock et al., 2003).': 'Projected rising temperatures as well as decreasing precipitation and an extension of the dry summer season in the Mediterranean region (Nogués Bravo et al. 2008) are expected to strongly reduce suitable habitats of Mediterranean alpine vegetation, being especially critcal given the very scattered occurrence of small alpine areas and the very high degree of locally endemic species. Model projections for Mediterranean alpine species, however, are very scarce, but simulations of high-elevation key species in Sierra Nevada, Spain, suggested the disappearance of suitable habitats before the mid-21st century (Benito et al. 2011). References: 'Nogués Bravo D, Araújo MB, Lasanta T, López Moreno JI 2008. Climate change in Mediterranean mountains during the 21st century. Ambio 37: 280-285.' 'Benito B, Lorite J, Penas J 2011. Simulating potential effects of climatic warming on altitudinal patterns of key species in Mediterranean-alpine ecosystems Climatic Change 108: 471-483.'	as per comment 750, we have already covered Mediterranean mountain and felt no need to add even more text on this given the space constraints
ECA values liaison group	Ch.3	162	4706			Consider the possibility to use the term 'nature's contributions to people' instead of 'ecosystem services'	see comment at line 110 re terminology and values
Harald Pauli	Ch.3	163	4711	163	4711	..., but fertiliser effects of nitrogen...'?	not sure what the comment implies
Sonja Jähnig	Ch.3	163	4736	163	4737	or here suggested further reference: Balint M, Domisch S, Engelhardt CHM, Haase P, Lehrian S, Sauer J, Theissinger K, Pauls SU, Nowak C. 2011. Cryptic biodiversity loss linked to global climate change. Nature Climate Change 1:313-318. Domisch S, Jähnig SC, Haase P. 2011. Climate-change winners and losers: stream macroinvertebrates of a submontane region in Central Europe. Freshwater Biology 56:2009–2020.	added, thank you
UNEP-WCMC: Elise Belle	Ch.3	164	4769	164	4771	"mammals effectively in the future (reviewed in [...] surprisingly low numbers of [...] Vittoz et al. 2013). Effects of pollutants"	the whole section on taxa trends in mountain systems was deleted
Allan Watt	Ch.3	165	4793	169	4881	A much broader treatment of the impacts of climate change on biodiversity in agricultural areas is needed, perhaps starting with an assessment of the research on the implications for biodiversity in this system. I suggest that research on pests, which starts this section, is of secondary interest. Regarding pests, however, climate change may affect more than generation number (line 4797).	we are not sure what the reviewer expects, this was perhaps the most extensive coverage across all systems in terms of future trends and infact we had to cut it substantially to meet the space constraints
Mark Rounsevell	Ch.3	170	4883	170	4884	I'm not sure that the Executive Summary really best reflects the discussion/evidence in this section	The part of the executive summary on the biodiversity - ecosystem service relation has been completely rewritten.
Allan Watt	Ch.3	170	4883	186	5510	Firstly, in this draft the authors have gone some way to address my concern in the FOD that separating (biodiversity) research into research on ecosystem functioning and ecosystem services is not helpful in the context of this assessment because it suggests that ecosystem functioning is not linked to ecosystem services, which is clearly untrue. The concept of ecosystem functioning (BEF) research has been explicitly removed but biodiversity – ecosystem services (BES) remains, appearing to also cover research on function(ing). I would therefore suggest that the BES acronym is removed.	We removed any use of this acronym.
Allan Watt	Ch.3	170	4883	186	5510	Secondly, however, this (long) section still feels out of place in an assessment that is intended (ultimately) to guide policy-makers. The basic message is, I believe, correct: relationships between biodiversity, ecosystem functioning and ecosystem services need to be included in the decision making process. This is stated in the section but only at the end (page 186)! I suggest that it is moved to the start of the section so that the reader understands the point of this section.	To increase the policy-relevance of this assessment part, we very much revised the corresponding message in the executive summary and we shortened and rewrote the sectio in the chapter itself, attempting to provide clear and relevant conclusions throughout.
Allan Watt	Ch.3	170	4883	186	5510	Thirdly, it is far too long, with far too much detail, including some text that appears to be copied verbatim from published papers. There are some important points in the section, such as the basic message referred to above and the point about genetic diversity (line 4998) but they are lost in the detail.	This section has been competely revised and shortened.
ECA values liaison group	Ch.3	170	4883	186	5510	This section 3.4 focuses on BES theory and practice in the ECA region. As the dominant terminology supporting the scientific evidence/literature comes from the ES approach, it is suggested that a very short explanation is provided at the beginning of this section when IPBES terminology (NCPs, GQL etc) is not being used.	The ECA team agreed to use nature's contributions to people and nature when summarising assessed information and to speak about ecosystem services or biodiversity when directly refering to literature where these terms are used and wheer statemenets would be too general otherwise.
ECA values liaison group	Ch.3	170	4886			The use of 'nature's contributions to people and their link to a good quality of life' should be prefered here to ecosystem services.	The ECA team agreed to use nature's contributions to people and nature when summarising assessed information and to speak about ecosystem services or biodiversity when directly refering to literature where these terms are used and wheer statemenets would be too general otherwise.
Mark Rounsevell	Ch.3	170	4895	170	4895	Is there need to discuss other theories or concepts in this section, including socio-ecological systems, resilience, etc?	The section has been completely rewritten. Please note that biodiversity-ecosystem service relations are by definition a social-ecological issue. Resilience is thoroughly considered in the section.
Eva Spehn	Ch.3	171	4929	171	4929	another mechanism are positive species interactions and facilitation effects (not covered by complementarity and selection effect).	These are now mentioned. Please note that facilitative species interactions can cause complimenatrity effects.
Eva Spehn	Ch.3	173	5011	174	5022	no need to repeat the mechanisms again, they are already listed above; I suggest to delete the text	The section has been completely rewritten and redundancies were removed..
Eva Spehn	Ch.3	174	5042	174	5042	Schmid et al (2009) is also a meta-analysis?	This has been rewritten.
Amor Torre-Marin	Ch.3	175	5076	175	5076	Confidence term? If so it should go betwwen brackets. If not alternative wording should be used.	Confidence terms are only used in the executive summary. The language of the chapter was changed accordingly during the overall rewrite of this section.
Amor Torre-Marin	Ch.3	175	5077	175	5077	Confidence term? If so it should go betwwen brackets. If not alternative wording should be used.	Confidence terms are only used in the executive summary. The language of the chapter was changed accordingly during the overall rewrite of this section.
Amor Torre-Marin	Ch.3	175	5081	175	5081	Confidence term? If so it should go betwwen brackets. If not alternative wording should be used.	Confidence terms are only used in the executive summary. The language of the chapter was changed accordingly during the overall rewrite of this section.
Amor Torre-Marin	Ch.3	175	5086	175	5086	Confidence term? If so it should go betwwen brackets. If not alternative wording should be used.	Confidence terms are only used in the executive summary. The language of the chapter was changed accordingly during the overall rewrite of this section.
Amor Torre-Marin	Ch.3	176	5094	176	5094	Confidence term? If so it should go betwwen brackets. If not alternative wording should be used.	Confidence terms are only used in the executive summary. The language of the chapter was changed accordingly during the overall rewrite of this section.

Amor Torre-Marin	Ch.3	176	5127	176	5127	Confidence term? If so it should go betwwen brackets. If not alternative wording should be used.	Confidence terms are only used in the executive summary. The language of the chapter was changed accordingly during the overall rewrite of this section.
Amor Torre-Marin	Ch.3	177	5146	177	5146	Confidence term? If so it should go betwwen brackets. If not alternative wording should be used.	Confidence terms are only used in the executive summary. The language of the chapter was changed accordingly during the overall rewrite of this section.
Amor Torre-Marin	Ch.3	178	5181	178	5181	Confidence term? If so it should go betwwen brackets. If not alternative wording should be used.	Confidence terms are only used in the executive summary. The language of the chapter was changed accordingly during the overall rewrite of this section.
ECA values liaison group	Ch.3	178	5186			Consider the possibility to use the term 'nature's contributions to people' instead of 'ecosystem services'	The ECA team agreed to use nature's contributions to people and nature when summarising assessed information and to speak about ecosystem services or biodiversity when directly refering to literature where these terms are used and wheer statemenets would be too general otherwise.
ECA values liaison group	Ch.3	178	5192	178	5193	The use of 'nature's contributions to people and their link to a good quality of life' should be prefered here to ecosystem services.	The ECA team agreed to use nature's contributions to people and nature when summarising assessed information and to speak about ecosystem services or biodiversity when directly refering to literature where these terms are used and wheer statemenets would be too general otherwise.
ECA values liaison group	Ch.3	178	5204	178	5205	The use of 'nature's contributions to people and their link to a good quality of life' should be prefered here to ecosystem services.	The ECA team agreed to use nature's contributions to people and nature when summarising assessed information and to speak about ecosystem services or biodiversity when directly refering to literature where these terms are used and wheer statemenets would be too general otherwise.
Amor Torre-Marin	Ch.3	179	5226	179	5226	Confidence term? If so it should go betwwen brackets. If not alternative wording should be used.	Confidence terms are only used in the executive summary. The language of the chapter was changed accordingly during the overall rewrite of this section.
Eva Spehn	Ch.3	179	5234	179	5234	I would cite (Schmid 2002) here, which is already in the References	We cite Schmid 2002 in the context of context-dependence of biodiversity - ecosystem service effects.
Amor Torre-Marin	Ch.3	179	5245	179	5245	Confidence term? If so it should go betwwen brackets. If not alternative wording should be used.	Confidence terms are only used in the executive summary. The language of the chapter was changed accordingly during the overall rewrite of this section.
Oliver Lindecke	Ch.3	179	5251	5253	179	Inner Mongolia is not part of the ECA sub regions. Maybe another citation could support the argumentation.	Omitted.
Amor Torre-Marin	Ch.3	179	5256	179	5256	Confidence term? If so it should go betwwen brackets. If not alternative wording should be used.	Confidence terms are only used in the executive summary. The language of the chapter was changed accordingly during the overall rewrite of this section.
EU: Ole Ostermann, JRC	Ch.3	179	5256	179	5257	"...it is well established that grass and biodiversity stability in biomass production." This is not clear.	This mistake has been removed in the course of rewriting.
Amor Torre-Marin	Ch.3	179	5262	179	5262	Confidence term? If so it should go betwwen brackets. If not alternative wording should be used.	Confidence terms are only used in the executive summary. The language of the chapter was changed accordingly during the overall rewrite of this section.
ECA values liaison group	Ch.3	180	5296	180	5297	Contributions to people as opposed to ecosystem services could be used here. Instead of services, again the use of 'contributions' is suggested.	The ECA team agreed to use nature's contributions to people and nature when summarising assessed information and to speak about ecosystem services or biodiversity when directly refering to literature where these terms are used and wheer statemenets would be too general otherwise.
ECA values liaison group	Ch.3	181	5311	181	5312	Consider the possibility to use the term 'on diverse contributions to people' instead of 'multiple services'	The ECA team agreed to use nature's contributions to people and nature when summarising assessed information and to speak about ecosystem services or biodiversity when directly refering to literature where these terms are used and wheer statemenets would be too general otherwise.
ECA values liaison group	Ch.3	183	5376		5408	In general, some parts in this section refer to ecosystem services which should be, if possible, replaced by the term 'nature's contributions to people'	The ECA team agreed to use nature's contributions to people and nature when summarising assessed information and to speak about ecosystem services or biodiversity when directly refering to literature where these terms are used and wheer statemenets would be too general otherwise.
Amor Torre-Marin	Ch.3	183	5383	183	5383	Confidence term? If so it should go betwwen brackets. If not alternative wording should be used.	Confidence terms are only used in the executive summary. The language of the chapter was changed accordingly during the overall rewrite of this section.
Amor Torre-Marin	Ch.3	183	5391	183	5391	Confidence term? If so it should go betwwen brackets. If not alternative wording should be used.	Confidence terms are only used in the executive summary. The language of the chapter was changed accordingly during the overall rewrite of this section.
EU: Ole Ostermann, JRC	Ch.3	184	5436	185	5467	The figure 3.71 and the related text mention the MAES project, (Mapping and Assessment of Ecosystems and their Services, with lead author J. Maes). Please see more reports on the project outcome at the following links : https://www.google.fr/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwi03Z3Yyb_UAhWFfhoKHd8KDHIQFggmMAA&url=http%3A%2F%2Fec.europa.eu%2Fenvironment%2Fnature%2Fknowledge%2Fecosystem_assessment%2Fpdf%2F3rdMAESReport_Condition.pdf&usg=AFQjCNFDc9eahc0fEwms5lLopg-jAqLC0A , and also this page http://ec.europa.eu/environment/nature/knowledge/ecosystem_assessment/	Thanks for these valuable links. In this specific case on biodiversity - ecosystem service relations we had selected the figure as it directly relates the two.
ECA values liaison group	Ch.3	185	5451			Consider the possibility of using 'key contributions to people' instead of ecosystem functions (I guess it is meant ecosystem services?)	The ECA team agreed to use nature's contributions to people and nature when summarising assessed information and to speak about ecosystem services or biodiversity when directly refering to literature where these terms are used and wheer statemenets would be too general otherwise.

ECA values liaison group	Ch.3	185	5455			Instead of 'ecosystem functioning/services' consider using 'ecosystem functioning/delivery of contributions to people'	The ECA team agreed to use nature's contributions to people and nature when summarising assessed information and to speak about ecosystem services or biodiversity when directly refering to literature where these terms are used and wheer statemenets would be too general otherwise.
Amor Torre-Marin	Ch.3	185	5475	185	5475	Confidence term? If so it should go betwwen brackets. If not alternative wording should be used.	Confidence terms are only used in the executive summary. The language of the chapter was changed accordingly during the overall rewrite of this section.
Amor Torre-Marin	Ch.3	186	5490	186	5490	Confidence term? If so it should go betwwen brackets. If not alternative wording should be used.	Confidence terms are only used in the executive summary. The language of the chapter was changed accordingly during the overall rewrite of this section.
ECA values liaison group	Ch.3	186	5502		5510	Ecosystem Services should be replaced by the term 'nature's contributions to people' and NCP categories recognised by IPBES should be ideally used instead of provisioning, regulating and cultural ES categories.	The ECA team agreed to use nature's contributions to people and nature when summarising assessed information and to speak about ecosystem services or biodiversity when directly refering to literature where these terms are used and wheer statemenets would be too general otherwise.
ECA values liaison group	Ch.3	186	5502		5510	Please consider: "Finally we argue that the role of Nature and its Contributions to People (biodiversity, provisioning, cultural and regulating services) needs to be included in the decision making process at both the local, national and international levels to minimize trade-offs and maximize ecosystem functionality"	While this section was rewritten, opportunities for considering nature and its contributions to people in decision-making are assessed and presented in Chapter 6.
ECA values liaison group	Ch.3	186	5502		5510	a link back to the relevant chapter 1 should be provided in the text.	While this section was rewritten, opportunities for considering nature and its contributions to people in decision-making are assessed and presented in Chapter 6.
Allan Watt	Ch.3	187	5511	191	5694	Presumably an early draft and although some parts are useful, overall it doesn't say much more than there are huge gaps in knowledge. For example, the point made on functional diversity (line 5631) may be correct but (se above) unless well-introduced at the start of the Chapter and convincingly argued somewhere in the Chapter, this recommendation has no weight.	the whole section has been reviewed addressing all comments below. Note that this is an attempt to list the known unknowns. Several were unknown unknowns until this review as an analyses of the amount of knowledge on status and trends for the region has never been attempted, so a quantification of gaps was missing. This in itself seems a very valuable contribution of this section
Oliver Lindecke	Ch.3	187	5511	5687	187	There is a misbalance in the number of experts working for IUCN red listing if compared to the size of taxonomic groups they are working for. The number of experts must be increased in groups were this misbalance could cause delay in updating of conservation categorization and evaluation of species trends.	we entirely agree but this is not in the scope of the assessment
Dmitry Schigel	Ch.3	187	5511			Analysis of knowledge gaps seems to be superficial and the future projections vague; IPBES needs to support digitization and liberation of biodiversity data from natural history collections, citizen science, ecology and monitoring projects through GBIF and OBIS. Filling the data gaps will naturally boost filling the knowledge gaps, reducing the west-east disbalance in the analytical studies, and as result, in the accuracy and depth of IPBES assessments.	thank you for the insights, see also reply to comment at line 801
Mark Rounsevell	Ch.3	187	5512	187	5513	Not needed. Focus on outcomes rather than the process.	deleted
UNEP-WCMC: Elise Belle	Ch.3	187	5512	187	5519	I would entirely delete this section: 'The work on the first [...] and local knowledge. More", and only keep the last two sentences of the paragraph as: "Fundamental knowledge gaps are described below [...]".	agreed and done
ECA values liaison group	Ch.3	187	5512		5513	It could be better to say that the work done in the FOD and SOD for ECA enabled the assessment and synthesizing of a wide range knowledge but that further work is needed to integrate a wider range of different knowledge systems such as ILK.	sentence deleted
ECA values liaison group	Ch.3	187	5512		5519	This introductory part of the Knowledge Gaps section should emphasize more clearly the existing gap regarding the reflection of the multiple value types in the current order draft. As the chapter deals mainly with one dimension of the IPBES CF, that of the 'Nature' box, it would be good to mention the knowledge gaps regarding the relationship between species, habitats, biodiversity, ecosystem traits etc. and Good Quality of Life element of the CF. More specifically, it can be mentioned whether the screened literature fails to capture biodiversity values held by indigenous people and/or local communities in ECA (which is only mentioned very briefly in line 5519) or provide the reasons why the diversity of values has been excluded (ie. lack of a coherent methodology to include these, lack of time etc.) and the implications	we deleted the intro
ECA values liaison group	Ch.3	187	5518		5525	Ecosystem Services should be replaced by the term 'nature's contributions to people'	see commment at line 110
Mark Rounsevell	Ch.3	187	5526	187	5526	Is there also a gap with respect to temporal aspects, i.e. fewer studies for the future than for the past?	indeed, added, thank you
Diana Bowler	Ch.3	187	5527	187	5527	Apart from popular organsism like birds and butterflies, most the biodiversity change data is based on local rather than national scale data. In these cases, often there is a sampling bias (i thinking specificially about long-term population monitoring) away from highly disturbed sites, leading to underestimates of the effects of human activities.	probably true, but we had not quantification of it or could find a reference in support of this comment
PESC-4: Kristina Raab	Ch.3	187	5527	187	5529	It would be good to provide an explanation for the lack of literature from Central Asia and quantify the "large gaps" by a literature index (number of paper per region or by available research funding), to provide evidence for the lack of research and provide an incentive for decision makers to fund more research.	good point but we were unable to do it due to time constraints
Mark Rounsevell	Ch.3	187	5530	187	5530	Leave this to Ch4?	the role of drivers was for chapter 3, trends of drivers for 4
UNEP-WCMC: Elise Belle	Ch.3	187	5540		5541	"description of new marine species [...] et al. 2012). It is estimated that between one-third"	Corrected
UNEP-WCMC: Elise Belle	Ch.3	187	5546		5546	"marine diversity makes the trend"	Corrected
Diana Bowler	Ch.3	187	5547	187	5547	I am not sure I agree with this - there is tonnes of long-term trawling data sampling benthic organisms across the North Sea available on the ICES datras database	There is a misunderstanding here: indeed we agree that benthic organisms have been studied (and the data were used in the "past-current" trends section) but in soft sediments not in rocky subtidal habitats (which cannot be studied with trawling/dredging equipments).
UNEP-WCMC: Elise Belle	Ch.3	188	5555	188	5555	"Directive in the EU. This is notably". Also add missing reference in brackets.	The sentence has been rephrased.
UNEP-WCMC: Elise Belle	Ch.3	188	5584		5586	"to be Data Deficient [...] carried out by Brooks et al. (2016) in which marine [...] This is not surprising as trend data"	Corrected
UNEP-WCMC: Elise Belle	Ch.3	189	5588	189	5590	"gap in marine biodiversity [...] in deep sea areas [...] and ecosystems being present in the"	Corrected
Kristina Raab	Ch.3	189	5597	189	5597	Please mention the World Oceans Assessment explicitly here.	Done
Andriy-Taras Bashta	Ch.3	190	5653			there is no chapter about gaps on knowledge concerning mammals	now added, 55 data deficient mammals
UNEP-WCMC: Elise Belle	Ch.3	190	5655	190	5655	"as being Data Deficient in terms [...] species have unknown population"	corrected

UNEP-WCMC: Elise Belle	Ch.3	190	5656		5656	"available and some of the trends [...]	corrected
Diana Bowler	Ch.3	190	5656	190	5656	Again, I don't really agree. The best long term data we have is on birds! http://www.ebcc.info/index.php?ID=557	relatively to other taxa indeed, but nevertheless we needed to report the known unknowns
UNEP-WCMC: Elise Belle	Ch.3	190	5657		5657	"means regions such as caucasus"	we had it checked by a native and was decided to keep "means that"
Gregory Insarov	Ch.3	190	5663	190	5665	Authors may want to include data on lichens of Russia. Available from: A checklist of the lichen flora of Russia. 2010. Sankt Petersburg, NAUKA Publishers, 194 pp. (in Russian)	thank you, added
Harald Pauli	Ch.3	191	5671	191	5671	...lack of field data, especially from repeated surveys of permanenet plots, difficulties...'	corrected
Harald Pauli	Ch.3	191	5672	191	5673	Threatening processes affecting vascular plants are also unknown for many species.'	we decided to keep several species
Anatoliy Khapugin	Ch.3	191	5672	133	191	Amongst problem for creating of Red List, the problem of unavaibility of assessment results for Editors who generalise these data for a whole Red List of Europe or any other area. It concerns many non-English countries where there are regional assessment, but these published (or even do not published) in national language.	agreed
UNEP-WCMC: Elise Belle	Ch.3	191	5672	191	5672	"Threats affecting vascular plants"	corrected
UNEP-WCMC: Elise Belle	Ch.3	191	5682		5684	"small proportion of species have been assessed on the IUCN Red List. More precisely, there are only [...] that are occuring in"	entirely rephrased
Harald Pauli	Ch.3	191	5686	191	5686	But there are some studies on insects in Kyrgyzstan (e.g. Milko DA 2016 - Insects of Naryn State Nature Reserve, however in Russian)	indeed, but limited in geographic scope, warranting the "almost nothing"
ECA values liaison group	Ch.3	191	5688		5694	For most estimates of Nature's Contribution to People there is insufficient data to evaluate provision and for example Ecosystem Services are inadequately quantified or insufficient number of services estimated (Boerema et al., 2016) or biodiversity estimation limited to Species Richness and not other qualitative elements (Feest et al., 2010) . Good Quality of Life is similarly frequently limited in scope albeit the information is often to be found in government statistics.	this is for chapter 2
UNEP-WCMC: Elise Belle	Ch.3	191	5692		5692	"plants are poorly studied. Finally,"	entirely rephrased
Amor Torre-Marin	Ch.3	191	6591	191	6591	Confidence term? If so it should go betwwen brackets. If not alternative wording should be used.	we can't find this
Harald Pauli	Ch.3	192	5697	224	6993	References of citations are usually missing and references in the list are not cited, making the review a bit difficult	All references issues have been addressed: sections with insufficient number (relative to available and pertinent publications) have been carefully reviewed to address this; when there were too many references the less important ones were moved to a shado
EU: Ole Ostermann, JRC	Ch.3	192	5697	224	6993	Section 3.6 References, starts two times an alphabetical list of references (second at p212, line 6495). Please merge, and namely add all the lacking references referred to throughout the whole draft text.	All references issues have been addressed: sections with insufficient number (relative to available and pertinent publications) have been carefully reviewed to address this; when there were too many references the less important ones were moved to a shado