

Guide for documenting case studies from RLE Assessments in XML format

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**Provita**

**IUCN**

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Content Table

[Content Table 2](#_Toc10989848)

[1. Brief introduction to XML format 7](#_Toc10989849)

[2. Structure of Red List of Ecosystem xml-documents 9](#_Toc10989850)

[2.1. Document: Case study 9](#_Toc10989851)

[3. Node documentation 12](#_Toc10989852)

[3.1. Root element: Case Studies 12](#_Toc10989853)

[3.2. Node: Case Study 12](#_Toc10989854)

[3.2.1. Node: Case Study Names 13](#_Toc10989855)

[3.2.1.1. Node: Case Study Name 14](#_Toc10989856)

[3.2.2. Node: Scope 14](#_Toc10989857)

[3.2.2.1. Node: Scope description 15](#_Toc10989858)

[3.2.2.2. Node: Scope classification 16](#_Toc10989859)

[3.2.2.2.1. Node: Scope classification element 17](#_Toc10989860)

[3.2.3. Node: Assessment information 17](#_Toc10989861)

[3.2.3.1. Node: Reference label 18](#_Toc10989862)

[3.2.3.2. Node: Assessment date 18](#_Toc10989863)

[3.2.3.3. Node: Assessment authors 19](#_Toc10989864)

[3.2.3.3.1. Node: Author 19](#_Toc10989865)

[3.2.3.4. Node: Assessment collaborators 20](#_Toc10989866)

[3.2.3.4.1. Node: Collaborator 20](#_Toc10989867)

[3.2.3.5. Node: Assessment reviewers 20](#_Toc10989868)

[3.2.3.5.1. Node: Reviewer 21](#_Toc10989869)

[3.2.3.6. Node: Assessment Keywords 21](#_Toc10989870)

[3.2.3.6.1. Node: Keyword 22](#_Toc10989871)

[3.2.4. Node: Assessment target 22](#_Toc10989872)

[3.2.4.1. Node: Assessment target id 23](#_Toc10989873)

[3.2.4.2. Node: Assessment target descriptions 23](#_Toc10989874)

[3.2.4.2.1. Node: Assessment target description 24](#_Toc10989875)

[3.2.4.3. Node: Assessment target names 24](#_Toc10989876)

[3.2.4.3.1. Node: Assessment target name 25](#_Toc10989877)

[3.2.4.4. Node: Characteristic native biota 25](#_Toc10989878)

[3.2.4.4.1. Node: Taxon list 26](#_Toc10989879)

[3.2.4.4.2. Node: Taxon 27](#_Toc10989880)

[3.2.4.4.3. Node: Biota Summaries 27](#_Toc10989881)

[3.2.4.4.4. Node: Biota Summary 28](#_Toc10989882)

[3.2.4.5. Node: Abiotic environment 28](#_Toc10989883)

[3.2.4.5.1. Node: Abiotic Summaries 29](#_Toc10989884)

[3.2.4.5.1.1. Node: Abiotic Summary 30](#_Toc10989885)

[3.2.4.6. Node: Biotic processes 31](#_Toc10989886)

[3.2.4.6.1. Node: Biotic processes summaries 31](#_Toc10989887)

[3.2.4.6.1.1. Node: Biotic processes summary 32](#_Toc10989888)

[3.2.4.7. Node: Ecosystem Services 33](#_Toc10989889)

[3.2.4.7.1. Node: Services 33](#_Toc10989890)

[3.2.4.7.1.1. Node: Ecosystem Service 34](#_Toc10989891)

[3.2.4.7.2. Node: Ecosystem services summaries 34](#_Toc10989892)

[3.2.4.7.2.1. Node: Ecosystem service summary 34](#_Toc10989893)

[3.2.4.8. Node: Threats 35](#_Toc10989894)

[3.2.4.8.1. Node: Threat Summaries 36](#_Toc10989895)

[3.2.4.8.1.1. Node: Threat Summary 36](#_Toc10989896)

[3.2.4.8.2. Node: Threat 37](#_Toc10989897)

[3.2.4.8.2.1. Node: Threat name 37](#_Toc10989898)

[3.2.4.8.2.2. Node: Threat impact 38](#_Toc10989899)

[3.2.4.8.2.2.1. Node: Timing 38](#_Toc10989900)

[3.2.4.8.2.2.2. Node: Scope 39](#_Toc10989901)

[3.2.4.8.2.2.3. Node: Severity 40](#_Toc10989902)

[3.2.4.8.2.3. Node: Threat descriptions 40](#_Toc10989903)

[3.2.4.8.2.3.1. Node: Threat description 41](#_Toc10989904)

[3.2.4.8.2.4. Node: Threat classification 41](#_Toc10989905)

[3.2.4.8.2.4.1. Node: Threat classification element 42](#_Toc10989906)

[3.2.4.9. Node: Conservation actions 43](#_Toc10989907)

[3.2.4.9.1. Node: Conservation Summaries 43](#_Toc10989908)

[3.2.4.9.1.1. Node: Conservation-Summary 44](#_Toc10989909)

[3.2.4.9.2. Node: Conservation action 45](#_Toc10989910)

[3.2.4.9.2.1. Node: Conservation action name 45](#_Toc10989911)

[3.2.4.9.2.2. Node: Conservation action descriptions 46](#_Toc10989912)

[3.2.4.9.2.2.1. Node: Conservation action description 46](#_Toc10989913)

[3.2.4.9.2.3. Node: Conservation action classification 47](#_Toc10989914)

[3.2.4.9.2.3.1. Node: Conservation action classification element 47](#_Toc10989915)

[3.2.4.10. Node: Research needs 48](#_Toc10989916)

[3.2.4.10.1. Node: Research needs summaries 49](#_Toc10989917)

[3.2.4.10.1.1. Node: Research needs summary 49](#_Toc10989918)

[3.2.4.10.2. Node: Research needed 50](#_Toc10989919)

[3.2.4.10.2.1. Node: Research needed name 50](#_Toc10989920)

[3.2.4.10.2.2. Node: Research needed descriptions 50](#_Toc10989921)

[3.2.4.10.2.2.1. Node: Research needed description 51](#_Toc10989922)

[3.2.4.10.2.3. Node: Research-needed classification 51](#_Toc10989923)

[3.2.4.10.2.3.1. Node: Research needed classification element 52](#_Toc10989924)

[3.2.4.11. Node: Conceptual Ecosystem Model 52](#_Toc10989925)

[3.2.4.11.1. Node: Conceptual Ecosystem Model Type 53](#_Toc10989926)

[3.2.4.11.2. Node: Conceptual Ecosystem Model Source 54](#_Toc10989927)

[3.2.4.11.3. Node: Conceptual Ecosystem Model Summaries 54](#_Toc10989928)

[3.2.4.11.3.1. Node: Conceptual Ecosystem Model Summary 55](#_Toc10989929)

[3.2.4.12. Node: Classifications 56](#_Toc10989930)

[3.2.4.12.1. Node: Classification system 57](#_Toc10989931)

[3.2.4.12.1.1. Node: Classification system element 57](#_Toc10989932)

[3.2.4.13. Node: Distribution 58](#_Toc10989933)

[3.2.4.13.1. Node: Distribution Summaries 58](#_Toc10989934)

[3.2.4.13.2. Node: Summary 59](#_Toc10989935)

[3.2.4.13.3. Node: Countries 59](#_Toc10989936)

[3.2.4.13.3.1. Node: Country 60](#_Toc10989937)

[3.2.4.13.4. Node: Geographic region 60](#_Toc10989938)

[3.2.4.13.5. Node: Biogeographic realm 61](#_Toc10989939)

[3.2.4.13.6. Node: Region (land regions and marine regions) 61](#_Toc10989940)

[3.2.4.13.6.1. Node: Region classification system 61](#_Toc10989941)

[3.2.4.13.6.1.1. Node: Region classification element 61](#_Toc10989942)

[3.2.4.13.7. Node: Spatial data 61](#_Toc10989943)

[3.2.4.13.7.1. Node: Spatial point 62](#_Toc10989944)

[3.2.4.13.7.1.1. Node: Longitude 64](#_Toc10989945)

[3.2.4.13.7.1.2. Node: Latitude 64](#_Toc10989946)

[3.2.4.13.7.1.3. Node: Radius 65](#_Toc10989947)

[3.2.4.14. Node: Collapse definition 65](#_Toc10989948)

[3.2.4.14.1. Node: Collapse Summaries 66](#_Toc10989949)

[3.2.4.14.1.1. Node: Collapse Summary 66](#_Toc10989950)

[3.2.4.14.2. Node: Spatial collapse 67](#_Toc10989951)

[3.2.4.14.3. Node: Functional collapse 67](#_Toc10989952)

[3.2.5. Node: Ecosystem Risk Assessment 68](#_Toc10989953)

[3.2.5.1. Node: Assessment version 68](#_Toc10989954)

[3.2.5.2. Node: Risk Assessment Protocol 69](#_Toc10989955)

[3.2.5.3. Node: Assessment unit 69](#_Toc10989956)

[3.2.5.3.1. Node: Ecosystem subset 70](#_Toc10989957)

[3.2.5.3.1.1. Node: Sub-set descriptions 70](#_Toc10989958)

[3.2.5.3.1.1.1. Node: Sub-set description 71](#_Toc10989959)

[3.2.5.3.1.2. Node: Countries 71](#_Toc10989960)

[3.2.5.3.1.2.1. Node: Country 72](#_Toc10989961)

[3.2.5.3.1.3. Node: Spatial data 72](#_Toc10989962)

[3.2.5.3.1.3.1. Node: Spatial point 72](#_Toc10989963)

[3.2.5.3.1.3.1.1. Node: Longitude 73](#_Toc10989964)

[3.2.5.3.1.3.1.2. Node: Latitude 74](#_Toc10989965)

[3.2.5.3.1.3.1.3. Node: Radius 74](#_Toc10989966)

[3.2.5.3.2. Node: Risk assessment Summaries 74](#_Toc10989967)

[3.2.5.3.2.1. Node: Risk assessment Summary 75](#_Toc10989968)

[3.2.5.3.3. Node: Rationale 75](#_Toc10989969)

[3.2.5.3.4. Node: Overall Category 76](#_Toc10989970)

[3.2.5.3.5. Node: Plausible bounds 76](#_Toc10989971)

[3.2.5.3.6. Node: Criterions 77](#_Toc10989972)

[3.2.5.3.6.1. Node: Criterion 78](#_Toc10989973)

[3.2.5.3.6.1.1. 3.1.4.3.6.1. Node: Summaries 79](#_Toc10989974)

[3.2.5.3.6.1.2. Node: Rationale 79](#_Toc10989975)

[3.2.5.3.6.1.3. Node: Category 79](#_Toc10989976)

[3.2.5.3.6.1.4. Node Plausible bounds 80](#_Toc10989977)

[3.2.5.3.6.1.5. Node: Sub-criterions 80](#_Toc10989978)

[3.2.5.3.6.1.5.1. Node: Sub-criterion 80](#_Toc10989979)

[3.2.5.3.6.1.5.2. Node: Summary 81](#_Toc10989980)

[3.2.5.3.6.1.5.3. Node: Rationale 82](#_Toc10989981)

[3.2.5.3.6.1.5.4. Node: Category 82](#_Toc10989982)

[3.2.5.3.6.1.5.5. Node: Plausible bounds 82](#_Toc10989983)

[3.2.5.3.6.1.5.6. Node: Key indicator variables 83](#_Toc10989984)

[3.1.4.3.6.5.5.1. Node: Key indicator 83](#_Toc10989985)

[3.1.4.3.6.5.5.1.1 Node: Indicator data 84](#_Toc10989986)

[3.1.4.3.6.5.5.1.1.1 Node: Data source 85](#_Toc10989987)

[3.1.4.3.6.5.5.1.1.2 Node: Data description 85](#_Toc10989988)

[3.1.4.3.6.5.5.1.1.3 Nodes: Values 86](#_Toc10989989)

[3.1.4.3.6.5.5.1.1.3.1.1 Year 87](#_Toc10989990)

[3.1.4.3.6.5.5.1.1.3.1.2 Extent 87](#_Toc10989991)

[3.1.4.3.6.5.5.1.1.3.1.3 Severity 87](#_Toc10989992)

[3.1.4.3.6.5.5.1.2 Node: Collapse threshold 88](#_Toc10989993)

[3.2.5.3.6.1.5.7. Node: Threat defined locations 89](#_Toc10989994)

[3.2.5.3.6.1.5.8. Node: Continuing decline 89](#_Toc10989995)

[3.2.5.3.6.1.5.9. Node: Threatening process 90](#_Toc10989996)

[3.2.6. Node: Content curations 90](#_Toc10989997)

[3.2.6.1. Node: Content curation 90](#_Toc10989998)

[3.2.6.1.1. Edit description 91](#_Toc10989999)

[3.2.6.1.1.1. Node: Nodes checked 91](#_Toc10990000)

[3.2.6.1.1.1.1. Node: Node checked 91](#_Toc10990001)

[3.2.6.1.1.1.1.1. Node: Content changes 92](#_Toc10990002)

[3.2.6.1.1.1.1.2. Node: attribute changes 92](#_Toc10990003)

# **Brief introduction to XML format**

Properly formatted XML documents will allow a standardized reporting of IUCN Red List Ecosystem (RLE) assessments in a semi-structured format. The XML format is a plain text format, with data organized in **elements** that have some value surrounded by a pair of **tags**. Tags are enclosed in brackets, and closing tags are preceded by a forward-slash, like this:

<assessment-author> JR Ferrer-Paris </assessment-author>

This snip of code simply tells that the "assessment author" is JR Ferrer Paris. Tags discriminate capital words, spaces and symbols, so tag names should be used consistently across documents. For example:

<assessment-author> JR Ferrer-Paris </assessment-author>

**is different to**

<Assessment-Author> JR Ferrer-Paris </Assessment-Author>

Tags can have **attributes** (like ids, types, language, etc.), that contain data or metadata related to a specific element. Attributes will show this format:

<Case-Study-Name lang="en">Tepui shrublands, southern Venezuela</Case-Study-Name>

In this case, lang= “en” is an attribute that indicates that the information corresponding to the tag “Case-Study-Name” is presented in English. In this example, “lang” will be the attribute code for language and “en” will be the two-letters code for English.

Elements in the xml file can be nested within each other (**parent-child**), or can be **siblings** to each other.

Each xml file needs to have an initial declaration and a **root element**, in which all other elements will be nested.

To create a XML document of a published assessment, we will first create a file with a collection of case of studies. The root element will be “Case-Studies” and it will nests each case study (unit assessed) in the publication. Each case study should have a unique id, added as attribute. For example:

<Case-Studies> *[root element]*

<Case-Study id="MAC\_RLE\_Chile\_2015\_1" name="LRE de Chile: Bosque caducifolio mediterráneo-templado andino de Nothofagus alpina y N. obliqua, VU > </Case-Study>

*[1st case study]*

<Case-Study id="MAC\_RLE\_Chile\_2015\_2" name="LRE de Chile: Bosque caducifolio mediterráneo-templado andino de Nothofagus pumilio y N. obliqua, VU"> </Case-Study>

*[2nd case study]*

</Case-Studies>

**Empty nodes** can be used as placeholders within the xml-file structure. They can be written as a combination of opening and closing tags:

<Case-Study id="MAC\_RLE\_Chile\_2015\_45" >

</Case-Study id="MAC\_RLE\_Chile\_2015\_45">

or as a single tag with closing “/” at the end:

<Case-Study id="MAC\_RLE\_Chile\_2015\_45"/>

We will write empty nodes adding “/” at the end of the single tag to indicate that it is empty and it is not an unfilled forgotten node. An exception will be parent nodes, which will be written as a combination of opening and closing tags so as not to change the nodes structure. For example:

<Threat-descriptions>

<Threat-description lang=""/>

</Threat-descriptions>

In this example, “Threat descriptions” is empty but not written as a single tag because it is a parent node of “Threat-description” and if we type it as a simple tag, the child node will not appear in the structure. While, “Threat-description” is also empty and written as a single tag because it is not a parent node.

This is a more elaborate example with some of the tags we will include in our case study documentation:

<Case-Study id="MAC\_RLE\_Chile\_2015\_45">

<Assessment-information>

<Keywords>

<Keyword>Chile</Keyword></Keywords>

<ref-label>MAC\_RLE\_Chile\_2015</ref-label>

<Assessment-contributors>

<Author>Pliscoff, P<Author>

</Assessment-contributor>

<assessment-date>2015</assessment-date>

</Assessment-information>

...

<Assessment-Target>

<AT-id>MAC\_RLE\_Chile\_2015\_45</AT-id>

<Distribution>

<Summary>National assessment of Chilean ecosystems</Summary>

<spatial-data><Spatial-point datum="WGS84" proj="longlat" type="lower-left-corner"><x>132.43</x><y>-36.42</y><radius units=" degrees">0.01</radius></Spatial-point></Spatial-data>

</Assessment-Target>

...

<Ecosystem-Risk-Assessment>

<Assessment-unit>

<Overall-category>LC</Overall-category>

<Criterion RAP="IUCN RLE 1.0" name="A">

<Rationale>This ecosystem is Critically Endangered under criterion A</Rationale>

<Category>CR</Category>

<Plausible-bounds lower="" upper=""></Plausible-bounds>

</Assessment-unit> </Ecosystem-Risk-Assessment>

</Case-Study>

The following section specifies the format, type of content and purpose of each of the nodes (tags) that are part of the XML structure for documenting case studies. However, there are some general aspects to consider in the entire document:

* if there is no information available for a particular node in the original document, it must be closed using the forward slash "/" (see text below).
* If in a case study there is no information for a given node, the use of the forward slash “/” at the end of the tag must be placed in the lowest order node for which information is lacking (children nodes). For example, if there is no characteristic biota description, it is recommended to close the node as follows:
  + **Recommended use of “/” for <Characteristic-biota>**

1. In case there is not data for characteristic biota:

<Characteristic-biota>

<taxons>

<taxon/>

</taxons>

<Biota-Summaries>

<Biota-Summary lang=""/>

</Biota-Summaries>

</Characteristic-biota>

1. In case the only data missing in the original assessment is biota description:

<Characteristic-biota>

<taxons>

<taxon>Chelonia mydas</taxon>

</taxons>

<Biota-Summaries>

<Biota-Summary lang=""/>

</Biota-Summaries>

</Characteristic-biota>

* In general, the formal language used for text description within each node is “English”, only nodes using the @lang attribute could include descriptions in a different language.
* Some nodes in the structure that will be developed below will be taken as a reference to establish "search filters" corresponding to hierarchical classification systems. These nodes must be transcribed with the exact name used in the classification scheme, since any typing error can generate a category in duplicate. These nodes are: <Scope-classification-element>, <Threat-Classification-element>, <Conservation-action-classification-element>, <Research-needed-classification-element>, <Classification-element>, <Region-classification-element>.
* For all those nodes that contain numerical information, the decimal units will be separated with a period ".". For example: <Indicator-value units = km2> 357.28 </Indicator-value>.
* When filling a descripting node, the text should end with a period “.”. Example:

<Abiotic-Summary lang="en">Kelp forests are confined to cold, nutrient-rich, open, rocky coastal waters. A dependence upon light for photosynthesis restricts them to clear shallow water, rarely deeper than 15-40m.</Abiotic-Summary>

* When filling categories nodes or names, the category/name should end without a period. Examples:

<AT-name lang="en">Giant Kelp forests</AT-name>

<taxon>Laminaria groenlandica</taxon>

<Threat-classification-element level="1">5. Biological resource use</Threat-classification-element>

<Threat-Scope id="IUCN" version="3.2" selected="no" assigned-by="RLE team">Affect the majority of the assessment target (50-90%)</Threat-Scope>

* Texts should not include the spetial characters “&” “<” “>”, because they are not readed as text in the XML file. They should be replaced by an “and” “less than” or “more than”.
* Phrases as “Table 1.” “Figure 2”, “see here”….. should be deleted because the material related to these phrases will not be included.

# **Structure of Red List of Ecosystem xml-documents**

In order to document ecosystem assessments, a common, minimal structure is needed. This structure is used to order the data in logical units within a hierarchy, while also allowing for certain flexibility. We will call each element in this structure a "node."

The first step is to develop a list of all the available reference documents ("References" documents), The next step is the development of the document describing the actual risk assessment for each ecosystem ("Case studies" documents).

In the next sections, you will find a detailed explanation of the structure of a typical "case studies" xml-document, providing a standardized system to summarize:

a) Basic information of the RLE assessment (author, publishing date, reference label and keywords),

b) Assessment unit characteristics (location, classification, biotic processes, characteristic biota, abiotic environment, etc),

c) Ecosystem risk assessment (ERA) information, including the results of the evaluation following IUCN criterion or any alternative system, and

d) Information on the revisions (curation) and status of the xml-document prior to its addition to the RLE Database.

# **Document: Case studies**

As mentioned, this xml document aims to systematize all the information related to ecosystems’ collapse risk assessments that have applied the IUCN RLE Categories and Criteria or some other international standard. These assessments may vary in structure and depth of analysis, so it is essential to clarify before starting:

1. **What? The methods used for the assessment,** our xml-document is based on the IUCN Red List of Ecosystems Categories and Criteria; thus, it is important to define a priori the protocol used by the assessors and identify how the nodes/tags adapt to the information provided. *Avoid forcing content into inappropriate categories (nodes).*
2. **Why? The objective of the assessment**, in some cases, the assessment aims to assign a category of risk to the ecosystem and in other cases one or more criteria are applied as part of an exercise to validate methods. Understanding this difference keeps clear the scope of the assessment and the type of data available, *one of the most common errors is to assume information that is not provided by the author of the assessment.*
3. **How? The quality and extent of the information**, the method used in the assessment (qualitative or quantitative) must be clear in the xml-document. Sometimes indicators are provided based on a bibliographic review and in other cases by quantitative estimations; *a good case study documentation must clarify the source of data to allow the effective monitoring of the ecosystem in the future.*

Each reference should have associated only one case studies document. That is why, in the process of documenting case studies in XML format, we will define two different case studies xml types according the number of assessment units described in the reference. When only **one** unit is included in the reference, it will be called "**strategic**"; when **more than one unit** is included in the reference, it will be called "**systematic**". For both types of documents, the node structure will remain the same, differentiating only in the number of case study nodes per file. A strategic case will only include one assessment unit (case study) per file and in the systematic evaluations, one file can group multiple assessment units (multiples case study nodes).

, (spetially to link the case studies document with its reference document)

The exported xml-document has a root element called <Case-Studies> that contains one or more <Case-Study> elements. A typical <Case-Study> element, describing assessment information, assessment target and ecosystem risk assessment would include some of this nodes (the entire structure will be developed in the next sections, a full structure model could be found at XXXXX:

<Case-Studies>

<Case-Study id="" name="">

<Case-Study-Name lang=""></Case-Study-Name>

<Scope>

<Scope-description></Scope-description>

<Scope-classification></Scope-classification>

</Scope>

<Assessment-Information date="" updated-by="" status="" load="">

<Assessment-contributors></Assessment-contributors>

<Assessment-date></Assessment-date>

<Assessment-reviewers></Assessment-reviewers>

<Date-received></Date-received>

<Date-accepted></Date-accepted>

<Date-published></Date-published>

<Date-webpublished></Date-webpublished>

<ref-label></ref-label>

<Keywords></Keywords>

</Assessment-Information>

<Assessment-Target date="" updated-by="" status="">

<AT-id></AT-id>

<AT-description></AT-description>

<AT-name></AT-name>

<Characteristic-biota></Characteristic-biota>

<Abiotic-environment></Abiotic-environment>

<Biotic-processes>Biotic-processes>

<Ecosystem-services></Ecosystem-services>

<Threats></Threats>

<Conservation-actions></Conservation-actions>

<Research-needs></Research-needs>

<Conceptual-ecosystem-model></Conceptual-ecosystem-model>

<Classifications></Classifications>

<Distribution></Distribution>

<Collapse-definition></Collapse-definition>

</Assessment-Target>

<Ecosystem-Risk-Assessment date="" updated-by="" status="">

<Assessment-version></Assessment-version>

<Risk-assessment-protocol></Risk-assessment-protocol>

<Assessment-unit></Assessment-unit>

</Ecosystem-Risk-Assessment>

<Content-Curations></Content-Curations>

</Case-Study>

</Case-Studies>

# **Node documentation**

# **Root element: Case Studies**

Tag: <Case-Studies>

Parent: none

Children: Case-Study

Content: A collection of one or more than one Case-Study from the same bibliography. Each Case-Study contains the information related to the risk assessment of one assessment target (i.e. one ecosystem type, habitat type, biotope type, etc).

Attributes: none

Example:

<Case-Studies>

<Case-Study id="OliveiraMiranda\_TepuiShrublands\_2013\_1" name="Tepui shrublands, southern Venezuela, LC"/>

<Case-Study id="Lester\_CoorongLagoons\_2013\_1" name="The Coorong Lagoons and Murray Mouth Inverse Estuary, South Australia, CR"/>

<Case-Study id="MacNally\_RiverRedGum\_2013\_1" name="Red gum and black box, south-eastern Australia, VU"/>

</Case-Studies>

# **Node: Case Study**

Tag: <Case-Study>

Parent: Case-Studies

Children: Case-Study-Names, Scope, Assessment-Information, Assessment-Target, Ecosystem-Risk-Assessment, Content-Curations

Content: element containing all information regarding the application of an ecosystem risk assessment protocol to one assessment target (ecosystem type, habitat type, biotope type, etc.). Each case study needs to have six nodes of information: one for name versions (<Case-Study-Names>), one for the scope of the assessment (<Scope>), one for information regarding the assessment reference (<Assessment-Information>), one for the information regarding the assessment target description (<Assessment-Target>, one for the actual application of the risk assessment protocol (<Ecosystem-Risk-Asessment>), and the last node for listing content curation events (i.e. the additions and/or corrections made to the xml file over time) (<Content-Curations>).

Attributes: id, name

* @id = unique ID of the case study, usually composed of the ID of a bibliographic reference and a consecutive number related to the specific assessment target.
* @name = unique name of the case study (in English), usually composed of the name of the assessment target (preferably the same name used in the reference, in the original language), the delimitation of the assessment unit (country or region) and the overall risk assessment category.

These attributes are repetitive but are meant to facilitate navigation within the xml files, particularly when a single xml file contains more than on Case-Study (e.g., for systematic assessments).

**Note:** to assign the *id* attribute the compiler should use the <ref-label> tag information (provided by the references xml), the “\_” character and a sequential number. For example, for the publication with the <ref-label> “Alaniz\_Chile\_CentralChileHotspot\_2016”, the *id* for the first unit assessed will be “Alaniz\_Chile\_CentralChileHotspot\_2016\_1”, for the second unit the id will be “Alaniz\_Chile\_CentralChileHotspot\_2016\_2”, for the third unit the id will be “Alaniz\_Chile\_CentralChileHotspot\_2016\_3”, and so on. The consistency of the data provided between tags is very important to further use of this information

Examples:

In case of a single (strategic) case study assessment,

<Case-Study id="OliveiraMiranda\_TepuiShrublands\_2013\_1" name="Tepui shrublands, southern Venezuela, LC">

In case of a multiple (systematic) case study assessment,

<Case-Study id="Alaniz\_Chile\_CentralChileHotspot\_2016\_1" name="Coastal Mediterranean sclerophyll forest of C. alba and P. boldus, LC">

<Case-Study id="Alaniz\_Chile\_CentralChileHotspot\_2016\_2" name="Coastal Mediterranean sclerophyll arborescent scrub of Peumus boldus and Schinus latifolius, LC">

# **Node: Case Study Names**

Tag: <Case-Study-Names>

Parent: Case-Study

Children: Case-Study-Name

Content: List of alternative names for the case study in the different languages in which it is available. It must always include the name in English and the name in the native language of the assessment (if different from English).

Attributes: none

Example:

<Case-Study-Names>

<Case-Study-Name lang="en">Tepui shrublands, southern Venezuela</Case-Study-Name>

<Case-Study-Name lang="es">Arbustales tepuyanos, sur de Venezuela</Case-Study-Name>

</Case-Study-Names>

# **Node: Case Study Name**

Tag: <Case-Study-Name>

Parent: Case-Study-Names

Children: none

Content: Alternative names for the case study in the different languages in which it is available. The case study name must be unique, and refer to the name of the assessment target and the geographical distribution assessed. If a single study case contains information in more than a language, add a <Case-Study-Name> node for each language (see examples). If the original reference includes some description code for the ecosystem, this must be considered in the text description (see example below).

Attributes: lang

* @lang = for specifying the language using a two-letter iso-code (en: English, fr: French, sp: Spanish, de: German, etc). See the Glossary for more details.

Example:

* Case study name without code for the ecosystem target:

<Case-Study-Names>

<Case-Study-Name lang="en">Tepui shrublands, southern Venezuela</Case-Study-Name>

</Case-Study-Names>

* Case study name with code for the ecosystem target:

<Case-Study-Names>

<Case-Study-Name lang="en">Tropical Deserts Zonobiome ZD-A1, Colombia</Case-Study-Name>

</Case-Study-Names>

# **Node: Scope**

Tag: <Scope>

Parent: Case-Study

Children: Scope-description, Scope-classification

Content: Element containing important information regarding the extent of the assessment in relation to the total distribution of the assessment target.

Attributes: none

Example:

<Scope>

<Scope-description/>

<Scope-classification id="IUCN RLE" version="1.0" selected="no" assigned-by="RLE team">

<Scope-classification-element level="1">1. Global</Scope-classification-element>

</Scope-classification>

</Scope>

# **Node: Scope description**

Tag: <Scope-description>

Parent: Scope

Children: none

Content: Brief explanation of the extent of the risk assessment in relation to the total distribution of the assessment target. It must explicitly address if only a portion of the assessment target (i.e. ecosystem) was assessed, and if the area is linked to a specific administrative boundary (such as a national or regional boundary). It should be clear enough to justify the category assigned within the Scope-classification node. If it is not explicitly address by the author, it should be done by the IUCN RLE team.

Attributes: none

Example:

For a “global” assessment

<Scope-description> The risk assessment covered the entire distribution of the assessment target.</Scope-description>

For a “Sub-global” assessment with “national” scope:

<Scope-description> The assessment target is distributed across more than one country in northern South America; however, this risk assessment covered only the portion of the distribution that is within Venezuela.</Scope-description>

For a “Sub-global” assessment with “regional” scope:

<Scope-description> The assessment target is distributed across more than one country in Europe; however, this risk assessment covered only the portion of the distribution that is within western Europe.</Scope-description>

# **Node: Scope classification**

Tag: <Scope-classification>

Parent: Scope

Children: Scope-classification-element

Content: Element containing information on the classification system used to assign the scope of the risk assessment.

Attributes: id, version, selected, assigned by

* @id= unique ID of the classification scheme used to assign the scope. In alphanumeric format. Example: “IUCN RLE”
* @version= unique version used by the classification scheme selected. In numeric format. Example: “1.0”
* @selected= possible values “yes” when the classification system was explicitly established by the author(s) of the case study in the documentation and “no” when the compiler/data transcriber applied the classification system.
* @assigned-by= identification of the person assigning the assessment target to a given classification element. Possible values include “RLE Team”, “Assessment authors”, “David Keith”.

Example:

<Scope-classification id="IUCN RLE" version="1.0" selected="no" assigned-by="RLE team">

<Scope-classification-element level="1">1. Global</Scope-classification-element>

</Scope-classification>

**Note:** At this time there is no official classification scheme for Scope. While this issue is solved, use the following values for this node:

id=IUCN RLE version=1.0 selected=yes assigned-by=RLE team

# **Node: Scope classification element**

Tag: <Scope-classification-element>

Parent: Scope-classification

Children: none

Content: Element containing the level of classification for the Scope of the risk assessment, according to the classification scheme selected. Until an official classification scheme is available, the current draft version should be used.

Current draft version:

1. Global

2. Sub-global

2.1. Regional (more than one country)

2.2. National

2.3. Sub-national

Attributes: level

* @level=numeric value of the ordinal level within a hierarchical classification scheme. Possible values are integer numbers (“1”, “2”, “3”, etc.) Assign “1” to the highest level within the hierarchy, “2” to the next level, and so on, until reaching the lowest level applicable. If more than one level is relevant, add a node for each level starting with the highest one and moving towards the lowest.

Example:

For a “global” assessment”:

<Scope-classification id="IUCN RLE" version="1.0" selected="no" assigned-by="RLE team">

<Scope-classification-element level="1">1. Global</Scope-classification-element>

</Scope-classification>

For a “national” assessment”:

<Scope-classification id="IUCN RLE" version="1.0" selected="no" assigned-by="RLE team">

<Scope-classification-element level="1">2. Sub-global</Scope-classification-element>

<Scope-classification-element level="2">2.2. National</Scope-classification-element>

</Scope-classification>

# **Node: Assessment information**

Tag: <Assessment-Information>

Parent: Case-Study

Children: ref-label, Assessment-date, Assessment-authors, Assessment-collaborators, Assessment-reviewers, Assessment-Keywords

Content: Element containing key information regarding the assessment process (assessment meta-data). It will contain information nodes about the assessment procedure (authors, date, reference, etc).

Attributes: date, updated-by, status, load

* @date = last update of this section in YYYY-MM-DD format.
* @updated-by = person(s) who filled up all information nodes with initials in upper case.
* @status = “completed”, “update required” (some information available, but not yet filled in), “incomplete” (required fields cannot be filled due to lack of information), “pending” (awaiting input from authors or other sources to fill in).
* @load = “true” to identify if the content of the Assessment-Information node will be taken as a reference for all case studies contained in the root node <Case-Studies> or “false” if they will not. In case of strategic case studies the “true” value will be always considered, nevertheless for systematic case studies only the assessment information considered as “true” will be the first unit.

Example:

<Assessment-Information date="2018-08-29" updated-by="ACU" status="completed" load="true">

# **Node: Reference label**

Tag: <ref-label>

Parent: Assessment-Information

Children: none

Content: Element referencing a bibliographic record (document: References). It contains a value matching the ref-label element from the document: References. Labels include the last name of first author, one or two keywords or fragments from the title, and the year of publication, all joined by underscores (“\_”). This code should be given by the supervisor and will not be arbitrary assigned.

Attributes: none

Examples:

<ref-label>Keith\_Foundations\_2013</ref-label>

<ref-label>Murray\_TidalFlats\_2015</ref-label>

# **Node: Assessment date**

Tag: <Assessment-date>

Parent: Assessment-Information

Children: none

Content: Element containing a reference date for which the assessment is valid. It is not a publication date but an assessment date. Typically the final date used for the “present” time-frame declared in subcriteria A1, C1 or D1 or in the data source from the methods. Date in YYYY-MM-DD format preferably, but if this information is not provided use YYYY format.

Attributes: none

Example:

<Assessment-date>2010-08-24</Assessment-date>

<Assessment-date>2010</Assessment-date>

# **Node: Assessment authors**

Tag: <Assessment-authors>

Parent: Assessment-Information

Children: Author

Content: Element containing a list of the authors of the case study. Each node should refer to one person. In the case of a systematic assessment, this list may not be the same as the list of authors of the reference because the reference may contain authors who worked in another case study or in the drafting of the reference and not in the evaluation itself. Consequently, the list of authors could be different for all the <Case-Study> included in one <Case-Studies>.

Attributes: none

Example:

<Assessment-authors>

<Author>Rodriguez, JP</Author>

<Author>Zambrano-Martínez, S</Author>

</Assessment-authors>

# **Node: Author**

Tag: <Author>

Parent: Assessment-authors

Children: none

Content: Element containing the name of one author. Authors usually perform and write the final assessment. In some cases, the assessment authors might differ from the Reference-authors. Preferred format: “Last Name, First Name” or “Last Name, Initials” (in the latter case, do not separate or follow the initials with “.”).

Attributes: none

Example:

When the First Name of the authors is available:

<Author>Rodríguez, Jon Paul</Author>

<Author>Zambrano-Martínez, Sergio</Author>

When only Initials are known:

<Author>Rodríguez, JP</Author>

<Author>Zambrano-Martínez, S</Author>

# **Node: Assessment collaborators**

Tag: <Assessment-collaborators>

Parent: Assessment-Information

Children: Collaborator

Content: Element containing list of the collaborators of the case study. Each node should refer to one person.

Attributes: none

Example:

<Assessment-collaborators>

<Collaborator>Miranda, M</Collaborator> <Collaborator>Rodriguez, JP</Collaborator>

<Collaborator>Zambrano-Martínez, S</Collaborator> </Assessment- collaborators >

# **Node: Collaborator**

Tag: <Collaborator>

Parent: Assessment-collaborators

Children: none

Content: Element containing the name of one collaborator. A Collaborator is a person who provided key data or information or performed part of the analysis, but was not directly involved in the final assessment outcome. Preferred format: “Last Name, First Name” or “Last Name, Initials”.

Attributes: none

Example:

<Collaborator>Hernández, L</Collaborator>

# **Node: Assessment reviewers**

Tag: <Assessment-reviewers>

Parent: Assessment-Information

Children: Reviewer

Content: Element containing a list of the reviewers of the case study. Each node should refer to one person.

Attributes: none

Example:

<Assessment-reviewers>

<Reviewer>Keith, D</Reviewer>

<Reviewer>Nicholson, E</Reviewer>

</Assessment-reviewers>

# **Node: Reviewer**

Tag: <Reviewer>

Parent: Assessment-reviewers

Children: none

Content: Element containing the name of one reviewer. Reviewers make a critical evaluation of the assessment, the procedure followed and the final documentation. If this information is not explicit in the case study documentation, leave the node empty. Preferred format: “Last Name, First Name” or “Last Name, Initials”.

Attributes: none

Example:

<Reviewer>Keith, D</Reviewer>

# **Node: Assessment Keywords**

Tag: <Assessment-Keywords>

Parent: Assessment-Information

Children: Keyword

Content: Lists of keywords included in the assessment, that can be different from the Keywords of the reference to more specifically address the assessment target. **They should include either “strategic”** (if only one assessment target was assessed) **or “systematic”** (if more than one assessment target was assessed as part of the same effort, such as it happens in national assessments). Keywords should start with an uppercase. For all cases, the first keyword of the list should be “strategic” or “systematic”.

Attributes: none

Example:

<Assessment-Keywords>

<Keyword>Evergreen forest</Keyword>

<Keyword>Venezuela</Keyword>

</Assessment-Keywords>

# **Node: Keyword**

Tag: <Keyword>

Parent: Keywords

Children: none

Content: Element containing one keyword included in the assessment. At least one element for either **“strategic”** (if only one assessment target was assessed) or “**systematic**” (if more than one assessment target was assessed as part of the same effort, such as it happens in national assessments) should be included. Keywords should start with an uppercase. In the case of systematic evaluations avoid placing specific keywords describing one assessment unit, since this information will be applied to the rest of the units.

Attributes: none

Example:

<Keyword>Strategic</Keyword>

<Keyword>Evergreen forest</Keyword>

<Keyword>Venezuela</Keyword>

# **Node: Assessment target**

Tag: <Assessment-Target>

Parent: Case-Study

Children: AT-id, AT-descriptions, AT-names, Characteristic-biota, Abiotic-environment, Biotic-processes, Ecosystem-services, Threats, Conservation-actions, Research-needs, Conceptual-ecosystem-model, Classifications, Distribution, Collapse-definition

Content: Element containing all information regarding the assessment target (might be defined as an ecosystem, habitat, biotype, vegetation type). It will contain elements in order to describe defining characteristics, distribution, classification and threats of the assessment target.

Attributes: date, updated-by, status

* @date = last update of this section in YYYY-MM-DD format.
* @updated-by = person(s) who filled up all information nodes with initials in upper case.
* @status = “completed”, “update required” (some information available, but not yet filled in), “incomplete” (required fields cannot be filled), “pending” (awaiting input from authors or other sources to fill in).

Example:

<Assessment-Target date="2017-08-29" updated-by="ACU" status="completed">

# **Node: Assessment target id**

Tag: <AT-id>

Parent: Assessment-Target

Children: none

Content: Element referencing an ecosystem type/assessment target that has been previously defined. The ecosystem type id must be provided by the data base team in order to maintain the consistency of assessment documentation. In general, it will contain a **three letters iso-code for the country, a keyword for the locality, a keyword for the assessment target type and a consecutive number** (see example).

Attributes: none

Examples:

<AT-id>VEN\_Tepui\_Shrublands\_1</AT-id>

<AT-id>AUT\_Coorong\_Lagoons\_1</AT-id>

# **Node: Assessment target descriptions**

Tag: <AT-descriptions>

Parent: Assessment-Target

Children: AT-description

Content: List of alternative text descriptions for the case study in the different languages in which it is available, always including the original language used in the documentation.

Attributes: none

Example:

<AT-descriptions>

<AT-description lang=”en”>Tepui shrublands are included in the Pantepui, a phytogeographical province totaling 6,000 km2 formed by grouping all table mountain (tepui) summits above 1500 m. Pantepui is part of the Guayana Shield, one of the oldest continental areas in the western hemisphere (Zinck and Huber 2011). They were not recognized as a distinct primary vegetation community until the 1980s, when they were first included as discrete units in vegetation maps (Huber and Alarcon 1988, Huber 1995a, 1995b, Riina and Huber 2003).</AT-description>

<AT-description lang=”es”> Los matorrales tepuyanos están incluidos en el Pantepui, en la provincia fitogeográfica que totaliza 6,000 km2 que se forma al agrupar todas las cumbres de las montañas tipo meseta (tepui) por encima de los 1500 m. El Pantepui es parte del Escudo Guayanés, una de las áreas continentales más antiguas del hemisferio occidental (Zinck y Huber 2011). Estos matorrales no fueron reconocidos como una comunidad vegetal primaria distinta hasta la década de 1980, cuando fueron incluidos por primera vez como unidades discretas en los mapas de vegetación (Huber y Alarcón 1988, Huber 1995a, 1995b, Riina y Huber 2003).</AT-description>

</AT-descriptions>

# **Node: Assessment target description**

Tag: <AT-description>

Parent: AT-descriptions

Children: none

Content: Element containing a text description of the assessment target. If the description is available in more than one language, add a <AT-description> node for each language (see examples). This node should include relevant information to distinguish this assessment unit from others due to its unique characteristics.

Attributes: lang

* @lang = see Glossary and node 3.2.1.1 Case Study Name for more details.

Example:

<AT-description lang="en">Tidal flats are defined as a coastal wetland ecosystem characterized by fine-grained sedimentary deposits within a broad, low-sloping intertidal zone, where they undergo regular inundation during the tidal cycle (Healy et al. 2002; IUCN 2012b). In the Yellow Sea region of East Asia, tidal flats occur in association with a variety of coastal landforms across a latitudinal range of about 8° and constitute the principal coastal ecosystem fringing more than 4000 km of the coastlines of China, North Korea and South Korea.</AT-description>

# **Node: Assessment target names**

Tag: <AT-names>

Parent: Assessment-Target

Children: AT-name

Content: List of the unique name for the assessment target in the different languages in which it is available (the same name used in the reference). The first name of the list should be the one assigned in its original language.

Attributes: none

Example:

<AT-names>

<AT-name lang=”es”>Arbustales tepuyanos</AT-name>

<AT-name lang=”en”>Tepui shrublands</AT-name>

</AT-names>

# **Node: Assessment target name**

Tag: <AT-name>

Parent: AT-names

Children: none

Content: Alternative names for the assessment target in the different languages in which it is available. The assessment target name must be unique and consistent with the Case-Study-Name node excluding geographic location and category of risk data. If the information is available in more than a language, add an <AT-name> node for each language (see examples).

Attributes: lang

* @lang = see Glossary and node 3.2.1.1 Case Study Name for more details.

Example:

<AT-name lang=”es”> Arbustales tepuyanos </AT-name>

<AT-name lang=”en”>Tepui shrublands</AT-name>

# **Node: Characteristic native biota**

Tag: <Characteristic-biota>

Parent: Assessment-Target

Children: taxons, Biota-Summaries

Content: It contains a list of nodes describing the characteristic biota (text descriptions and/or list of taxa).

The characteristic native biota includes the genes, populations, species, assemblages of species and their key interactions that: (i) compositionally distinguish an ecosystem type from others (diagnostic components); and (ii) are central in driving ecosystem dynamics and function, such as ecosystem engineers, trophic or structural dominants, or functionally unique elements (functional components) (Bland et al, 2016). In some cases in the assessment the characteristic native biota is not explicit, thus we need to consider this definition to properly assign the list of nodes and text description of biota.

Attributes: none

Example:

<Characteristic-biota>

<taxons>

<taxon>Potamocorbula sp </taxon>

<taxon>Branchtotoma belcheri ssp. </taxon>

<taxon>Fenneropenaeus chinensis </taxon>

</taxons>

<Biota-Summaries>

<Biota-Summary lang="en">Terrestrial, marine and freshwater biota are associated with the Yellow Sea tidal flat ecosystem, forming a complex ecological community that is dominated by micro- and macro-invertebrates, fish and predatory birds (Bird 2010; Choi et al 2010; Kuwae et al 2012). In general, the Yellow Sea tidal flat ecosystem is dominated by tube-building polychaetes and suspension-feeding bivalves (Ahn et al.1995), and supports very high biomass, with molluscs accounting for up to 50% of the benthic biomass at some sites (UNDP/GEF 2007; Choi et al. 2010). A key feature of the Yellow Sea ecoregion is the yearly influx of about three million migratory shore-birds that utilize tidal flats during their annual migration between their breeding grounds in the Arctic and non-breeding areas throughout Asia and Oceania (Barter 2002). The Yellow Sea contains 27 sites that support important numbers of 36 species of migratory shorebirds, accounting for almost 40% of all migratory shorebirds that migrate through the East Asian Australasian Flyway (Barter 2002).</Biota-Summary>

</Biota-Summaries>

</Characteristic-biota>

# **Node: Taxon list**

Tag: <taxons>

Parent: Characteristic-biota

Children: taxon

Content: Element containing a list of single taxon names. It contains a name of one taxonomic element (genus, species, subspecies) in formal **scientific** language. Taxonomic families are not included in this list.

Attributes: none

Example:

<taxons>

<taxon>Potamocorbula sp </taxon>

<taxon>Branchtotoma belcheri ssp. </taxon>

<taxon>Fenneropenaeus chinensis </taxon>

<taxon>Tringa guttifer </taxon>

<taxon>Numenius madagascariensis </taxon>

<taxon>Eurynorhynchus pygmeus </taxon>

<taxon>Calidris tenuirostris </taxon>

<taxon>Larus saundersi </taxon>

<taxon>Grus japonensis </taxon>

<taxon>Grus monacha </taxon>

</taxons>

# **Node: Taxon**

Tag: <taxon>

Parent: taxons

Children: none

Attributes: none

Content: Element containing a single taxon name. It contains a name of one taxonomic element (genus, species, or subspecies) in formal **scientific** language. Add a node for each separate taxon.

Attributes: none

Example:

<taxon>Potamocorbula sp.</taxon>

<taxon>Branchtotoma belcheri sp.</taxon>

<taxon>Fenneropenaeus chinensis</taxon>

# **Node: Biota Summaries**

Tag: <Biota-Summaries>

Parent: Characteristic-biota

Children: Biota-Summary

Content: Element containing the text descriptions of the characteristic biota relevant for the assessment target in the different languages available.

Attributes: none

Example:

<Biota-Summaries>

<Biota-Summary lang=”en”>This ecosystem type is characterized by vegetation dominated by peat mosses and insectivorous plants like sundew. The dominance by peat mosses together with geomorphic and hydrological processes distinguishes raised bogs from other ecosystem types. Other typical species for raised bogs in Germany are the vascular plants bog-rosemary and cranberry, the butterfly species Cranberry Fritillary, the moth Manchester Treble-Bar and the ground beetle Agonum ericeti (Blab et al., 1995).</Biota-Summary>

<Biota-Summary lang=”es”> Este ecosistema se caracteriza por vegetación dominada por musgos de turba y plantas insectívoras como Drosera sp. El predominio de los musgos de turba junto con los procesos geomorfológicos e hidrológicos distingue los pantanos elevados de otros tipos de ecosistemas. Otras especies típicas de los pantanos elevados en Alemania incluyen en el caso de las plantas vasculares el romero y el arándano, la especie de mariposa Boloria aquilonaris , la polilla Carsia sororiata y el escarabajo de tierra Agonum ericeti (Blab et al., 1995).</Biota-Summary>

</Biota-Summaries>

# **Node: Biota Summary**

Tag: <Biota-Summary>

Parent: Biota-Summaries

Children: none

Content: Element containing the text description of the characteristic biota relevant for the assessment target. The characteristic native biota includes the genes, populations, species, assemblages of species and their key interactions that: (i) compositionally distinguish an ecosystem type from others (diagnostic components); and (ii) are central in driving ecosystem dynamics and function, such as ecosystem engineers, trophic or structural dominants, or functionally unique elements (functional components) (Bland et al, 2016). If the information is available in more than a language, add a <Biota-Summary> node for each language (see examples).

Attributes: lang

* @lang = see Glossary and node 3.2.1.1 Case Study Name for more details.

Example:

<Biota-Summary lang="en">Terrestrial, marine and freshwater biota are associated with the Yellow Sea tidal flat ecosystem, forming a complex ecological community that is dominated by micro- and macro-invertebrates, fish and predatory birds (Bird 2010; Choi et al 2010; Kuwae et al 2012). In general, the Yellow Sea tidal flat ecosystem is dominated by tube-building polychaetes and suspension-feeding bivalves (Ahn et al.1995), and supports very high biomass, with molluscs accounting for up to 50% of the benthic biomass at some sites (UNDP/GEF 2007; Choi et al. 2010). Detailed information on benthic diversity, abundance and community composition is limited (Choi et al. 2014), although it is estimated that the Yellow Sea marine ecoregion contains 464 endemic species, many of which occur only in the tidal flat ecosystem (UNDP/GEF 2007). Several endemic species, such as Chinese shrimp and several sub-species of amphioxus have become identified as threatened in recent years (UNDP/GEF 2007; Hao et al . 2014). A key feature of the Yellow Sea ecoregion is the yearly influx of about three million migratory shore-birds that utilize tidal flats during their annual migration between their breeding grounds in the Arctic and non-breeding areas throughout Asia and Oceania (Barter 2002). The Yellow Sea contains 27 sites that support important numbers of 36 species of migratory shorebirds, accounting for almost 40% of all migratory shorebirds that migrate through the East Asian Australasian Flyway (Barter 2002).</Biota-Summary>

# Node: Abiotic environment

Tag: <Abiotic-environment>

Parent: Assessment-Target

Children: Abiotic-Summaries

Content: Element containing the text descriptions of the abiotic environment. Descriptions should identify salient abiotic features that influence the distribution or functions of an assessment target, define its natural range of variability, sustain its characteristic native biota, and differentiate it from other systems. For terrestrial ecosystems, salient abiotic features may include substrates, soils and landforms, as well as ranges of key climatic variables, while those of freshwater and marine ecosystems may include key aspects of water regimes, light regimes, tides, currents, climatic factors and physical and chemical properties of the water column (Bland et al, 2016).

In some cases, the abiotic environment is not explicit in the documentation. In those cases, only experienced team members should attempt to fill out the information or the authors should be contacted to obtain the additional information. Less experienced compilers should leave the node empty.

Attributes: none

Example:

<Abiotic-environment>

<Abiotic-Summaries>

<Abiotic-Summary lang=”en”>Tepui shrublands are mostly associated with the slopes and summits of the tepuis, on granite and pink sandstone formations, dating back to the Precambrian period (Huber 1995 veg). Although the Tepui shrubland ecosystem appears sporadically at altitudes of 800-1,500 m , with a mesothermic climate (12-24ºC), the best developed and densest communit ies are found on higher grounds (1,500-3,000 m), with submicrothermic climate (6-12ºC). At all elevations, Tepui shrublands are exposed to high air humidit y and precipitation, greater than 2000 mm (Huber 1989; Riina and Huber 2003). With the exception of soils with high organic content, these communities develop on rocky soils (sandstone or granite), where in spite of high precipitation, moisture conditions are limited due to the low water- retention capacit y of the substrate and excessive draining (Riina and Huber 2003), as a consequence of strong winds and high solar radiation periods (Huber 1995a, Zinck and Huber 2011).</Abiotic-Summary>

</Abiotic-Summaries>

</Abiotic-environment>

# **Node: Abiotic Summaries**

Tag: <Abiotic-Summaries>

Parent: Abiotic-environment

Children: Abiotic-Summary

Content: Element containing a list of the text descriptions of the abiotic environment relevant for the assessment target in the different languages available.

Attributes: none

Example:

<Abiotic-Summaries>

<Abiotic-Summary lang=”en”>Kelp forests are confined to cold, nutrient-rich, open, rocky coastal waters. A dependence upon light for photosynthesis restricts them to clear shallow water, rarely deeper than 15-40m.</Abiotic-Summary>

</Abiotic-Summaries>

# **Node: Abiotic Summary**

Tag: <Abiotic-Summary>

Parent: Abiotic-Summaries

Children: none

Content: Element containing the text description of the abiotic environment relevant for the assessment target. If the information is available in more than a language, add an <Abiotic-Summary> node for each language (see examples).

Attributes: lang

* @lang = see Glossary and node 3.2.1.1 Case Study Name for more details.

Example:

<Abiotic-Summary lang=”en”> The Yellow Sea is a shallow (mean depth c. 45 m), semi-enclosed sea with surrounding geography varying from mountain ranges in South Korea to low-elevation coastal plains across much of the northern and western regions. As such, tidal flats in the Yellow Sea are among the largest on earth; in areas with high tidal amplitude (macrotidal, > 4 m), they may attain a width of nearly 20 km when exposed at low tide (Healy et al. 2002). A key feature of the Yellow Sea tidal flats is the seasonal switching from an erosion- to accretion-dominated system in some areas, depending on the occurrence of the monsoon (Healy et al. 2002).</Abiotic-Summary>

# Node: Biotic processes

Tag: <Biotic-processes>

Parent: Assessment-Target

Children: Processes-Summaries

Content: Element containing a text describing the key biotic processes and interactions that characterize the assessment target. Biotic processes and interactions refer to the understanding of ecosystem dynamics essential for assessing risks related to functional declines (Bland, 2006). In some cases, processes and interactions are implicit in threatening processes or in other sections of the assessment, thus it is important to locate the proper information to include it in this section.

Attributes: none

Example:

<Biotic-processes>

<Processes-Summaries>

<Processes-Summary lang=”en”> Tepuis are not actually isolated from lowland landscapes (Huber, 1989; 1995). Extremely adverse environmental conditions such as lack of soil, nutrient deficiency, strong winds, and high radiation appear as the main cause of these relatively depauperate communities (Huber, 1995) and play key roles in the evolution and ecology of the ecosystem. For example, sclerophyllous foliage and diversity of carnivorous plants are likely evolutionary responses to nutrient deficient soils that characterize the old stable landscapes in which these shrublands occur (Hopper, 2009). Like other sclerophyllous shrublands, the tepui are prone to recurring fires (e.g. Givinsh et al. 1986), although these appear to be infrequent and their role in ecosystem dynamics is poorly understood.</Processes-Summary >

<Processes-Summaries>

</Biotic-processes>

# **Node:** Biotic processes **summaries**

Tag: <Processes-Summaries>

Parent: Biotic-processes

Children: Processes-Summary

Content: Element containing a list of the text descriptions of the biotic processes and interactions relevant for the assessment target in the different languages available.

Attributes: none

Example:

<Processes-Summaries>

<Processes-Summary lang=”en”> The key process occurring within this ecosystem is the flow of fresh water entering the system, which in the Coorong occurs from the River Murray over the barrages. This then interacts with mouth openness, water levels, local sea levels, wind, weather systems, flows via Salt Creek and evaporation rates to drive the hydrodynamics of the Coorong lagoons (Webster, 2010), which in turn, drive the ecological characteristics of the system (Lester and Fairweather, 2011). The rate and timing of delivery can have a large influence on the effect of freshwater flows, with prolonged low flows identified as more effective than short, larger flows to avoid high salinities and ecological degradation, for comparable volumes (Lester et al., 2011).</Processes-Summary>

</Processes-Summaries>

# **Node:** Biotic processes **summary**

Tag: <Processes-Summary>

Parent: Processes-Summaries

Children: none

Content: Element containing the text description of the abiotic environment relevant for the assessment target. If the information is available in more than a language, add a <Processes-Summary> node for each language (see examples).

Attributes: lang

* @lang = see Glossary and node 3.2.1.1 Case Study Name for more details.

Example:

<Processes-Summary lang=”en”> Kelp canopies influence the near-shore marine environment and its biota by dampening waves, reducing light and providing a three-dimensional architecture within the water column. Through its influence on wave action and water movement, kelp affects coastal erosion, sedimentation, upwelling, benthic productivity and recruitment of benthic invertebrates (Duggins et al. 1990). Reduced light intensity under kelp canopies creates benthic conditions favourable for particular species (Santelices and Ojeda 1984) and affects competitive relationships among algal species (Dayton 1985). Kelp forest architecture provides shelter, breeding sites and food for pelagic and benthic organisms (Bernstein and Jung 1980; Bologna and Steneck 1993; Levin 1994; Anderson et al. 1997), while the kelp tissue itself provides substrates for epiphytic algae and sessile animals (Duggins 1980; Reed and Foster 1984; Dunton and Schell 1987), as well as food for herbivores and detritivores (Linley et al. 1981; Duggins et al. 1989; Mann 2000), including some trophic specialists (Steneck and Watling 1982; Estes and Steinberg 1988). The kelp forests are part of an extensive trophic network that extends to the open ocean and terrestrial habitats (Estes et al. 2009). Disturbance regimes, competition, and predation are key processes that influence kelp forest ecosystem dynamics. Competition strongly regulates recruitment and establishment, which occurs largely within canopy gaps created by population thinning or disturbance (Reed and Foster 1984; Chapman 1986).</Processes-Summary>

# Node: Ecosystem services

Tag: <Ecosystem-services>

Parent: Assessment-Target

Children: Services, Services-Summaries

Content: Element containing a list (<Services>) and description (<Services-Summaries>) of the main ecosystem services that the assessment target (i.e. ecosystem) provides.

Attributes: none

Example:

<Ecosystem-services>

<Services>

<Ecosystem-service>Air quality</Ecosystem-service>

<Ecosystem-service>Water supplies</Ecosystem service>

<Ecosystem-service>Pollination</Ecosystem-service>

</Services>

<Services-Summaries>

<Services-Summary lang=”en”>The high density of vegetation favors the maintenance of air quality and high levels of humidity that enables the accumulation of water that supplies the surrounded towns. Also, attracts pollinators (key species of this ecosystem interactions).</Services-Summary>

</Services-Summaries>

</Ecosystem-services>

# **Node: Services**

Tag: <Services>

Parent: Ecosystem-services

Children: Ecosystem-service

Content: Element containing a list of single ecosystem services provided by the assessment target. INCLUDE DEFINITION OF ECOSYSTEM SERVICE. The information on individual services is not always explicit in the case study documentation but can be inferred. However, if unsure, it is best to only include the text description in the node <Services-Summary>.

Attributes: none

Example:

<Services>

<Ecosystem-service>Water supplies</Ecosystem service>

<Ecosystem-service>Air quality</Ecosystem-service>

<Ecosystem-service>Other</Ecosystem-service>

</Services>

# **Node: Ecosystem service**

Tag: <Ecosystem-service>

Parent: Services

Children: none

Content: Element containing a single ecosystem service. The possible names of the services are: water quality, water supplies, flood control, climate regulation, landscape, air quality, nutrient cycling, habitat maintenance, provision of critical habitat, pollination, erosion control, biocontrol, shoreline protection, other. Add a node for each separate ecosystem service provided by the assessment target.

Attributes: none

Example:

<Ecosystem-service>Water supplies</Ecosystem service>

<Ecosystem-service>Air quality</Ecosystem-service>

<Ecosystem-service>Other</Ecosystem-service>

# **Node: Ecosystem services summaries**

Tag: <Services-Summaries>

Parent: Ecosystem-services

Children: Services-Summary

Content: Element containing a list of the text descriptions of the ecosystem services relevant for the assessment target in the different languages available.

Attributes: none

Example:

<Services-Summaries>

<Services-Summary lang=”en”>This ecosystem provides shelter for a great quantity of marine invertebrates that are legally exploited by fishing. One of the main ecosystem services of this unit is food provision.</Summary>

</Summaries>

# **Node: Ecosystem service summary**

Tag: <Services-Summary>

Parent: Services-Summaries

Children: none

Content: Element containing the text description of the ecosystem services relevant for the assessment target. If the ecosystem service described in the assessment is classified as “other” according to the name list provided, describe the service in the “Services-Summary” node. If the information is available in more than a language, add a <Services-Summary> node for each language (see examples).

Attributes: lang

* @lang = see Glossary and node 3.2.1.1 Case Study Name for more details.

Example:

<Services-Summaries>

<Services-Summary lang=”en”> Yellow Sea tidal flats provide important ecosystem services including storm protection, coastline stabilization and food production for a coastal population of more than 150 million people (MacKinnon et al. 2012; Murray et al. 2014)..</Services-Summary>

</Services-Summaries>

# Node: Threats

Tag: <Threats>

Parent: Assessment-Target

Children: Threats-Summaries, Threat

Content: Element containing the threats identified for the assessment target (ecosystem, biotope, habitat, etc) during the risk assessment. This node contains a text description (<Threats-Summaries>) and a list (<Threat>) of each threat found. For each threat, information on the classification system used, its impact and a brief description should be included. If the original author didn’t provide a classification scheme, we must use the classification scheme provided by IUCN on its version 3.2 available in:

<https://www.iucnredlist.org/resources/threat-classification-scheme>

**Note:** be aware that the threats listed in this document are based on the IUCN Red List of Threatened Species, and some will not be applicable for ecosystems. A proper understanding of the assessment will allow an effective classification of the threats.

Attributes: none

Example:

<Threats>

<Threats-Summaries>

<Threats-Summary lang=”en”>The primary threatening process to the Coorong ecosystem is a reduction of freshwater inflows from the River Murray. There is an interaction between extractions in the Murray Darling Basin and drought, and there is likely to be an interaction between extractions and future climate change, as that develops within the region. The second major threatening process is change to the source and timing of water delivery to the region.</Threats-Summary>

<Threats-Summaries>

<Threat></Threat>

</Threats>

# **Node: Threats Summaries**

Tag: <Threats-Summaries>

Parent: Threats

Children: Threats-Summary

Content: Element containing a list of the text descriptions of the threats relevant for the assessment target in the different languages available.

Attributes: none

Example:

<Threats-Summaries>

<Threats-Summary lang=”en”> Some of the key threatening processes to tidal flats include (i) rapid growth of urban, agricultural and industrial developments in the coastal zone, (ii) widespread damming and modification of the large river systems that supply sediment to the system, (iii) the swift emergence of large-scale tide and wind power generation facilities, (iv) invasion of exotic flora, (v) extensive pollution in coastal areas,(vi) overharvesting of fin fish and shelfish populations, (vii) ongoing erosion, compaction and subsidence of tidal flat sediments and (viii) sea-level rise (Sato and Koh 2004; MacKinnon et al. 2012; Iwamura et al. 2013; He et al. 2014; Murray et al. 2014).</Threats-Summary>

</Threats-Summaries>

# **Node: Threats Summary**

Tag: <Threats-Summary>

Parent: Threats-Summaries

Children: none

Content: Element containing a summary of the text description of all the threats relevant for the assessment target. If it is not provided by the authors, the compiler should write a summary using just the informantion of the reference. If the information is available in more than a language, add a <Threats-Summary> node for each language (see examples).

Attributes: lang

* @lang = see Glossary and node 3.2.1.1 Case Study Name for more details.

Example:

<Threats-Summary lang=”en”> The Tepui shrublands have few known processes that threaten their persistence. Human effects are limited to localized impacts in the tepuis more visited by tourists, or to damage caused by the arrival of groups (tourists or scientists) in helicopters or small planes. This damage, although limited to relatively small areas, is almost irreversible, as it has been shown that the affected vegetation recovers very slowly (Gorzula and Huber, 1992; MARN 2000; Riina and Huber, 2003). The second process currently considered a threat to the persistence tepui shrubland is global climate change. A small range of tolerance of the component species to changes in humidity and temperature could be a clear weakness of the system (Huber, 1995; Rull et al., 2005; Rull et al., 2009), but additional research is necessary to support this assumption.</Threats-Summary>

# **Node: Threat**

Tag: <Threat>

Parent: Threats

Children: Threat-name, Threat-Impact, Threat-descriptions, Threat-classification

Content: Element containing the detailed information of one of the threats relevant for the assessment target. For each threat, one <Threat> node that documents: the name and a brief description as documented by the assessors, as well as its corresponding classification and impact following the IUCN scheme (<https://www.iucnredlist.org/resources/threat-classification-scheme>)

Attributes: none

Example:

<Threat>

<Threat-name>Intensive ostrich farming industry</Threat-name>

<Threat-Impact></Threat-Impact>

<Threat-descriptions>

<Threat-description lang=”en”> An intensive ostrich farming industry was established in the Little Karoo in the 19th century and has been the dominant activity and the primary cause of habitat degradation throughout the region (Hoffman and Ashwell 2001; Herling et al. 2009). <Threat-description>

</Threat-descriptions>

<Threat-classification id="IUCN" version="3.2" selected="yes" assigned-by="RLE-team"></Threat-classification>

</Threat>

# **Node: Threat name**

Tag: <Threat-name>

Parent: Threat

Children: none

Content: Element containing the name of one threat relevant for the assessment target. It contains the name of the threat **assigned in the original document**.

Attributes: none

Example:

<Threat-name> Intensive ostrich farming industry</Threat-name>

<Threat-name>Reduction of freshwater inflows from the River Murray</Threat-name>

# **Node: Threat impact**

Tag: <Threat-Impact>

Parent: Threat

Children: Threat-Timing, Threat-Scope, Threat-Severity

Content: Element containing the impact classification for a threat relevant for the assessment target. It contains information on the timing, scope and severity of the threat assigned in the original document following the IUCN scheme. IUCN categories to assign timing, scope and severity of threat impact are available in: <https://www.iucnredlist.org/resources/threat-classification-scheme>. If the classification is not assigned by the authors and if the information is not completely explicit enough to clearly assign a category, the compiler should not assume extra information and should leave the node empty.

Attributes: none

Example:

<Threat-Impact>

<Threat-Timing id="IUCN" version="3.2" selected="no" assigned-by="RLE-team">Only in the past and unlikely to return</ Threat-Timing>

<Threat-Scope id="IUCN" version="3.2" selected="no" assigned-by="RLE-team">Affects the majority of the population (50-90%)</Threat-Scope>

<Threat-Severity id="IUCN" version="3.2" selected="no" assigned-by="RLE-team">Unknown</Threat-Severity>

</Threat-Impact>

# **Node: Threat timing**

Tag: < Threat-Timing>

Parent: Threat-Impact

Children: none

Content: Element containing the timing of the threat (i.e. past, ongoing or in the future). Possible values are: ¨Only in the past and unlikely to return¨, ¨In the past but now suspended and likely to return¨, ¨Ongoing¨, ¨Only in the future¨ and ¨Unknown”, as described in the IUCN threats classification scheme.

Attribute: id, version, selected, assigned-by

* @id= see Glossary and node 3.2.2.2. Scope Classification for more details.
* @version= see Glossary and node 3.2.2.2. Scope Classification for more details.
* @selected= see Glossary and node 3.2.2.2. Scope Classification for more details.
* @assigned-by= see Glossary and node 3.2.2.2. Scope Classification for more details.

Example:

<Threat-Timing id="IUCN" version="3.2" selected="no" assigned-by="RLE-team">Only in the past and unlikely to return</Threat-Timing>

# **Node: Threat scope**

Tag: <Threat-Scope>

Parent: Threat-Impact

Children: none

Content: Element containing the proportion of the total assessment target affected by the threat as described in the IUCN threats classification scheme. Possible values are: ¨Affects the whole assessment target (>90%)¨, ¨Affects the majority of the assessment target (50-90%)¨, ¨Affects the minority of the assessment target (<50%)¨ and ¨Unknown¨.

Attribute: id, version, selected, assigned-by

* @id= see Glossary and node 3.2.2.2. Scope Classification for more details.
* @version= see Glossary and node 3.2.2.2. Scope Classification for more details.
* @selected= see Glossary and node 3.2.2.2. Scope Classification for more details.
* @assigned-by= see Glossary and node 3.2.2.2. Scope Classification for more details.

Example:

<Threat-Scope id="IUCN" version="3.2" selected="no" assigned-by="RLE Team">Affects the majority of the assessment target (50-90%)</Threat-Scope>

# **Node: Threat severity**

Tag: <Threat-Severity>

Parent: Threat-Impact

Children: none

Content: Element containing the overall decline caused by a threat (severity) as described in the IUCN threats classification scheme. Possible values are: “Causing or likely to cause very rapid declines (>30% over 10 years)”, “Causing or likely to cause rapid declines (20–30% over 10 years)”, “Causing or likely to cause relatively slow but significant declines (<20% over 10 years)”, “Causing or likely to cause fluctuations”, “Causing or likely to cause negligible declines”, “No declines” and “Unknown”.

Attribute: id, version, selected, assigned-by

* @id= see Glossary and node 3.2.2.2. Scope Classification for more details.
* @version= see Glossary and node 3.2.2.2. Scope Classification for more details.
* @selected= see Glossary and node 3.2.2.2. Scope Classification for more details.
* @assigned-by= see Glossary and node 3.2.2.2. Scope Classification for more details.

Example:

<Threat-Severity id="IUCN" version="3.2" selected="no" assigned-by="RLE Team">Unknown</Threat-Severity>

# **Node: Threat descriptions**

Tag: <Threat-descriptions>

Parent: Threat

Children: Threat-description

Content: Element containing a list of text description of one threat relevant for the assessment target in the different languages available.

Attributes: none

Example:

<Threat-descriptions>

<Threat-description lang=”en”> Changes to ocean currents and temperatures, as concentrations of nutrients are inversely related to water temperature, and kelp forests are dependent for growth on cold waters with high nutrient availability. For example, nitrate concentrations decline by more than an order of magnitude as temperatures increase from 6 to14°C (Dayton et al. 1999). Thus, the kelp forests are likely to be susceptible to climate change that weakens cold water currents or increases frequency of thermal events.</Threat-description>

</Threat-descriptions>

# **Node: Threat description**

Tag: <Threat-description>

Parent: Threat-descriptions

Children: none

Content: Element containing the text description of one threat relevant for the assessment target assigned. If the information is available in more than a language, add a <Threat-description> node for each language.

Attributes: lang

* @lang = see Glossary and node 3.2.1.1 Case Study Name for more details.

Example:

<Threat-description lang=”en”> Human effects are limited to localized impacts in the tepuis more visited by tourists, or to damage caused by the arrival of groups (tourists or scientists) in helicopters or small planes. Among the most common adverse effects are the disposal of garbage, fuel cans and other items left by visitors in their temporary camps (Huber,1995). Nevertheless, in many tepuis there are clear signs of deterioration of the vegetation due to trampling, helicopter landing, rock-climbing and rappelling, paragliding, introduction of exotic species and accumulation of rubbish. This damage, although limited to relatively small areas, is almost irreversible, as it has been shown that the affected vegetation recovers very slowly (Gorzula and Huber, 1992; MARN 2000; Riina and Huber, 2003).</Threat-description>

# **Node: Threat classification**

Tag: <Threat-classification>

Parent: Threat

Children: Threat-classification-element

Content: Element containing the classification assigned to one threat relevant for the assessment target. If the original author didn’t provide a classification scheme, we must use the classification scheme provided by IUCN on its version 3.2 available in:

<https://www.iucnredlist.org/resources/threat-classification-scheme>

In this order, we must be aware the threats listed in this document are based in the IUCN Red List of Threatened Species, and some will not adjust for ecosystems context. A proper understanding of the assessment will allow an effective classification of the threats.

If more than one classification system is recorded by the authors, all of them should be included in the XML file.

Attributes: id, version, selected, assigned-by

* @id= see Glossary and node 3.2.2.2. Scope Classification for more details.
* @version= see Glossary and node 3.2.2.2. Scope Classification for more details.
* @selected= see Glossary and node 3.2.2.2. Scope Classification for more details.
* @assigned-by= see Glossary and node 3.2.2.2. Scope Classification for more details.

Example:

<Threat-classification id="IUCN" version="3.2" selected="yes" assigned-by="Assessment authors">

<Threat-classification-element level="1">2. Agriculture and aquaculture</Threat-classification-element>

<Threat-classification-element level="2">2.1. Annual and perennial non-timber crops</Threat-classification-element>

<Threat-classification-element level="3">2.1.3. Agro-industry farming</Threat-classification-element>

</Threat-classification>

# **Node: Threat classification element**

Tag: <Threat-classification-element>

Parent: Threat-classification

Children: none

Content: Element containing the level of classification for the threat relevant for the assessment target, according to the classification scheme selected. In some cases the threat classifies for more than one category into a level and one node should be created for each category (see the example).

Attributes: level

* @level= possible values “1”, “2” or “3” according the level of classification used in the threats category.

Example:

<Threat-name>Change in land use</Threat-name>

<Threat-Impact></Threat-Impact>

<Threat-descriptions>

<Threat-description lang="en">Alpine snow patch herbfields are at risk by land developments including ski resort development and summer tourism. Of the 240 snow patch herbfields on the Bogong High Plains mapped by McDougall (1982), it is known that two have been destroyed as a consequence of ski resort development in Victoria in the past 50 years (W. Papst, unpublished data, 2014).</Threat-description>

</Threat-descriptions>

<Threat-classification id="IUCN" version="3.2" selected="no" assigned-by="RLE team">

<Threat-classification-element level="1">1. Residential and commercial development</Threat-classification-element>

<Threat-classification-element level="2">1.3. Tourism and recreation areas</Threat-classification-element>

<Threat-classification-element level="1">6. Human intrusions and disturbance</Threat-classification-element>

<Threat-classification-element level="2">>6.1. Recreational activities</Threat-classification-element>

</Threat-classification>

# Node: Conservation actions

Tag: <Conservation-actions>

Parent: Assessment-Target  
Children: Conservation-Summaries, Conservation-action

Content: Element containing a list of conservation actions developed for the assessment target (ecosystem, biotope, habitat, etc.) at present time. This node contains a text description and a list of each conservation action with its classification and description. Will be considered only conservation actions identified by the assessment author, not conservation actions defined by the compiler. If the original author identifies a conservation action but didn’t provide a classification scheme, we must use the classification scheme provided by IUCN on its version 2.0 available in: <https://www.iucnredlist.org/resources/conservation-actions-classification-scheme>. In this order, we must be aware the conservation actions listed in this document are based in the IUCN Red List of Threatened Species, and some will not adjust for ecosystems context. A proper understanding of the assessment will allow an effective classification of the conservation actions.

Attributes: none

Example:

<Conservation-actions>

<Conservation-Summaries>

<Conservation-Summary lang="en">Substantial stands of Tapia forest occur in the south and in Isalo National Park. Tapia also hosts silk worms and thereby supports village-based silk industries, which often afford it some local protection.</Conservation-Summary>

</Conservation-Summaries>

<Conservation-action>

<Conservation-action-name>National park protection</Conservation-action-name>

<Conservation-action-descriptions></Conservation-action-descriptions>

<Conservation-action-classification id="IUCN" version="2.0" selected="no" assigned-by="RLE team"></Conservation-action-classification>

</Conservation-action>

</Conservation-actions>

# **Node: Conservation Summaries**

Tag: <Conservation-Summaries>

Parent: Conservation-actions

Children: Conservation-Summary

Content: Element containing a list of text descriptions of the conservation actions relevant for the assessment target in the different languages available.

Attributes: none

Example:

<Conservation-Summaries>

<Conservation-Summary lang="en">Australian snow patch herbfields are rare and consequently are of high conservation significance. Although not explicitly listed under national legislation (The Environment Protection and Biodiversity Conservation Act, 1999; EPBC), they are considered as ‘matters of National Environmental Significance’ under the EPBC Act.</Conservation-Summary>

</Conservation-Summaries>

# **Node: Conservation-Summary**

Tag: <Conservation-Summary>

Parent: Conservation-Summaries

Children: none

Content: Element containing the text description of the conservation actions relevant for the assessment target. If the information is available in more than a language, add a <Conservation-Summary> node for each language (see examples).

Attributes: lang

* @lang = see Glossary and node 3.2.1.1 Case Study Name for more details.

Example:

<Conservation-Summary lang="en">The assessment demonstrates an urgent need to arrest the decline of the Yellow Sea tidal flat ecosystem, which could be achieved by (i) improved coastal planning and management at regional and national levels, (ii) expansion of the coastal protected area network, and (iii) improved managed of existing protected areas to reduce illegal land reclamation and coastal exploitation.Conservation-Summary>

# **Node: Conservation action**

Tag: <Conservation-action>

Parent: Conservation-actions

Children: Conservation-action-name, Conservation-action-description, Conservation-action-classification

Content: Element containing the information of one conservation action relevant for the assessment target. It contains the name and description of the conservation action assigned in the original document and its corresponding classification following IUCN scheme (<https://www.iucnredlist.org/resources/conservation-actions-classification-scheme>).

Attributes: none

Example:

<Conservation-action>

<Conservation-action-name>National park protection</Conservation-action-name>

<Conservation-action-descriptions>

<Conservation-action-description lang="en">Substantial stands of Tapia forest occur in the south and in Isalo National Park.</Conservation-action-description>

</Conservation-action-descriptions>

<Conservation-action-classification id="IUCN" version="2.0" selected="no" assigned-by="RLE team">

<Conservation-action-classification-element level="1">1. Land/water protection</Conservation-action-classification-element>

<Conservation-action-classification-element level="2"> 1.1 Site/area protection</Conservation-action-classification-element>

</Conservation-action-classification>

</Conservation-action>

# **Node: Conservation action name**

Tag: <Conservation-action-name>

Parent: Conservation-action

Children: none

Content: Element containing the name of one conservation action relevant for the assessment target. It contains the name of the conservation action assigned in the original document.

Attributes: none

Example:

<Conservation-action-name>Expansion of the coastal protected area network</Conservation-action-name>

<Conservation-action-name>National Heritage areas and Flora and Fauna Guarantee Act 1988</Conservation-action-name>

# **Node: Conservation action descriptions**

Tag: <Conservation-action-descriptions>

Parent: Conservation-action

Children: Conservation-action-description

Content: Element containing the list of nodes with text description of one conservation action relevant for the assessment target assigned in the original document in the different languages available.

Attributes: none

Example:

<Conservation-action-descriptions>

<Conservation-action-description lang="en">The Coorong, Lower Lakes and Murray Mouth region itself is a Wetland of International Importance under the Ramsar Convention (Phillips and Muller 2006), one of six identified icon sites under The Living Murray initiative, and a hydraulic indicator site under the draft Murray-Darling Basin Plan (MDBA 2010).</Conservation-action-description>

</Conservation-action-descriptions>

# **Node: Conservation action description**

Tag: <Conservation-action-description>

Parent: Conservation-action

Children: none

Content: Element containing the text description of one conservation action relevant for the assessment target assigned in the original document. If the information is available in more than a language, add a <Conservation-action-description> node for each language (see examples).

Attributes: lang

* @lang = see Glossary and node 3.2.1.1 Case Study Name for more details.

Example:

<Conservation-action-description lang="en">Australian snow patch herbfields are one of the rarest ecosystems in Australia and consequently, are of high conservation significance. Although not explicitly listed under national legislation (The Environment Protection and Biodiversity Conservation Act, 1999; EPBC), they are within National Heritage areas and therefore considered as ‘matters of National Environmental Significance’ under the EPBC Act. In Victoria, they are explicitly listed under the Flora and Fauna Guarantee Act 1988 (Government Gazette G 27, published on 5 July 2012).</Conservation-action-description>

# **Node: Conservation action classification**

Tag: <Conservation-action-classification>

Parent: Conservation-action

Children: Conservation-action-classification-element

Content: Element containing the classification assigned to one conservation action relevant for the assessment target following IUCN scheme (<https://www.iucnredlist.org/resources/conservation-actions-classification-scheme>). It could be assigned by the compiler.

Attributes: id, version, selected, assigned-by

* @id= see Glossary and node 3.2.2.2. Scope Classification for more details.
* @version= see Glossary and node 3.2.2.2. Scope Classification for more details.
* @selected= see Glossary and node 3.2.2.2. Scope Classification for more details.
* @assigned-by= see Glossary and node 3.2.2.2. Scope Classification for more details.

Example:

<Conservation-action-classification id="IUCN" version="2.0" selected="no" assigned-by="RLE team">

<Conservation-action-classification-element level="1">1. Land/water protection</Conservation-action-classification-element>

<Conservation-action-classification-element level="2"> 1.1 Site/area protection</Conservation-action-classification-element>

</Conservation-action-classification>

# **Node: Conservation action classification element**

Tag: <Conservation-action-classification-element>

Parent: Conservation-action-classification

Children: none

Content: Element containing the level of classification for the conservation action relevant for the assessment target, according the classification scheme selected.

Attributes: level

* @level= possible values “1”, “2” or “3” according the level of hierarchical classification used in the Conservation action category.

Example:

<Conservation-action-classification id="IUCN" version="2.0" selected="no" assigned-by="RLE team">

<Conservation-action-classification-element level="1">1. Land/water protection</Conservation-action-classification-element>

<Conservation-action-classification-element level="2"> 1.1 Site/area protection</Conservation-action-classification-element>

</Conservation-action-classification>

# Node: Research needs

Tag: <Research-needs>

Parent: Assessment-Target

Children: Research-summaries, Research needed

Content: Element containing a list of research needs request for the assessment target (ecosystem, biotope, habitat, etc) after the risk classification. This node contains a text description (summary) and a list of each research need with its classification and description. Only research needs identified by the assessment author will be considered, not research needs defined by the compiler. If the original author didn’t provide a classification scheme, we must use the classification scheme provided by IUCN on its version 2.0 available in:

<https://www.iucnredlist.org/resources/research-needed-classification-scheme>In this order, we must be aware the research needs listed in this document are based in the IUCN Red List of Threatened Species, and some will not adjust for ecosystems context. A proper understanding of the assessment will allow an effective classification of the conservation actions.

Attributes: none

Example:

<Research-needs>

<Research-Summaries>

<Research-Summary lang="en">Several aspects of Tapia forest need further research, including: current and future declines in area of distribution, effect of invasive species, degradation of biotic and abiotic environment, and key factors determining the distribution of Tapia forests.</Research-Summary>

</Research-Summaries>

<Research-needed>

<Research-needed-name>Current and future declines in area of distribution</Research-needed-name>

<Research-needed-descriptions></Research-needed-descriptions>

<Research-needed-classification id="IUCN" version="2.0" selected="no" assigned-by="RLE team"></Research-needed-classification>

</Research-needed>

</Research-needs>

# **Node: Research needs summaries**

Tag: <Research-Summaries>

Parent: Research-needs

Children: Research-Summary

Content: Element containing a list of text description of the research needs relevant for the assessment target in the different languages available.

Attributes: none

Example:

<Research-Summaries>

<Research-Summary lang="en"> Several areas of research are needed including assessing the potential of snow patch herbfields as refugia for some alpine species, continued monitoring of fauna and flora dynamics in the ecosystem, management strategies to reduce disturbance in the ecosystem and scenario planing to manage threats and their outcomes. </Research-Summary>

</Research-Summaries>

# **Node: Research needs summary**

Tag: <Research-Summary>

Parent: Research-Summaries

Children: none

Content: Element containing a text description of a summary of the research needs relevant for the assessment target. If the information is available in more than a language, add a < Research-Summary > node for each language (see examples).

Attributes: lang

* @lang = see Glossary and node 3.2.1.1 Case Study Name for more details.

Example:

<Research-Summaries>

<Research-Summary lang="en"> To improve this assessment,a deeper understanding of the sources and trends of biotic and abiotic degradation is necessary. Information regarding these would reduce uncertainty in the listings under criteria C and D, and would allow the necessary work to be completed to quantitatively assess risk under criterion E. Thus, several research priorities remain including (i) achieving higher temporal resolution of tidal flat mapping, (ii) further consolidating data on the sources and ecosystem impacts of biotic and abiotic degradation, (iii) improving our understanding of the effects of sediment declines and coastal reclamation on the tidal flat system,and (iv) improving our knowledge of the status of tidal flats in North Korea. </Research-Summary>

</Research-Summaries>

# **Node: Research needed**

Tag: <Research-needed>

Parent: Research-needs

Children: Research-needed-name, Research-needed-description, Research-needed-classification

Content: Element containing one research need relevant for the assessment target. It contains the name and description of the research needed assigned in the original document. Will be considered only a research needed identified by the assessment author, not those defined by the compiler. If the original author identifies a research needed but didn’t provide a classification scheme, we must use the classification scheme provided by IUCN on its version 2.0 available in: <https://www.iucnredlist.org/resources/research-needed-classification-scheme>

Attributes: none

Example:

<Research-needed>

<Research-needed-name>Current and future declines in area of distribution</Research-needed-name>

<Research-needed-descriptions></Research-needed-descriptions>

<Research-needed-classification id="IUCN" version="2.0" selected="no" assigned-by="RLE team"></Research-needed-classification>

</Research-needed>

# **Node: Research needed name**

Tag: <Research-needed-name>

Parent: Research-needed

Children: none

Content: Element containing the name of one research needed relevant for the assessment target identified by the assessment authors. It contains the name of the research needed assigned in the original document.

Attributes: none

Example:

<Research-needed-name>Current and future declines in area of distribution</Research-needed-name>

<Research-needed-name>Ecosystem modelling and remote sensing</Research-needed-name>

<Research-needed-name>Biotic and abiotic degradation monitoring</Research-needed-name>

# **Node: Research needed descriptions**

Tag: <Research-needed-descriptions>

Parent: Research-needed

Children: Research-needed-description

Content: Element containing the list of text descriptions of one research needed relevant for the assessment target assigned in the original document in the different languages available.

Attributes: none

Example:

<Research-needed-descriptions>

<Research-needed-description lang="en">Limited data exist to quantify the current rate in area of distribution, so there is little information to drive any analysis of projected declines.</Research-needed-description>

</Research-needed-descriptions>

# **Node: Research needed description**

Tag: <Research-needed-description>

Parent: Research-needed-descriptions

Children: none

Content: Element containing the text description of one research needed relevant for the assessment target assigned in the original document. If the information is available in more than a language, add a < Research-needed-description > node for each language

Attributes: lang

* @lang = see Glossary and node 3.2.1.1 Case Study Name for more details.

Example:

<Research-needed-descriptions>

<Research-needed-description lang="en">Despite substantial multi-site data on ecosystem state over the past two decades, the use of these data to derive bounded estimates of risk in some cases resulted in high uncertainties that span the full range of risk possibilities. Given the national conservation significance of snow patch herbfields, continued and indeed expanded, monitoring of the state of snow patch herbfields is essential. Effective monitoring for biodiversity conservation can be based on simple attributes such as location, shrub cover, grass cover, species dominance and the amount of bare ground.</Research-needed-description>

</Research-needed-descriptions>

# **Node: Research-needed classification**

Tag: <Research-needed-classification>

Parent: Research-needed

Children: Research-needed-classification-element

Content: Element containing the classification assigned to one research needed relevant for the assessment target according to the classification scheme provided by IUCN. It could be assigned by the compiler.

Attributes: id, version, selected, assigned-by

* @id= see Glossary and node 3.2.2.2. Scope Classification for more details.
* @version= see Glossary and node 3.2.2.2. Scope Classification for more details.
* @selected= see Glossary and node 3.2.2.2. Scope Classification for more details.
* @assigned-by= see Glossary and node 3.2.2.2. Scope Classification for more details.

Example:

<Research-needed-classification id="IUCN" version="2.0" selected="no" assigned-by="RLE team">

<Research-needed-classification-element level="1">1. Research</Research-needed-classification-element>

<Research-needed-classification-element level="1">1.2. Distribution</Research-needed-classification-element>

</Research-needed-classification>

# **Node: Research needed classification element**

Tag: <Research-needed-classification-element>

Parent: Research-needed-classification

Children: none

Content: Element containing the level of classification for the Research needed relevant for the assessment target, according to the classification scheme selected.

Attributes: level

* @level= possible values “1”, “2” or “3” according the level of hierarchical classification used in the Research needs category.

Example:

<Research-needed-classification id="IUCN" version="2.0" selected="no" assigned-by="RLE team">

<Research-needed-classification-element level="1">1. Research</Research-needed-classification-element>

<Research-needed-classification-element level="2">1.2. Distribution</Research-needed-classification-element>

</Research-needed-classification>

# Node: Conceptual Ecosystem Model

Tag: <Conceptual-ecosystem-model>

Parent: Assessment-Target

Children: CEM-type, CEM-source, CEM-summary

Content: Element containing a list of nodes describing the type, source and description of the conceptual ecosystem model used in the assessment to determine biotic interactions and threats. According to Bland *et. al*. (2016), a conceptual model is a diagram of key ecosystem processes and threats identified for the assessment target (ecosystem, biotope, habitat, etc.) after the risk classification.

Attributes: none

Example:

<Conceptual-ecosystem-model>

<CEM-type graphic="yes">State and transition</CEM-type>

<CEM-source> Lester and Fairweather, 2011</CEM-source>

<CEM-summaries>

<CEM-summary lang="en"> Conceptual model of ecological processes relevant to the risk assessment of the Meso-American Reef focuses on five benthic groups (brooding corals, spawning corals, macroalgae, turf and epilithic algal communities) and four consumer groups (herbivorous fish, small piscivorous fish, large piscivorous fish and urchins).</CEM-summary>

</CEM-summaries>

</Conceptual-ecosystem-model>

# Node: Conceptual Ecosystem Model Type

Tag: <CEM-type>

Parent: Conceptual-ecosystem-model

Children: none

Content: Element containing the type of conceptual ecosystem model. Values could be cause-effect or state and transition. According to Bland *et. al.* (2016), cause-effect models depict the interaction and dependencies among model components, such as characteristic biota, the abiotic environment and threats; while state-and-transition models depict switches between ecosystem states due to changes in the abiotic environment or ecosystem processes.

Attribute: graphic

* @graphic: indicates if a graphical conceptual model is available in the original document. Possible values are yes (if there is a graphic) or no (if it doesn’t includes a graphic).

Example:

<CEM-type graphic="yes">State and transition</CEM-type>

< CEM-type graphic="no">Cause-effect</ CEM-type>

# Node: Conceptual Ecosystem Model Source

Tag: <CEM-source>

Parent: Conceptual-ecosystem-model

Children: none

Content: Element containing the source of the conceptual ecosystem model. It contains a reference to the original conceptual ecosystem model.

Attributes: none

Example:

<CEM-source>Lester and Fairweather, 2011</CEM-source>

<CEM-source>Keith, D, 2013</CEM-source>

# Node: Conceptual Ecosystem Model Summaries

Tag: <CEM-summaries>

Parent: Conceptual-ecosystem-model

Children: CEM-summary

Content: Element containing the list of text descriptions of the conceptual ecosystem model used for the assessment target in the different languages available.

Attributes: none

Example:

<CEM-summaries>

<CEM-summary lang="en">The ecosystem states model for the Coorong identified the key abiotic characteristics associated with each of the eight ecosystem states. These included the average daily tidal range, the number of no-flow days over the barrages, the annual average water level, annual average depth from two years previous and the annual average salinity. This illustrates the interactions between water levels, flow and salinity that occur within the region thus giving it its unique abiotic characteristics.</CEM-summary>

</CEM-summaries>

# Node: Conceptual Ecosystem Model Summary

Tag: <CEM-summary>

Parent: CEM-summaries

Children: none

Content: Element containing the text description of the conceptual ecosystem model used for the assessment target. If the information is available in more than a language, add a <CEM-summary> node for each language (see examples).

Attributes: lang

* @lang = see Glossary and node 3.2.1.1 Case Study Name for more details.

Example:

<CEM-summaries>

<CEM-summary lang="en">Disturbance regimes, competition, and predation are key processes that influence kelp forest ecosystem dynamics. Outcomes of interspecific competition depend on differential growth rates, which are regulated by water temperatures and availability of light and nutrients, and vary seasonally and between years (Steneck et al. 2002). Extensive deforestation may result from biological interactions such as outbreaks of disease or herbivore populations. Kelps are more susceptible to lethal diseases when under physiological stress initiated by low nutrient availability, high salinity or high temperatures (Steneck et al. 2002). Overgrazing by sea urchins causes the most widespread and long-lasting denudation of Alaskan kelp forests (Duggins 1983; Estes and Duggins 1995). Once established on open substrate, the urchins eliminate kelp recruitment and maintain open conditions by switching their behaviour from consumers of detrital fall out within forest to mobile herbivores when kelp is rare (Konar and Estes 2003). The abundance of urchins is regulated by several trophic levels of predators and the availability of alternative prey, resulting in highly complex ecosystem dynamics influenced by multiple processes and interactions that are intrinsic and extrinsic to the kelp forests (Springer 2003; Springer et al. 2008; Estes et al. 2009).CEM-summary>

</CEM-summaries>

# Node: Classifications

Tag: <Classifications>

Parent: Assessment-Target

Children: Classification-system

Content: Element containing information about the hierarchical classification of the assessment unit according to one or more ecosystem classification schemes.. If the author did not provide a classification scheme for its assessment target, the compiler should assign it using the IUCN habitat classification scheme version 3.1 and the RLE Global Typology, available in:

<https://www.iucnredlist.org/resources/habitat-classification-scheme>

Attributes: none

Example:

<Classifications>

<Classification-system id="RLE Global Typology" version="draft" selected="no" assigned-by="RLE team"></Classification-system>

<Classification-system id="IUCN" version="3.0" selected="yes" assigned-by="Assessment authors"></Classification-system>

</Classifications>

# Node: Classification system

Tag: <Classification-system>

Parent: Classifications

Children: Classification-element

Content: Element containing the classification of the assessment unit according to one classification system. It contains the category used according the assessment authors.

Attributes: id, version, selected, assigned-by

* @id= see Glossary and node 3.2.2.2. Scope Classification for more details.
* @version= see Glossary and node 3.2.2.2. Scope Classification for more details.
* @selected= see Glossary and node 3.2.2.2. Scope Classification for more details.
* @assigned-by= see Glossary and node 3.2.2.2. Scope Classification for more details.

Example:

<Classification-system id="IUCN" version="3.1" selected="yes" assigned-by="Assessment authors">

<Classification-element level="'1">13. Marine Coastal/Supratidal</Classification-element>

<Classification-element level="'2">13.4. Coastal Brackish/Saline Lagoons/Marine Lakes</Classification-element>

</Classification-system>

<Classification-system id="RLE Global Typology" version="draft" selected="no" assigned-by="RLE team">

<Classification-element level="'1">Freshwater/Marine</Classification-element>

<Classification-element level="'2">FM1 Transitional waters</Classification-element>

<Classification-element level="'3">FM1.2 Permanently open riverine estuaries and bays</Classification-element>

</Classification-system>

# Node: Classification system element

Tag: <Classification-element>

Parent: Classification-system

Children: none

Content: Element containing each level of the hierarchical classification system used by assessment authors or assigned by the compiler following IUCN criteria.

Attributes: level

* @level= possible values “1”, “2” or “3” according the hierarchical level of classification used in the threats category.

Example:

<Classification-system id="IUCN" version="3.1" selected="yes" assigned-by="Assessment authors">

<Classification-element level="'1">13. Marine Coastal/Supratidal</Classification-element>

<Classification-element level="'2">13.4. Coastal Brackish/Saline Lagoons/Marine Lakes</Classification-element>

</Classification-system>

# Node: Distribution

Tag: <Distribution>

Parent: Assessment-Target

Children: Distribution-Summaries, Countries, Geographic-region, Biogeographic-realm, Region, Spatial-data

Content: Element containing a description of the **global (complete) distribution of the assessment target.** It contains a text description of the distribution provided by the assessment authors, geographic and biogeographic categories and spatial-data from the area studied during assessment.

Attributes: none

Example:

<Distribution>

<Distribution-Summaries>

<Distribution-Summary lang="en">The Coorong is part of the Murray Mouth Region, South Australia.</Distribution-Summary>

</Distribution-Summaries>

<Countries></Countries>

<Geographic-region>Murray-Darling Basin</Geographic-region>

<Biogeographic-realm>Australasian</Biogeographic-realm>

<Region></Region>

<Spatial-data></Spatial-data>

</Distribution>

# Node: Distribution Summaries

Tag: <Distribution-Summaries>

Parent: Distribution

Children: Distribution-Summary

Content: Element containing the text description of the **global distribution** defined by the assessment authors from the assessment target in the different languages available. If the assessment scope is “sub-global” this node should be closed.

Attributes: none

Example:

<Distribution-Summaries>

<Distribution-Summary lang="en"> In the Yellow Sea region of East Asia, tidal flats are the principal coastal ecosystem fringing more than 4000 km of the coastlines of China, North Korea and South Korea.</Distribution-Summary>

</Distribution-Summaries>

# Node: Distribution Summary

Tag: <Distribution-Summary>

Parent: Distribution-Summaries

Children: none

Content: Element containing the text description of the global distribution defined by the assessment authors from the assessment target. If the information is available in more than a language, add a <Distribution-Summary> node for each language (see examples). If the assessment scope is “sub-global” this node should be closed.

Attributes: lang

* @lang = see Glossary and node 3.2.1.1 Case Study Name for more details.

Example:

<Distribution-Summaries>

<Distribution-Summary lang="en">Typical montane tepui shrublands are only found on higher elevations of the Guayana Shield, mainly in the States of Bolivar and Amazonas in southern Venezuela, on two tepui summits in adjacent Guyana and, to a very small extent, on the Brazilian section of Cerro de la Neblina (Huber 2012, pers. comm.). At lower elevations (800-1500 m), other peculiar scrub types are growing with different floristic composition and growth forms, such as in the Gran Sabana, Cerro Guaiquinima, or Cerro Sarisariñama,where they could be considered as "subtepuian" vegetation (Huber 1995a), but they are not yet sufficiently well explored.</Distribution-Summary>

</Distribution-Summaries>

# Node: Countries

Tag: <Countries>

Parent: Distribution

Children: Country

Content: Element containing the list of all the geographical entities (countries) where the assessment target (habitat, biotope, ecosystem) is distributed at global level. If the assessment scope is “sub-global” this node should be closed.

Attributes: none

Example:

<Countries>

<Country iso-code-2="VE">Venezuela</Country>

<Country iso-code-2="GY">Guyana</Country>

<Country iso-code-2="BR">Brazil</Country>

</Countries>

# Node: Country

Tag: <Country>

Parent: Countries

Children: none

Content: Element containing one country where the **assessment target** (habitat, biotope or ecosystem) is distributed.

Attributes: iso-code-2

* @iso-code-2= also called alpha-2 code, is a two digits combination provided for each country by the International Organization for Standardization (ISO). The complete list of countries and its alpha-2 code can be found at: <https://www.iban.com/country-codes>

Example:

<Countries>

<Country iso-code-2="VE">Venezuela</Country>

<Country iso-code-2="GY">Guyana</Country>

<Country iso-code-2="BR">Brazil</Country>

</Countries>

# Node: Geographic region

Tag: <Geographic-region>

Parent: Distribution

Children: none

Content: Element containing one geographic region where the assessment target (habitat, biotope or ecosystem) is located. In some cases, assessment authors indicate the geographic region assigned, in other cases, it should be assigned by the compiler. This node must contain information independently if the evaluation was done under a global or sub-global scope.

Attributes: none

Example:

<Distribution>

<Geographic-region>Murray-Darling Basin</Geographic-region>

<Geographic-region>Guayana Shield</Geographic-region>

<Geographic-region>Yellow Sea region</Geographic-region>

<Geographic-region>Western Gulf of Alaska</Geographic-region>

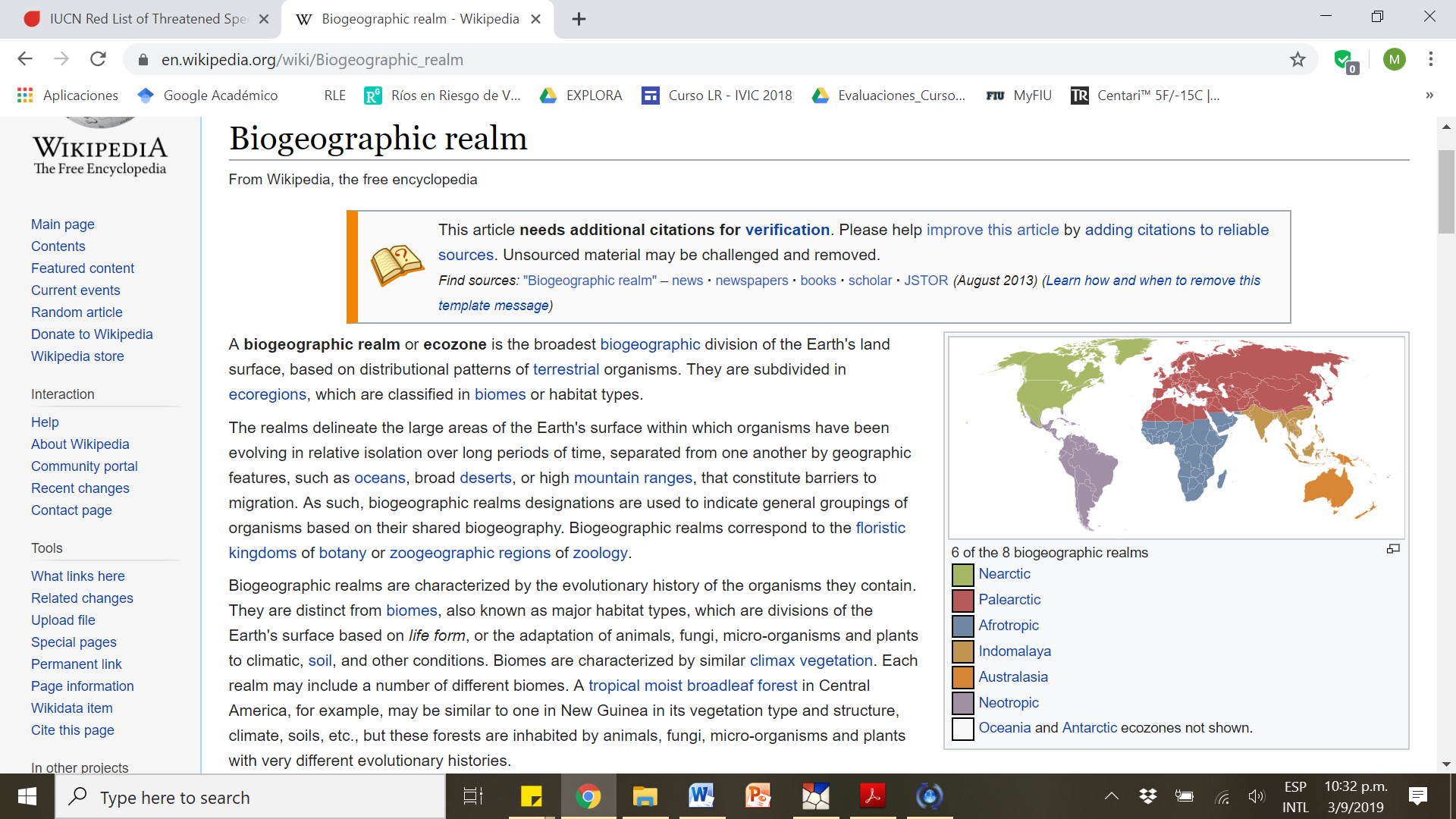
# Node: Biogeographic realm

Tag: <Biogeographic-realm>

Parent: Distribution

Children: none

Content: Element indicating the biogeographic realm where the assessment target (habitat, biotope or ecosystem) is located. It follows the biogeographic realms categories used by IUCN Red List of Threatened Species as filter in the advance searcher (<https://www.iucnredlist.org/search>). Possible values are: **Afrotropical, Antarctic, Australasian, Indomalayan, Nearctic, Neotropical, Oceanian, Palearctic.** This node must contain information independently if the evaluation was done under a global or sub-global scope.



Attributes: none

Example:

<Biogeographic-realm>Australasian</Biogeographic-realm>

<Biogeographic-realm>Nearctic</Biogeographic-realm>

<Biogeographic-realm>Neotropical</Biogeographic-realm>

# Node: Region (land regions and marine regions)

Tag: <Region>

Parent: Distribution

Children: Region-classification-system

Content: Element indicating the region where the assessment target (habitat, biotope or ecosystem) is located. It follows the land and marine region categories used by IUCN Red List of Threatened Species as filter in the advance searcher (<https://www.iucnredlist.org/search>). This node must contain information independently if the evaluation was done under a global or sub-global scope.

Attributes: none

Example:

<Region>

<Region-classification-system id="" version="" selected="no" assigned-by="RLE team">

<Region-classification-element level="1">1.Land</Region-classification-element>

<Region-classification-element level="2">1.9.Oceania</Region-classification-element>

<Region-classification-element level="3">1.9.2. Australia</Region-classification-element>

<Region-classification-element level="4">1.9.2.9 South Australia</Region-classification-element>

</Region-classification-system>

</Region>

# Node: Region classification system

Tag: <Region-classification-system>

Parent: Region

Children: Region-classification-element

Content: Element containing the hierarchical classification of the region where the assessment target (habitat, biotope or ecosystem) is located. It follows the land and marine region categories used by IUCN Red List of Threatened Species as filter in the advance searcher (<https://www.iucnredlist.org/search>).

Attributes: id, version, selected, assigned-by

* @id= see Glossary and node 3.2.2.2. Scope Classification for more details.
* @version= see Glossary and node 3.2.2.2. Scope Classification for more details.
* @selected= see Glossary and node 3.2.2.2. Scope Classification for more details.
* @assigned-by= see Glossary and node 3.2.2.2. Scope Classification for more details.

Example:

<Region>

<Region-classification-system id="" version="" selected="no" assigned-by="RLE team">

<Region-classification-element level="1">1.Land</Region-classification-element>

<Region-classification-element level="2"> 1.10. South America</Region-classification-element>

<Region-classification-element level="3"> 1.10.13. Venezuela</Region-classification-element>

<Region-classification-element level="4"> 1.10.13.2 Mainland</Region-classification-element>

</Region-classification-system>

</Region>

# Node: Region classification element

Tag: <Region-classification-element>

Parent: Region-classification-system

Children: none

Content: Element containing the level of classification for the Region of the assessment target, according to the classification scheme of land and marine region categories used by IUCN Red List of Threatened Species as filter in the advance searcher (<https://www.iucnredlist.org/search>).

Attributes: level

* @level= possible values “1”, “2” or “3” according the hierarchical level of classification used in the threats category.

Example:

<Region>

<Region-classification-system id="" version="" selected="no" assigned-by="RLE team">

<Region-classification-element level="1"> 2. Marine</Region-classification-element>

<Region-classification-element level="2"> 2.16. Pacific - northweast</Region-classification-element>

</Region-classification-system>

</Region>

# Node: Spatial data

Tag: <Spatial-data>

Parent: Distribution

Children: Spatial-point

Content: Element containing a list of nodes with geospatial data describing the assessment target **global distribution area**. The spatial data is obtained from the distribution area map provided by the assessment author(s). It should always include two sub-nodes of coordinates, one for the lower left corner and one for the upper right corner of its distribution. If the global assessment target area is not incorporated or is not explicit in the assessment target description, spatial data **should not** be included.

Attributes: none

Example:

<Spatial-data>

<Spatial-point datum="WGS84" proj="longlat" type="lower-left-corner">

<x>-36.66</x>

<y>138.24</y>

<radius units="degrees">0.01</radius>

</Spatial-point>

<Spatial-point datum="WGS84" proj="longlat" type="upper-right-corner">

<x>-35.27</x>

<y>140.32</y>

<radius units="degrees">0.01</radius>

</Spatial-point>

</Spatial-data>

# Node: Spatial point

Tag: <Spatial-point>

Parent: Spatial-data

Children: x, y, radius

Content: Element containing information that identifies the geographic location of features and boundaries in the **global** distribution of the assessment target. It contains the projection string used, calculation method, latitude, longitude and units in which this data is represented. The spatial data is obtained from the geographic coordinates in two points of the distribution map (lower left corner and upper right corner). (See spatial point calculation instructions in node 3.2.5.3.1.3.1.).

Attributes: datum, proj, type

* @datum= unique id of the projection datum used in the geographic coordinates. The geodetic datum is an abstract coordinate system with a surface reference; possible values are: "NGVD 29","OSGB36","SK-42","ED50","SAD69","GRS 80","ISO 6709","NAD 83","WGS 84","NAVD 88","ETRS89¨,¨GCJ-02¨,"Geo URI".
* @proj= it contains the units in which this data is represented.
* @type= indicates the type of method used to obtain the geographic coordinates, possible values are “lower-left-corner” or “upper-right-corner”.

Example:

<Spatial-data>

<Spatial-point datum="WGS84" proj="longlat" type="lower-left-corner">

<x>-36.66</x>

<y>138.24</y>

<radius units="degrees">0.01</radius>

</Spatial-point>

<Spatial-point datum="WGS84" proj="longlat" type="upper-right-corner">

<x>-35.27</x>

<y>140.32</y>

<radius units="degrees">0.01</radius>

</Spatial-point>

</Spatial-data>

# Node: Longitude

Tag: <x>

Parent: Spatial-point

Children: none

Content: Element containing the longitude component corresponding to the geographic coordinates of the assessment target (ecosystem, habitat units, biotope, etc.), presented in decimal degree format.

Attributes: none

Example:

<Spatial-point datum="WGS84" proj="longlat" type="lower-left-corner">

<x>-36.66</x>

<y>138.24</y>

<radius units="degrees">0.01</radius>

</Spatial-point>

# Node: Latitude

Tag: <y>

Parent: Spatial-point

Children: none

Content: Element containing the latitude component corresponding to the geographic coordinates of the assessment target (ecosystem, habitat units, biotope, etc.), presented in decimal degree format.

Attributes: none

Example:

<Spatial-point datum="WGS84" proj="longlat" type="lower-left-corner">

<x>-36.66</x>

<y>138.24</y>

<radius units="degrees">0.01</radius>

</Spatial-point>

# Node: Radius

Tag: <radius >

Parent: Spatial-point

Children: none

Content: Element containing the precision degree of the geographic coordinates used to describe the assessment target (ecosystem, habitat units, biotope, etc) distribution. It is presented in numeric format.

Attributes: units

* @units: element containing the standard expression chosen to express de precision degree.

Example:

<Spatial-point datum="WGS84" proj="longlat" type="lower-left-corner">

<x>-36.66</x>

<y>138.24</y>

<radius units="degrees">0.01</radius>

</Spatial-point>

# Node: Collapse definition

Tag: <Collapse-definition>

Parent: Assessment-Target

Children: Collapse-Summaries, Spatial-collapse, Functional-collapse

Content: Element containing a description or rationale for defining collapsed states and/or collapse values for the assessment target.

Attributes: none

Example:

<Collapse-definition>

<Collapse-Summaries></Collapse-Summaries>

<Spatial-collapse>Spatial collapse is assumed if the mapped distribution declines to zero.</Spatial-collapse>

<Functional-collapse>Ecological collapse occurs when half of the modelled years occur either in degraded ecosystem states or are in a period of recovery following the occurrence of degraded ecosystem states. The rationale for this is that long-term persistence of the characteristic biota for the region is highly unlikely if ecological degradation occurs frequently enough (here, defined at 50% of the time, as a starting point) without sufficient periods of recovery, and then ecological collapse is highly likely. Also, it is considered collapsed when the Ruppia sp. abundance is zero.</Functional-collapse>

</Collapse-definition>

# Node: Collapse Summaries

Tag: <Collapse-Summaries>

Parent: Collapse-definition

Children: Collapse-Summary

Content: Element containing a list of text descriptions of the ecosystem collapse defined by the assessment authors for the assessment target in the different languages available.

Attributes: none

Example:

<Collapse-Summaries>

<Collapse-Summary lang="en">Ecosystem collapse for this ecosystem type is defined conceptually as the loss of the range in estuarine, marine and hypersaline environments that have traditionally coexisted. Thus, it is effectively a loss of diversity of habitat types, rather than a complete loss of species. This is most likely to occur as a result of a loss of freshwater flows to the region that would increase salinity and decrease water levels and marine connectivity.</Collapse-Summary>

</Collapse-Summaries>

# Node: Collapse Summary

Tag: <Collapse-Summary>

Parent: Collapse-definition

Children: Collapse-Summaries

Content: Element containing the text description of the ecosystem collapse defined by the assessment authors for the assessment target. If the information is available in more than a language, add a <Collapse-Summary> node for each language (see examples).

Attributes: lang

* @lang = see Glossary and node 3.2.1.1 Case Study Name for more details.

Example:

<Collapse-Summaries>

<Collapse-Summary lang="en"> For assessment of criteria A and B, the kelp forests are assumed to collapse when their distribution declines to zero and they are entirely replaced by urchin barrens. Two variables were identified as potentially suitable for assessing disruption to biotic processes and interactions under criterion D: the density of kelp; and the abundance of sea otters, both having important trophic roles within the ecosystem. It was assumed that ecosystem collapse occurs when either of these measures declines to zero. Collapse-Summary>

</Collapse-Summaries>

# Node: Spatial collapse

Tag: <Spatial-collapse>

Parent: Collapse-definition

Children: none

Content: Element containing the text description of the ecosystem collapse at spatial level, corresponding to reduction in geographic distribution and reduction in the extent of occurrence/area of occupancy (A and B according IUCN RLE criteria).

Attributes: none

Example:

<Spatial-collapse>Spatial collapse is assumed if the mapped distribution declines to zero.</Spatial-collapse>

# Node: Functional collapse

Tag: <Functional-collapse>

Parent: Collapse-definition

Children: none

Content: Element containing the text description of the ecosystem collapse at functional level, corresponding to disruption in abiotic or biotic processes (C and D according IUCN RLE criteria).

Attributes: none

Example:

<Functional-collapse> Functional collapse under criterion C was assumed when sediment discharge decline to zero, and under criterion D when species occurrence declines to zero.</Functional-collapse>

# **Node: Ecosystem Risk Assessment**

Tag: <Ecosystem-Risk-Assessment>

Parent: Case-Study

Children: Assessment-version, Risk-assessment-protocol, Assessment-unit

Content: Element containing all information regarding the application of the risk assessment (protocol, assessment units, indicators and outcomes).

Attributes: date, updated-by, status

* @date = date of last update in YYYY-MM-DD format.
* @updated-by = person(s) who filled up all information nodes with initials in upper case.
* @status = “completed”, “update required” (some information available, but not yet filled in), “incomplete” (required fields cannot be filled), “awaiting” (awaiting input from authors or other sources to fill in).

Example:

<Ecosystem-Risk-Assessment date="2017-08-28" updated-by="ACU" status="completed">

<Assessment-version>2.0</Assessment-version>

<Risk-assessment-protocol>IUCN RLE</Risk-assessment-protocol>

<Assessment-unit></Assessment-unit>

</Ecosystem-Risk-Assessment>

# **Node: Assessment version**

Tag: <Assessment-version>

Parent: Ecosystem-Risk-Assessment

Children: none

Content: This is a node containing information about the version of the IUCN Red List of Ecosystems Categories and Criteria used for the assessment. "Version" should include the version number. Numbers should indicate major-version changes and minor-version changes. For the ``IUCN Red List of Ecosystems'' protocol, we will use following version numbers:

* 1.1: for the preliminary version of the criteria (Rodríguez *et. al.* 2011)
* 2.0: for the first official version of the criteria (Keith *et. al.* 2013)
* 2.1: for the revised version of the criteria included in the first RLE guidelines (Bland *et. al.* 2016)
* 2.2: for the revised version of the criteria included in the second RLE guidelines (Bland *et. al.* 2017)

For other Ecosystem Assessment criteria we will use the version cited by the author as 1.0, or 1.1 if the assessment is result of a major-version changes.

Attributes: none

Example:

<Ecosystem-Risk-Assessment date="2017-08-28" updated-by="ACU" status="completed">

<Assessment-version>2.0</Assessment-version>

<Risk-assessment-protocol>IUCN RLE</Risk-assessment-protocol>

<Assessment-unit></Assessment-unit>

</Ecosystem-Risk-Assessment>

# **Node: Risk Assessment Protocol**

Tag: <Risk-assessment-protocol>

Parent: Ecosystem-Risk-Assessment

Children: none

Content: Element indicating the acronym for the ecosystem risk assessment protocol used for the assessment.

Attributes: none

Example:

<Ecosystem-Risk-Assessment date="2017-08-28" updated-by="ACU" status="completed">

<Assessment-version>2.0</Assessment-version>

<Risk-assessment-protocol>IUCN RLE</Risk-assessment-protocol>

<Assessment-unit></Assessment-unit>

</Ecosystem-Risk-Assessment>

# Node: Assessment unit

Tag: <Assessment-unit>

Parent: Ecosystem Risk Assessment

Child: Ecosystem subset, RA-Summaries, Rationale, Overall-category, Plausible-bounds, Supporting-subcriteria, Criterions

Content: Element containing all information regarding the assessment unit (any sub-set of the assessment target that is being evaluated and has its own assessment outcome). It contains a description of the ecosystem sub-set evaluated and an assessment outcome from the criteria applied.

Attributes: none

Example:

<Assessment-unit>

<Ecosystem-subset></Ecosystem-subset>

<RA-Summaries></RA-Summaries>

<Rationale> Indicator values are well below the Vulnerable threshold for all criterions.</Rationale>

<Overall-category>LC</Overall-category>

<Plausible-bounds lower="" upper=""/>

<Supporting-subcriteria>A1+B1aii + B2aii</Supporting-subcriteria>

<Criterions></Criterions>

</Assessment-unit>

# Node: Ecosystem subset

Tag: <Ecosystem-subset>

Parent: Assessment-unit

Children: Subset-description, Countries, Spatial-data

Content: Element containing all information regarding distribution and representativeness of the assessment unit (any sub-set of the assessment target that is being evaluated and has its own assessment outcome). It contains the description of the assessment sub-set, a list of countries where it is distributed and spatial data. Independently if the assessment is from global or sub-global scope this node must be completed with information about the assessment unit distribution.

Attributes: none

Example:

<Ecosystem-subset>

<Subset-descriptions>

<Subset-description lang="en">The assessment unit includes all the tepui shrublands of Venezuela.</Subset-description>

</Subset-descriptions>

<Countries>

<Country iso-code-2="VE"></Country>

</Countries>

<Spatial-data></Spatial-data>

</Ecosystem-subset>

# Node: Sub-set descriptions

Tag: <Subset-descriptions>

Parent: Ecosystem-subset

Children: Subset-description

Content: Element containing a list of text descriptions of the sub-set assessed of the entire assessment target (ecosystem, biotope, habitat unit) in the different languages available.

Attributes: none

Example:

<Subset-descriptions>

<Subset-description lang="en">The assessment unit includes all the tepui shrublands of Venezuela.</Subset-description>

</Subset-descriptions>

# Node: Sub-set description

Tag: <Subset-description>

Parent: Ecosystem-subset

Children: none

Content: Element containing the text description of the sub-set assessed of the entire assessment target (ecosystem, biotope, habitat unit). While assessment target nodes describes the assessment target at its whole distribution, sub-set nodes describes the fragment of the assessment target that was assessed.

Attributes: none

Example:

<Subset-descriptions>

<Subset-description lang="en">This case study focuses on the coastal lagoons that comprise the Coorong, and the Murray Mouth estuary, where the River Murray meets the sea. The upstream Lower Lakes are largely freshwater, being separated from the Coorong by a series of artificial barrages that control the flow of water between the two. The Lower Lakes therefore comprise a different characteristic biota to the Coorong and Murray Mouth, so are not included in this assessment.</Subset-description>

</Subset-descriptions>

# Node: Countries

Tag: <Countries>

Parent: Ecosystem-subset

Children: Country

Content: Element containing the list of geographical entities (countries) where the **assessment unit** is distributed (not necessarily the same as the entire distribution of the assessment target)

Attributes: none

Example:

<Countries>

<Country iso-code-2="VE">Venezuela</Country>

</Countries>

# Node: Country

Tag: <Country>

Parent: Countries

Children: none

Content: Element containing one country where the **assessment unit** (habitat, biotope or ecosystem) is distributed.

Attributes: iso-code-2

* @iso-code-2= also called alpha-2 code, is a two digits combination provided for each country by the International Organization for Standardization (ISO). The complete list of countries and its alpha-2 code can be found at: <https://www.iban.com/country-codes>

Example:

<Countries>

<Country iso-code-2="AU">Australia</Country>

</Countries>

# Node: Spatial data

Tag: <Spatial-data>

Parent: Ecosystem subset

Children: Spatial point

Content: Element containing a list of nodes with geospatial data describing the **assessment unit** distribution area considered in the ecosystem risk assessment. The spatial data is obtained from the distribution area map provided by the assessment author(s). If the coordinates are not included, spatial data **should be** included. It should always include two sub-nodes of coordinates, one for the lower left corner and one for the upper right corner of its distribution.

Attributes: none

Example:

<Spatial-data>

<Spatial-point datum="WGS84" proj="longlat" type="lower-left-corner">

<x>-36.66</x>

<y>138.24</y>

<radius units="degrees">0.01</radius>

</Spatial-point>

<Spatial-point datum="WGS84" proj="longlat" type="upper-right-corner">

<x>-35.27</x>

<y>140.32</y>

<radius units="degrees">0.01</radius>

</Spatial-point>

</Spatial-data>

# Node: Spatial point

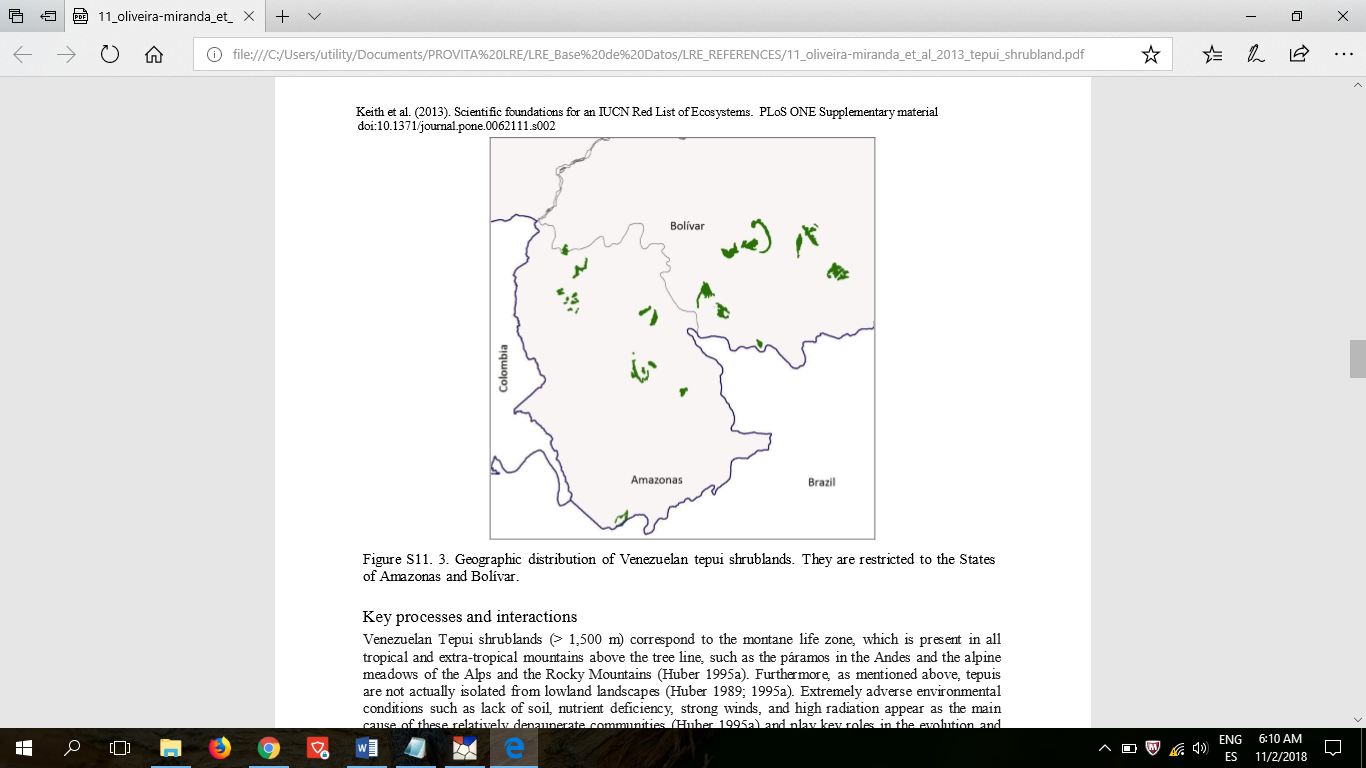
Tag: <Spatial-point>

Parent: Spatial data

Children: x, y, Radius

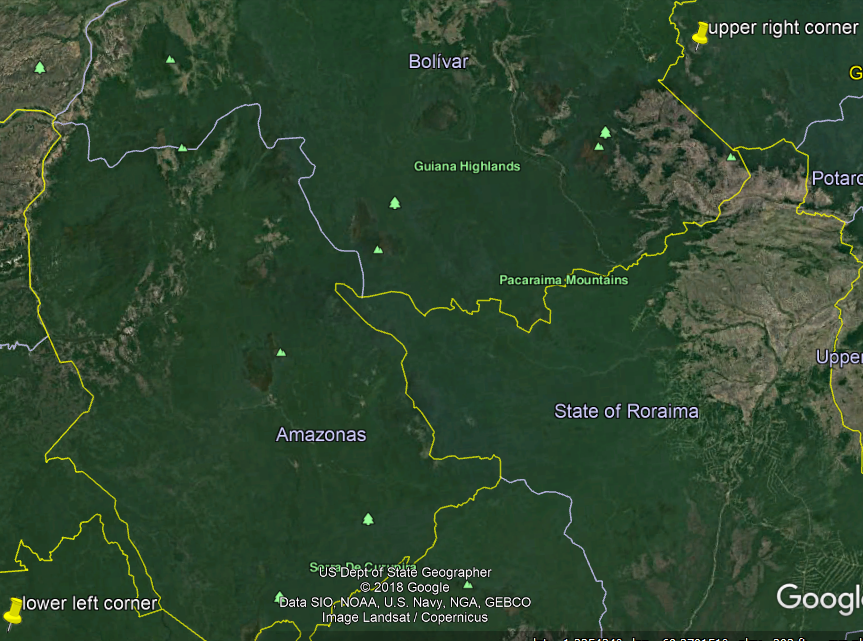
Content: Element containing information that identifies the geographic location of features and boundaries in the **assessment unit** considered in the ecosystem risk assessment. It contains the projection string used, calculation method, latitude, longitude and units in which this data is represented. The spatial data is obtained from the geographic coordinates in two points of the distribution map (lower left corner and upper right corner).

A typical distribution map provided by an assessment author should look like this:



**Fig 1**. Tepui-shrublands distribution area (Oliviera-Miranda *et. al*., 2013)

In this case, geospatial data is not specified in the assessment, but a reference area is provided in the text; thus the compiler should have this information. As a first step we can use any maps application server such as Google Maps or Google Earth and locate the area declared in the assessment document. We will use Google Earth for this example, once the sub-set unit is located we set two placemarks, one in the upper right corner and the other one in the lower left corner (see figure 2); this will provide the coordinates (latitude/longitude) in decimal degrees.



**Figure 2.** Google earth frame used to obtain geographic coordinates from assessment target (lower-left-corner/upper-right-corner).

Attributes: datum, proj, type

* @datum= unique id of the projection datum used in the geographic coordinates. The geodetic datum is an abstract coordinate system with a surface reference; possible values are: "NGVD 29","OSGB36","SK-42","ED50","SAD69","GRS 80","ISO 6709","NAD 83","WGS 84","NAVD 88","ETRS89¨,¨GCJ-02¨,"Geo URI".
* @proj= it contains the units in which this data is represented.
* @type= indicates the type of method used to obtain the geographic coordinates, possible values are “lower-left-corner” or “upper-right-corner”.

Example:

<Spatial-data>

<Spatial-point datum="WGS84" proj="longlat" type="lower-left-corner">

<x>-36.66</x>

<y>138.24</y>

<radius units="degrees">0.01</radius>

</Spatial-point>

<Spatial-point datum="WGS84" proj="longlat" type="upper-right-corner">

<x>-35.27</x>

<y>140.32</y>

<radius units="degrees">0.01</radius>

</Spatial-point>

</Spatial-data>

# Node: Longitude

Tag: <x>

Parent: Spatial-point

Children: none

Content: Element containing the longitude component corresponding to the geographic coordinates of the assessment unit, presented in decimal degree format.

Attributes: none

Example:

<Spatial-point datum="WGS84" proj="longlat" type="upper-right-corner">

<x>-35.27</x>

<y>140.32</y>

<radius units="degrees">0.01</radius>

</Spatial-point>

# Node: Latitude

Tag: <y>

Parent: Spatial-point

Children: none

Content: Element containing the latitude component corresponding to the geographic coordinates of the assessment unit, presented in decimal degree format.

Attributes: none

Example:

<Spatial-point datum="WGS84" proj="longlat" type="upper-right-corner">

<x>-35.27</x>

<y>140.32</y>

<radius units="degrees">0.01</radius>

</Spatial-point>

# Node: Radius

Tag: <radius>

Parent: Spatial-point

Children: none

Content: Element containing the precision degree of the geographic coordinates used to describe the assessment unit distribution. It is presented in numeric format.

Attributes: units

* @units: element containing the standard expression chosen to express the precision degree.

Example:

<Spatial-point datum="WGS84" proj="longlat" type="upper-right-corner">

<x>-35.27</x>

<y>140.32</y>

<radius units="degrees">0.01</radius>

</Spatial-point>

# Node: Risk assessment Summaries

Tag: <RA-Summaries>

Parent: Assessment-unit

Children: RA-Summary

Content: Element containing a list of text descriptions of the ecosystem risk assessment outcomes. It contains the general description of methods, **results** and complexity of analysis in the different languages available.

Attributes: none

Example:

<RA-Summaries>

<RA-Summary lang="en">The European Reedbeds ecosystem is classified as Vulnerable because over the last 50 years and since 1750, the decline in distribution across Europe is likely to be exceed 30% and 50% respectively (criterion A). Also, large declines in waterbird populations suggest a decline in biotic interactions with a relative severity of at least 50% over at least 50% of the extent of the ecosystem, with some biota declining by up to 90% in parts of the ecosystem distribution (criterion D).</RA-Summary>

</RA-Summaries>

# Node: Risk assessment Summary

Tag: <RA-Summary>

Parent: RA-Summaries

Children: none

Content: Element containing the text description of the ecosystem risk assessment outcomes. It contains the general description of methods, **results** and complexity of analysis. It includes the summary of the criterion results, but not the details of each subcriterion. If the information is available in more than a language, add a <RA-Summary> node for each language (see examples).

Attributes: lang

* @lang = see Glossary and node 3.2.1.1 Case Study Name for more details.

Example:

<RA-Summaries>

<RA-Summary lang="en"> There is evidence of biotic disruptions in Giant Kelp Forests. Evidence from trends in kelp density and sea otter sightings suggest a decline in biotic function of 50 - 95% relative severity across 100% of the extent of the ecosystem over the last 50 years. Also, it is reasonable to assume that the population of sea otter in 1750 was comparable or slightly larger than its peak in the mid 1980s. Based on this assumption, the decline in otter populations throughout the distribution of the kelp forest was 75-95% since 1750. The status of the ecosystem is therefore Endangered (plausible range Endangered - Critically Endangered) under sub-criterions D1 and D3.</RA-Summary>

</RA-Summaries>

# Node: Rationale

Tag: <Rationale>

Parent: Assessment-unit

Children: none

Content: Element containing a text description justifying the overall risk status of an ecosystem type. This information must be constructed by the compiler based on Ecosystem Risk Analysis data. In order to promote standard descriptions in the xml document, we strongly recommend the following text structure for assessment rationale.

Attributes: none

Example:

<Rationale>Indicator values are well below the Vulnerable threshold for all criterions.</Rationale>

<Rationale>A decline in biotic function of 50 - 95% relative severity across 100% of the extent of the ecosystem over the last 50 years and a decline of 75 - 95% since 1750.</Rationale>

<Rationale> Considering the effects of threatening processes in decline in geographic distribution, losses of 70% in sediment discharge dymanics and 80% decline in species occurrence.</Rationale>

# Node: Overall Category

Tag: <Overall-category>

Parent: Assessment-unit

Children: none

Content: Element containing the acronym from the category selected to assign the global risk status in the assessment target. Possible values (if IUCN protocol is used) are: “**VU**” for Vulnerable, “**EN**” for Endangered, “**CR**” for Critically Endangered, “**LC**” for Least Concern, “**DD**” for Data Deficient, “**NE**” for Not Evaluated, “**NT**” for Near threatened and “**CO**” for Collapsed. If another risk assessment protocol is used, the compiler should copy faithfully the acronym/name assigned by the author.

Attributes: none

Example:

<Assessment-unit>

<Ecosystem-subset></Ecosystem-subset>

<RA-Summaries></RA-Summaries>

<Rationale> Indicator values are well bellow the Vulnerable threshold for all criterions.</Rationale>

<Overall-category>LC</Overall-category>

<Plausible-bounds lower="" upper=""/>

<Supporting-subcriteria>A1+B1aii + B2aii</Supporting-subcriteria>

<Criterions></Criterions>

</Assessment-unit>

# Node: Plausible bounds

Tag: <Plausible-bounds>

Parent: Assessment-unit

Children: none

Content: Element used to communicate the uncertainty in the outcomes of an assessment by reporting the most likely category and categories that represent plausible upper and lower bounds. It contains the acronym of the categories with evidence to support inferences about risk status. **Plausible bounds are reported only if the original document does.**

Attributes: lower, upper

* @lower : lower bound of overall category.
* @upper : upper bound of overall category.

Example:

<Assessment-unit>

<Ecosystem-subset></Ecosystem-subset>

<RA-Summaries></RA-Summaries>

<Rationale> This ecosystem is Vulnerable acording to sub-criterions A1, A3, and D1.</Rationale>

<Overall-category>VU</Overall-category>

<Plausible-bounds lower="VU" upper="EN"></Plausible-bounds>

<Supporting-subcriteria>A1+A3 +D1</Supporting-subcriteria>

<Criterions></Criterions>

</Assessment-unit>

# Node: Supporting sub-criteria

Tag: <Supporting-subcriteria>

Parent: Assessment-unit

Children: none

Content: Element containing the criteria and full subcriteria (including conditionals and numerals) that support the overall category.

Attributes: none

Example:

<Assessment-unit>

<Ecosystem-subset></Ecosystem-subset>

<RA-Summaries></RA-Summaries>

<Rationale> Indicator values are well below the Vulnerable threshold.</Rationale>

<Overall-category>LC</Overall-category>

<Plausible-bounds lower="" upper=""/>

<Supporting-subcriteria>A1+B1aii+B2aii</Supporting-subcriteria>

<Criterions></Criterions>

</Assessment-unit>

# Node: Criterions

Tag: <Criterions>

Parent: Assessment-unit

Children: Criterion

Content: Element containing the risk assessment outcomes for each criterion. It contains text descriptions, risk categories assigned and quantitative data for sub-criterions. An ecosystem risk assessment should include a **complete** evaluation of all criteria listed in the protocol, thus a detailed compilation is needed.

Attributes: none

Example:

<Criterions>

<Criterion name=”A”></Criterion>

<Criterion name=”B”></Criterion>

<Criterion name=”C”></Criterion>

<Criterion name=”D”></Criterion>

<Criterion name=”E”></Criterion>

</Criterions>

# Node: Criterion

Tag: <Criterion>

Parent: Criterions

Children: Summaries, Rationale, Category, Plausible-bounds, Subcriterions, Modeling

Content: Element containing the risk assessment outcomes for one criterion. It contains a text description, risk category assigned and quantitative data for sub-criteria or modeling. An ecosystem risk assessment should include a **complete** evaluation of all subcriteria listed in the protocol, thus a detailed compilation is needed.

Attributes: name

* @name: element indicating the name of the criterion used by the assessment author(s). It contains an acronym in case of IUCN RLE criteria (A, B, C, D, E) or the name of the criterion according another risk assessment protocol.

Example:

<Criterions>

<Criterion name=”A”> </Criterion>

< Criterion name=”B”>

<Summaries></Summaries>

<Rationale>EOO and AOO are well above the threshold for Vulnerable.</Rationale>

<Category>LC</ Category>

<Plausible-bounds lower=”” upper=””/>

<Subcriterions></Subcriterions>

</Criterion>

< Criterion name=”C”></Criterion>

< Criterion name=”D”></Criterion>

< Criterion name=”E”></Criterion>

</Criterions>

# Node: Summaries

Tag: <Summaries>

Parent: Criterion

Children: Summary

Content: Element containing a list of text descriptions of the ecosystem risk assessment outcomes for the listed criterion in the different languages available. It contains the general description of methods, **results** **(especially of the sub-criterion that reach the higher category)** and complexity of analysis in the different languages available.

Example:

<Criterion name=”B”>

<Summaries>

<Summary lang="en"> The current mapped area of Venezuelan Tepui shrublands, estimated from Landsat satellite images, is approximately 5,170 km2. They naturally occur in ~35 locations (patch size range: 4-456 km2) associated with table-mountains and massifs in the Venezuelan Guayana Shield. And there is no evidence of an observed or inferred continuing decline or threatening process. Therefore, they are considered Least Concern under criterion B. </Summary>

</Summaries>

<Rationale>EOO and AOO are well above the threshold for Vulnerable.</Rationale>

<Category>LC</ Category>

<Plausible-bounds lower=”” upper=””/>

<Subcriterions></Subcriterions>

</Criterion>

# Node: Summary

Tag: <Summary>

Parent: Summaries

Children: none

Content: Element containing the text description of the ecosystem risk assessment outcomes for the listed criterion in the different languages available. It contains the general description of methods, **results (especially of the subcriterion that reach the higher category)** and complexity of analysis. If the information is available in more than a language, add a <Summary> node for each language (see examples). It doesn’t includes the details of each subcriterion.

Attributes: lang

* @lang = see Glossary and node 3.2.1.1 Case Study Name for more details.

Example:

<Criterion name=”B”>

<Summaries>

<Summary lang="en">It is considered as Critically Endangered under sub-criterion B1 because the extent of occurrence is 205 km2; there is evidence of increasing salinity in the Coorong since 1996; further environmental declines are also forecast under median and dry future climate projections; barrage flows are predicted to fall under climate change simulations, indicating that the processes threatening the Coorong ecosystem are likely to continue to cause declines in environmental condition in the next 20 years; and the ecosystem occurs at only one location.

</Summaries>

<Rationale>The extent of occurrence is less than 2000 km2, there is evidence of a decline in environmental quality, there are inferred threatening processes that are likely to cause continuing decline in environmental quality and there is one threat defined location.</Rationale>

<Category>CR</ Category>

<Plausible-bounds lower=”” upper=””/>

<Subcriterions></Subcriterions>

</Criterion>

# Node: Rationale

Tag: <Rationale>

Parent: Criterion

Children: none

Content: Element containing a text description justifying the risk category assigned to the criterion based on the evidence provided by the assessment. This information must be completed by the compiler based on Risk Assessment Analysis. **It justifies the criterion category, not the category of each sub-criterion.**

Example:

<Rationale>EOO and AOO are well above the threshold for Vulnerable.</Rationale>

<Rationale> The extent of occurrence is less than 2000 km2, there is evidence of a decline in environmental quality, there are inferred threatening processes that are likely to cause continuing decline in environmental quality and there is one threat defined location.</Rationale>

# Node: Category

Tag: <Category>

Parent: Criterion

Children: none

Content: Element containing the acronym for the risk category assigned to the criterion applied to the assessment unit. Possible values (if IUCN protocol is used) are: “**VU**” for Vulnerable, “**EN**” for Endangered, “**CR**” for Critically Endangered, “**LC**” for Least Concern, “**DD**” for Data Deficient, “**NE**” for Not Evaluated, “**NT**” for Near threatened and “**CO**” for Collapsed.

Example:

<Criterion name=”B”>

<Summaries></Summaries>

<Rationale>EOO and AOO are well above the threshold for Vulnerable.</Rationale>

<Category>LC</ Category>

<Plausible-bounds lower=”” upper=””/>

<Subcriterions></Subcriterions>

</Criterion>

# Node Plausible bounds

Tag: <Plausible-bounds>

Parent: Criterion

Children: none

Content: Element used to communicate the uncertainty in the outcomes of an assessment by reporting the most likely category and categories that represent plausible upper and lower bounds of the criterion assessed. It contains the acronym of the categories with evidence to support inferences about risk status. **Plausible bounds are reported only if the original document does.**

Attributes: lower, upper

* @lower : lower bound of the criterion category.
* @upper : upper bound of the criterion category.

Example:

<Category>EN</ Category>

<Plausible-bounds lower=”VU” upper=”EN”></Plausible-bounds>

# Node: Sub-criterions

Tag: <Subcriterions>

Parent: Criterion

Children: Subcriterion

Content: Element containing the risk assessment outcomes for each sub-criterion. It contains text descriptions, risk categories assigned and quantitative data for indicator variables. An ecosystem risk assessment should include a **complete** evaluation of all sub-criterion listed in the protocol, thus a detailed compilation is needed.

Attributes: none

Example:

<Subcriterions>

<Subcriterion name=”A1”></Subcriterion>

<Subcriterion name=”A2a”></Subcriterion>

<Subcriterion name=”A2b”></Subcriterion>

<Subcriterion name=”A3”></Subcriterion>

</Subcriterions>

# Node: Sub-criterion

Tag: <Subcriterion>

Parent: Criterion

Children: Summaries, Rationale, Category, Plausible-bounds, Key-indicator-variables, Threat-defined-locations, Continuing-decline, Threatening-process

Content: Element containing the risk assessment outcomes for one sub-criterion. It contains a text description, risk category assigned and quantitative data from indicator variables.

Attributes: name

* @name: element indicating the name of the sub-criterion used by the assessment author(s). It contains an acronym in case of IUCN RLE criteria:

Criterion A: sub-criterions **A1, A2a, A2b, A3**.

Criterion B: sub-criterions **B1, B2, B3**.

Criterion C: sub-criterions **C1, C2a, C2b, C3**.

Criterion D: sub-criterions **D1, D2a, D2b, D3**.

Criterion E: none sub-criterion.

Examples:

<Subcriterion name=A1>

<Summaries></Summaries>

<Rationale>No reliable information to assess current ecosystem decline.</Rationale>

<Category>DD</Category>

<Plausible-bounds lower="" upper=""/>

<Key-indicator-variables></Key-indicator-variables>

<Continuing-decline numeral=""/>

<Threatening-process/>

</Subcriterion>

<Subcriterion name=B1>

<Summaries></Summaries>

<Rationale>The mapped EEO is below the Vulnerable threshold under Criterion B1, and the ecosystem is undergoing continuing decline in distribution, biodiversity and quality.</Rationale>

<Category>VU</Category>

<Plausible-bounds lower="" upper=""/>

<Key-indicator-variables></Key-indicator-variables>

<Threat-defined-locations></Threat-defined-locations>

<Continuing-decline numeral="i, ii, iii">yes<Continuing-decline numeral>

<Threatening-process/>

</Subcriterion>

<Subcriterion name=B3>

<Summaries></Summaries>

<Rationale>Threat defined locations not known, the ecosystem is not likely to be rapidly affected by threats.</Rationale>

<Category>LC</Category>

<Plausible-bounds lower="" upper=""/>

<Threat-defined-locations></Threat-defined-locations>

<Continuing-decline numeral="i, ii, iii">yes<Continuing-decline numeral>

<Threatening-process/>

</Subcriterion>

<Subcriterion name=C3>

<Summaries></Summaries>

<Rationale>It is unlikely that the extent and severity of environmental degradation exceeds 70% since 1750.</Rationale>

<Category>LC</Category>

<Plausible-bounds lower="" upper=""/>

<Key-indicator-variables></Key-indicator-variables>

</Subcriterion>

# Node: Summaries

Tag: <Summaries>

Parent: Subcriterion

Children: Summary

Content: Element containing a list of text descriptions of the ecosystem risk assessment outcomes for the listed sub-criterions in the different languages available. It contains the general description of methods, detailed **results** and complexity of analysis in the different languages available.

Example:

<Summaries>

<Summary lang="en">Reedbed destruction was the dominating threat before 1960. Factors affecting the physical environment of remaining reedbeds had a lower extent and severity historically than over the past 50 years. Hence it is unlikely that the extent and severity of environmental degradation exceeds 70% since 1750 and the status of the ecosystem under sub-criterion C3 is Least Concern.</Summary>

</Summaries>

# 3.2.5.3.7.1.5.1.1.1 Node: Summary

Tag: <Summary>

Parent: Summaries

Child: none

Content: Element containing the text description of the ecosystem risk assessment outcomes for the listed sub-criterion. It contains the general description of methods, **results** and complexity of analysis. If the information is available in more than a language, add a <Summary> node for each language (see examples).

Attributes: lang

* @lang = see Glossary and node 3.2.1.1 Case Study Name for more details.

Example:

<Summaries>

<Summary lang="en"> Based on kelp densities, the relative severity of decline was estimated to be approximately 50% averaged across the full extent (100%. of the distribution for the 13 years 1987-2000). While the lower and upper bounds of otter population decline are 75.3% and 94.7% respectively. Evidence from trends in kelp density and sea otter sightings suggest a decline in biotic function of 50-95% relative severity across 100% of the extent of the ecosystem. The upper bound of this range may overestimate the severity of decline because i) Doroff et al. (2003) caution that their 2000 survey may have underestimated the population due to detectability issues (although it is not known whether the estimates from the 1980s suffer similar bias) and ii) the calculations assume that otter and kelp populations have not recovered since 2000 when there is qualitative evidence of some recovery. The most likely status of the ecosystem under sub-criterion D1 is therefore Endangered, although a status of Critically Endangered is possible. </Summary>

</Summaries>

# Node: Rationale

Tag: <Rationale>

Parent: Subcriterion

Children: none

Content: Element containing a text description justifying the risk category assigned to the su-bcriterion based on the evidence provided by the assessment.

Example:

<Rationale>It is unlikely that the extent and severity of environmental degradation exceeds 70% since 1750.</Rationale>

<Rationale>A decline in biotic function of 50 - 95% relative severity across 100% of the extent of the ecosystem over the last 50 years.</Rationale>

<Rationale>EOO (1.5 million km2) exceeds the thresholds for all threatened categories.</Rationale>

# Node: Category

Tag: <Category>

Parent: Subcriterion

Children: none

Content: Element containing the acronym for the risk category assigned to the subcriterion applied to the assessment target. Possible values (if IUCN protocol is used) are: “**VU**” for Vulnerable, “**EN**” for Endangered, “**CR**” for Critically Endangered, “**LC**” for Least Concern, “**DD**” for Data Deficient, “**NE**” for Not Evaluated, “**NT**” for Near threatened and “**CO**” for Collapsed.

Example:

<Subcriterion name=C3>

<Summaries></Summaries>

<Rationale>It is unlikely that the extent and severity of environmental degradation exceeds 70% since 1750.</Rationale>

<Category>LC</Category>

<Plausible-bounds lower="" upper=""/>

<Key-indicator-variables></Key-indicator-variables>

</Subcriterion>

# Node: Plausible bounds

Tag: <Plausible-bounds>

Parent: Subcriterion

Children: none

Content: Element used to communicate the uncertainty in the outcomes of an assessment by reporting the most likely category and categories that represent plausible upper and lower bounds. It contains the acronym of the categories with evidence to support inferences about risk status. **Plausible bounds are reported only if the original document does.**

Atributes: lower, upper

* @lower : lower bound of the sub-criterion category.
* @upper : upper bound of the sub-criterion category.

Example:

<Category>EN</ Category>

<Plausible-bounds lower=”VU” upper=”EN”></Plausible-bounds>

# Node: Key indicator variables

Tag: <Key-indicator-variables>

Parent: Subcriterion

Children: Key-indicator

Content: Element containing the key indicators used by the assessment authors to obtain reference values against the sub-criterion quantitative thresholds.

Attributes: none

Example:

<Key-indicator-variables>

<Key-indicator name=Average salinity></Key-indicator>

<Key-indicator name=Maximum salinity></Key-indicator>

<Key-indicator name=Water volume></Key-indicator>

</Key-indicator-variables>

# 3.2.5.3.7.1.5.1.5.1. Node: Key indicator

Tag: <Key-indicator>

Parent: Key-indicator-variables

Children: Indicator-data, Collapse-threshold

Content: Element containing the indicator used by the assessment authors to obtain reference values against the sub-criterion quantitative thresholds. In case of IUCN RLE protocols, we must be aware of the criteria and sub-criteria listed to recognize the key indicator variable used.

Generally, if the assessment author(s) properly applied the RLE criteria, we expect the application of some key indicators by criterion/sub-criterion (see table 1). It is important to critically analyze the results provided to include this data.

**Table 1. Expected key indicators under an IUCN RLE assessment**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | *Key indicators* | | | | |
| *Criterion* | *Sub-Criterion* | *Change in distribution* | *EOO* | *AOO* | *Other (related to abiotic quality)* | *Other (related to biotic disruption)* |
| *A* | A1 | X |  |  |  |  |
| A2a | X |  |  |  |  |
| A2b | X |  |  |  |  |
| A3 | X |  |  |  |  |
| *B* | B1 |  | X |  |  |  |
| B2 |  |  | X |  |  |
| B3 |  |  |  |  |  |
| *C* | C1 |  |  |  | X |  |
| C2 |  |  |  | X |  |
| C3 |  |  |  | X |  |
| *D* | D1 |  |  |  |  | X |
| D2 |  |  |  |  | X |
| D3 |  |  |  |  | X |

In case of criterion C and D, the compiler should specify de type of “biotic” or “abiotic” disruption assessed.

Attributes: name

@name= it refers to the name of the indicator used to assess the ecosystem under the specific sub-criterion.

Example: (from sub-criterion C1)

<Key-indicator-variables>

<Key-indicator name=Average salinity>

<Indicator-data></Indicator-data>

<Collapse-threshold units=”gl-1”>117</Collapse-threshold>

</Key-indicator>

<Key-indicator name =Maximum salinity></Key-indicator>

<Key-indicator name =Water volume></Key-indicator>

</Key-indicator-variables>

# 3.2.5.3.7.1.5.1.5.1.1. Node: Indicator data

Tag: <Indicator-data>

Parent: Key-indicator

Child: Data-source, Data-description, Values, Extent, Severity

Content: Element indicating the type and origin of indicator data provided by assessment author(s) to criteria validation. It contains the data sources referred by the authors, a text description of indicator methods and characteristics, the values of the indictor in a single or in multiples times and the extent and severity effects according to the indicator.

Examples:

From sub-criterion B1 (without extent and severity nodes):

<Key-indicator name="EOO">

<Indicator-data>

<Data-source>Poulin, B. 2013</Data-source>

<Data-description/>

<Values method="Mapped distribution"></Values>

</Indicator-data>

</Key-indicator>

From sub-criterion C1(with extent and severity nodes):

<Key-indicator name="Annual average salinity">

<Indicator-data>

<Data-source>Lester and Fairweather, 2012</Data-source>

<Data-description/>

<Values method=""></Values>

<Extent units="%">30</Extent>

<Severity units="%">18</Severity>

</Indicator-data>

</Key-indicator>

# 3.2.5.3.7.1.5.1.5.1.1.1. Node: Data source

Tag: <Data-source>

Parent: Indicator-data

Child: none

Content: Element containing each bibliographic reference cited by assessment authors and relevant for ecosystem risk analysis.

Example:

<Key-indicator name="Annual average salinity">

<Indicator-data>

<Data-source>Lester and Fairweather, 2012</Data-source>

<Data-description/>

<Values method=""></Values>

<Extent units="%">30</Extent>

<Severity units="%">18</Severity>

</Indicator-data>

</Key-indicator>

# 3.2.5.3.7.1.5.1.5.1.1.2. Node: Data description

Tag: <Data-description>

Parent: Indicator-data

Children: none

Content: Element containing a text description of indicator methods and characteristics.

Example:

<Data-description>Estimates calculated from Landsat and radar images</Data-description>

# 3.2.5.3.7.1.5.1.5.1.1.3. Nodes: Values

Tag: <Values>

Parent: Indicator-data

Children: Value

Content: Element containing **quantitative** values from the assessment, this node will provide the values that support the threat threshold analysis. IUCN RLE recommends at least three measures or scenarios projected to obtain values for each sub-criterion. The compiler could include as much scenarios as the assessors provide.

Attributes: method

* @method: this attribute can be used to declare the methodology for indicator variable calculation. Possible values can be “mapped distribution”, “observed”, “estimated”, “inferred”, “projected”.

Example:

<Values method="estimated">

<Value level=1></Value>

<Value level=2></Value>

<Value level=3></Value>

</Values>

**3.2.5.3.7.1.5.1.5.1.1.3.1 Node: Value**

Tag: <Value>

Parent: Values

Children: Year, Indicator-value

Content: Element containing one quantitative value from the assessment that support the threat threshold analysis.

Attributes: level

* @level: levels should be consecutive numbers that represent the chronological order of the values.

Example:

<Values method=”estimated”>

<Value level=1>

<Year>1987</Year>

<Indicator-value units=km2>357000</Indicator-value>

</Value>

<Value level=2>

<Year>2004</Year>

<Indicator-value units=km2>180000</Indicator-value>

</Value>

</Values>

# 3.2.5.3.7.1.5.1.5.1.1.3.1.1. Node: Year

Tag: <Year>

Parent: Value

Children: none

Content: Element containing the year taken to obtain the indicator variables.

Attributes: none

Example:

<Value level=1>

<Year>1987</Year>

<Indicator-value units=km2>357000</Indicator-value>

</Value>

# 3.2.5.3.7.1.5.1.5.1.1.3.1.2. Node: Indicator value

Tag: <Indicator-value>

Parent: Value

Children: none

Content: Element containing the quantitative value of the key indicator that is used to calculate the extent and severity of the decline. Values must be represented using “.” to express decimal numbers, avoid the use of “,”

Attributes: units

Attributes: units

* @units: element containing the units in which the key indicator was measured.

Example:

<Value level=1>

<Year>1987</Year>

<Indicator-value units=km2>357000</Indicator-value>

</Value>

# 3.2.5.3.7.1.5.1.5.1.1.4. Node: Extent

Tag: <Extent>

Parent: Indicator-data

Children: none

Content: Element containing the percentage of the area of the assessment unit that has been affected. In case of criterion A, represents distribution reduction. In case of criterion C and D, represents the extent of the abiotic or biotic alteration.

Attributes: units

* @units: element containing the standard expression to represent the extent (%).

Example:

<Indicator-data>

<Data-source>Lester and Fairweather, 2012</Data-source>

<Data-description/>

<Values method=""></Values>

<Extent units="%">30</Extent>

<Severity units="%">18</Severity>

</Indicator-data>

# 3.2.5.3.7.1.5.1.5.1.1.5. Node: Severity

Tag: <Severity>

Parent: Indicator-data

Children: none

Content: Element containing the degree to which abiotic or biotic disruptions are affecting the assessment target.

Attributes: units

* @units: element containing the standard expression chosen to express the severity (%).

Example:

<Indicator-data>

<Data-source>Lester and Fairweather, 2012</Data-source>

<Data-description/>

<Values method=""></Values>

<Extent units="%">30</Extent>

<Severity units="%">18</Severity>

</Indicator-data>

# 3.2.5.3.7.1.5.1.5.1.2. Node: Collapse threshold

Tag: <Collapse-threshold>

Parent: Key-indicator

Children: none

Content: Element containing the numerical value of the quantitative collapse threshold defined by the assessment author(s) for each key indicator variable.

Attributes: units

* @units: element containing the standard expression chosen to express the collapse threshold.

Example:

<Key-indicator name=Average salinity>

<Indicator-data></Indicator-data>

<Collapse-threshold units=”gl-1”>117</Collapse-threshold>

</Key-indicator>

# Node: Threat defined locations

Tag: <Threat-defined-locations>

Parent: Subcriterion

Children: none

Content: Element containing the number of locations **defined by threat**. It is defined as location a geographically or ecologically distinct area in which **a single threatening event can rapidly affect all occurrences of an ecosystem type**.

Attributes: none

Example:

<Subcriterion name=B3>

<Summaries></Summaries>

<Rationale>There is evidence of continuing decline but there are more than 5 threat defined locations and no threatening process.</Rationale>

<Category>LC</Category>

<Plausible-bounds lower="" upper=""/>

<Threat-defined-locations>12</Threat-defined-locations>

<Continuing-decline numeral="i, ii, iii">yes</Continuing-decline>

<Threatening-process>no</Threatening-process>

</Subcriterion>

# Node: Continuing decline

Tag: <Continuing-decline>

Parent: Subcriterion

Children: none

Content: Indicate if there is a gradual or episodic decline in distribution or ecological process that is likely to continue into the future, and is non-trivial in magnitude and its effect on the sustainability of characteristic native biota. Possible values are: “yes” or “no”.

Attributes: numeral

* @numeral: indicates if the continuing decline affects the geographic distribution (i), the environmental quality (ii) or biotic interactions (iii).

Example:

<Subcriterion name=B3>

<Summaries></Summaries>

<Rationale>There is evidence of continuing decline but there are more than 5 threat defined locations and no threatening process.</Rationale>

<Category>LC</Category>

<Plausible-bounds lower="" upper=""/>

<Threat-defined-locations>12</Threat-defined-locations>

<Continuing-decline numeral="i, ii, iii">yes</Continuing-decline>

<Threatening-process>no</Threatening-process>

</Subcriterion>

# Node: Threatening process

Tag: <Threatening-process>

Parent: Subcriterion

Children: none

Content: indicates if the ecosystem is prone to the effects of human activities or stochastic events within a very short time period (20 years) in an uncertain future, and thus, capable of Collapse of becoming Critically Endangered within a very short time period. Possible values are “yes” or “no”.

Attributes: none

Example:

<Subcriterion name=B3>

<Summaries></Summaries>

<Rationale>There is evidence of continuing decline but there are more than 5 threat defined locations and no threatening process.</Rationale>

<Category>LC</Category>

<Plausible-bounds lower="" upper=""/>

<Threat-defined-locations>12</Threat-defined-locations>

<Continuing-decline numeral="i, ii, iii">yes</Continuing-decline>

<Threatening-process>no</Threatening-process>

</Subcriterion>

# Node: Modelling

Tag: <Modelling>

Parent: Subcriterion

Children: Model-name, Model-source, Model-type, Scenarios, Overall-collapse-prob

Content: Node describing the quantitative model used in the application of criterion E. It includes the description, values and methodology of the model selected by the authors.

Attributes: none

Example:

<Modelling>

<Model-name>Ecosystem state model </Model-name>

<Model-source>Lester and Fairweather, 2011</Model-source>

<Model-type>State-and-transition model</Model-type>

<Scenarios></Scenarios>

<Overall-collapse-prob years=""></Overall-collapse-

</Modelling>

# Node: Model name

Tag: <Model-name>

Parent: Modelling

Children: none

Content: Indicates the name given to the model in the original document.

Attributes: none

Example:

<Model-name>Ecosystem state model </Model-name>

<Model-name>Coral Reef Scenario Evaluation Tool</Model-name>

# Node: Model source

Tag: <Model-source>

Parent: Modelling

Children: none

Content: Element containing the bibliographic reference of the model.

Attributes: none

Example:

<Modelling>

<Model-name>Ecosystem state model</Model-name>

<Model-source>Lester and Fairweather, 2011</Model-source>

<Model-type>State-and-transition model</Model-type>

<Scenarios></Scenarios>

<Overall-collapse-prob years=""></Overall-collapse-

</Modelling>

# Node: Model type

Tag: <Model-type>

Parent: Modelling

Children: none

Content: Element containing the type of the model. According to Bland *et. al.* (2017), possible types include: state-and-transition models, mass-balance models, bifurcation plots, network theory, dynamic Global Vegetation Models, dynamic species distribution and population models, spatial models, general ecosystem models, mechanistic models, empirical models and spatial models.

Attributes: none

Example:

<Modelling>

<Model-name>Ecosystem state model</Model-name>

<Model-source>Lester and Fairweather, 2011</Model-source>

<Model-type>State-and-transition model</Model-type>

<Scenarios></Scenarios>

<Overall-collapse-prob years=""></Overall-collapse-

</Modelling>

# Node: Scenarios

Tag: <Scenarios>

Parent: Modelling

Children: Scenario

Content: Includes a list of all the scenarios considered in the model. The names of the scenarios should be consistent with the names given by the authors.

Attributes: none

Example:

<Scenarios>

<Scenario name=”Current Conditions”></Scenario>

<Scenario name=”Without Development”></Scenario>

<Scenario name=”Median Future”></Scenario>

<Scenario name=”Dry Future”></Scenario>

<Scenario name=”Median Without Development”></Scenario>

<Scenario name=”Dry Without Development”></Scenario>

</Scenarios>

# Node: Scenario

Tag: <Scenario>

Parent: Scenarios

Children: Scenario-descriptions, Scenario-variables, Collapse-probability, Num-simulations, Scenario-Category

Content: Element containing the complete descriptions and outcomes of one scenario. It should describe the conditions of each variable considered under the scenario, the number of simulations, the collapse probability under those conditions and its corresponding category.

Attributes: name

* @name= correspond to the name given by the author to the scenario.

Example:

<Scenario name=”Median future”>

<Scenario-descriptions></Scenario-descriptions>

<Scenario-variabless></Scenario-variables>

<Collapse-probability years=””>61%</Collapse-probability>

<Num-simulations/>

<Scenario-Category>CR</Scenario-Category>

</Scenario>

# 3.2.5.3.7.1.6.4.1.1. Node: Scenario descriptions

Tag: <Scenario-descriptions>

Parent: Scenario

Children: Scenario-description

Content: Element containing a list of text descriptions of the scenario of the quantitative model in the different languages available.

Attributes: none

Example:

<Scenario-descriptions>

<Scenario-description lang="en">This scenario considers a median future climate projection based on three climate change scenarios from 15 global climate models in future climate projections for 2030 and natural conditions without water extraction.</Scenario-description>

</ Scenario-descriptions >

# 3.2.5.3.7.1.6.4.1.1.1. Node: Scenario description

Tag: <Scenario-description>

Parent: Scenario-descriptions

Children: none

Content: Element containing a text description of the conditions of each variable considered under the scenario. If the information is available in more than a language, add a <Scenario-description> node for each language.

Attributes: lang

* @lang = see Glossary and node 3.2.1.1 Case Study Name for more details.

Example:

<Scenario-descriptions>

<Scenario-description lang="en">This scenario considers high levels of fishing and low levels of rest of the threats (pollution, mass bleaching, ocean acidification and hurricanes).</Scenario-description>

</Scenario-descriptions>

# 3.2.5.3.7.1.6.4.1.2. Node: Scenario variables

Tag: <Scenario-variables>

Parent: Scenario

Children: Scenario-variable

Content: Element containing a list of the variables considered in the model **under the scenario described**.

Attributes: none

Example:

<Scenario-variables>

<Scenario-variable>Climate</Scenario-variable>

<Scenario-variable>Water extraction levels</Scenario-variable>

</Scenario-variable>

# 3.2.5.3.7.1.6.4.1.2.1. Node: Scenario variable

Tag: <Scenario-variable>

Parent: Scenario variables

Children: none

Content: Element containing the name of a variable considered in the model **under the scenario described**.

Attributes: none

Example:

<Scenario-variable>Climate</ Scenario-variable>

<Scenario-variable>Water extraction levels</Scenario-variable>

<Scenario-variable>Piscivorous fish biomass</Scenario-variable>

<Scenario-variable>Herbivorous fish biomass</Scenario-variable>

<Scenario-variable>Coral cover</Scenario-variable>

# 3.2.5.3.7.1.6.4.1.3. Node: Collapse probability

Tag: <Collapse-probability>

Parent: Scenario

Children: none

Content: Element indicating the ecosystem probability of collapse according to the modeled scenario.

Attributes: years

* @years: indicates the time frame to which the collapse probability corresponds.

Example:

<Scenario name=”9 Coral Cover”>

<Scenario-descriptions></Scenario-descriptions>

<Scenario-variables></Scenario-variables>

<Collapse-probability years=”50”>0.084</Collapse-probability>

<Collapse-probability years=”100”>0.37</Collapse-probability>

<Num-simulations>500</Num-simulations>

<Scenario-Category>VU</Scenario-Category>

</Scenario>

# 3.2.5.3.7.1.6.4.1.4. Node: Number of simulations

Tag: <Num-simulations>

Parent: Scenario

Children: none

Content: Element indicating the number of simulations modeled under the selected scenario conditions.

Attributes: none

Example:

<Scenario name=”9 Coral Cover”>

<Scenario-descriptions></Scenario-descriptions>

<Scenario-variables></Scenario-variables>

<Collapse-probability years=”50”>0.084</Collapse-probability>

<Collapse-probability years=”100”>0.37</Collapse-probability>

<Num-simulations>500</Num-simulations>

<Scenario-Category>VU</Scenario-Category>

</Scenario>

# 3.2.5.3.7.1.6.4.1.5. Node: Scenario category

Tag: <Scenario-Category>

Parent: Scenario

Children: none

Content: Element containing the acronym from the category selected to assign the risk status under the **scenario conditions**. Possible values (if IUCN protocol is used) are: “**VU**” for Vulnerable, “**EN**” for Endangered, “**CR**” for Critically Endangered, “**LC**” for Least Concern, “**DD**” for Data Deficient, “**NE**” for Not Evaluated, “**NT**” for Near threatened and “**CO**” for Collapsed. If another risk assessment protocol is used, the compiler should copy faithfully the acronym/name assigned by the author.

Attributes: none

Example:

<Scenario name=”9 Coral Cover”>

<Scenario-descriptions></Scenario-descriptions>

<Scenario-variables></Scenario-variables>

<Collapse-probability years=”50”>0.084</Collapse-probability>

<Collapse-probability years=”100”>0.37</Collapse-probability>

<Num-simulations>500</Num-simulations>

<Scenario-Category>VU</Scenario-Category>

</Scenario>

# Node: Overall collapse probability

Tag: <Overall-collapse-prob>

Parent: Modelling

Children: none

Content: Element indicating the overall ecosystem probability of collapse according to all the modeled scenarios or according to the more probable scenarios (depending of the authors criterions).

Attributes: years

* @years: indicates the time frame to which the collapse probability corresponds.

Example:

<Modelling>

<Model-name>Coral Reef Scenario Evaluation Tool</Model-name>

<Model-source>Melbourne-Thomas et al 2011</Model-source>

<Model-type>Sthocastic model</Model-type>

<Scenarios></Scenarios>

<Overall-collapse-prob years="50">0.57</Overall-collapse-prob>

</Modelling>

# **Node: Content curations**

Tag: <Content-Curations>

Parent: Case-Study

Children: content-curation

Content: This node groups all the curation events. The curation events list will show considering more recent events at top of the list.

Attributes: none

Example:

<Content-Curations>

<content-curation date="2018-12-11" reviewer="ACU" status="update-required"></content-curation>

<content-curation date="2018-10-10" reviewer="ACU" status="complete"></content-curation>

<content-curation date="2018-08-30" reviewer="JRFP" status="complete"></content-curation>

</Collapse-threshold>

# Node: Content curation

Tag: <content-curation>

Parent: Content-Curations

Children: edit-description

Content: This node include the information regarding one event of content curation. Information related to the level of change, nodes and attributes checked will be included.

Attributes: date, reviewer, status

* @date = date of curation in YYYY-MM-DD format.
* @reviewer = person who made the curation.
* @status = “completed”, “incomplete”.

Example:

<content-curation date="2018-12-11" reviewer="ACU" status="completed"></content-curation>

# Edit description

Tag: <edit-description>

Parent: content-curation

Children: node-checked, content-changes, attribute-changes

Content: This node describes all the corrections and revisions during each curation event.

Attributes: none

Example:

<edit-description>

<node-checked>threat classification element</node-checked>

<content-changes>deleted incorrect content</content-changes>

<attribute-changes></attribute-changes>

</edit-description>

# Node: Nodes checked

Tag: <nodes-checked>

# Node: Node checked

Tag: <node-checked>

Parent: edit-description

Children: none

Content: This node will contain the name of the node changed during content curation. If more than a node was revised, a list will be generated.

Attributes: none

Example:

<node-checked>threat classification element</node-checked>

<node-checked>Country</node-checked>

<node-checked>Plausible bounds</node-checked>

# Node: Content changes

Tag: <content-changes>

Parent: edit-description

Children: none

Content: Is a brief description of content changes. Typical descriptions could be “All information is up-to-date and seems correct”, “Compared value with original document and corrected inconsistencies”, “Added missing content”, “Deleted incorrect content, node empty, information needs to be added”, “Deleted incorrect content, node delete, this information is not available in the original document”, etc.

Attributes: none

Example:

<content-changes>added missing content </content-changes>

<content-changes>deleted incorrect content </content-changes>

# Node: Content change

# Node: attribute changes

Tag: <attribute-changes>

Parent: edit-description

Children: none

Content: Is a brief description of attribute changes. Typical descriptions could be “All information is up-to-date and seems correct”, “Compared value with original document and corrected inconsistencies”, “Added missing content”, “Deleted incorrect content, node empty, information needs to be added”, “Deleted incorrect content, node delete, this information is not available in the original document”, etc.

Attributes: none

Example:

<attribute-changes>added missing content </content-changes>

<attribute-changes>deleted incorrect content </content-changes>

# Node: attribute change

**References**

Bland, L., Keith, D., Miller, R., Murray, N. & Rodriguez, J., eds., 2016. Guidelines for the application of IUCN Red List of Ecosystems Categories and Criteria. IUCN, Gland, Switzerland. Version 1.0.

Bland, L., Keith, D., Miller, R., Murray, N. & Rodríguez, J., eds., 2017. Guidelines for the application of IUCN Red List of Ecosystems Categories and Criteria. IUCN, Gland, Switzerland. Version 1.1.

Keith, D. A., Rodriguez, J. P., Rodríguez-Clark, K. M., Nicholson, E., Aapala, K., Alonso, A., Asmussen, M., Bachman, S., Basset, A., Barrow, E. G., Benson, J. S., Bishop, M. J., Bonifacio, R., Brooks, T. M., Burgman, M. A., Comer, P., Com´ın, F. a., Essl, F., Faber-Langendoen, D., Fairweather, P. G., Holdaway, R. J., Jennings, M., Kingsford, R. T., Lester, R. E., Mac Nally, R., McCarthy, M. A., Moat, J., Oliveira-Miranda, M. A., Pisanu, P., Poulin, B., Regan, T. J., Riecken, U., Spalding, M. D. & Zambrano Martinez, S., 2013. Scientiﬁc Foundations for an IUCN Red List of Ecosystems. PLoS ONE, 8:e62111. URL http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid= 3648534{&}tool=pmcentrez{&}rendertype=abstract.

Rodríguez, J. P., Rodríguez-Clark, K. M., Baillie, J. E. M., Ash, N., Benson, J., Boucher, T., Brown, C., Burgess, N. D., Collen, B., Jennings, M., Keith, D. A., Nicholson, E., Revenga, C., Reyers, B., Rouget, M., Smith, T., Spalding, M., Taber, A., Walpole, M., Zager, I. & Zamin, T., 2011. Establishing IUCN Red List Criteria for Threatened Ecosystems. Conservati