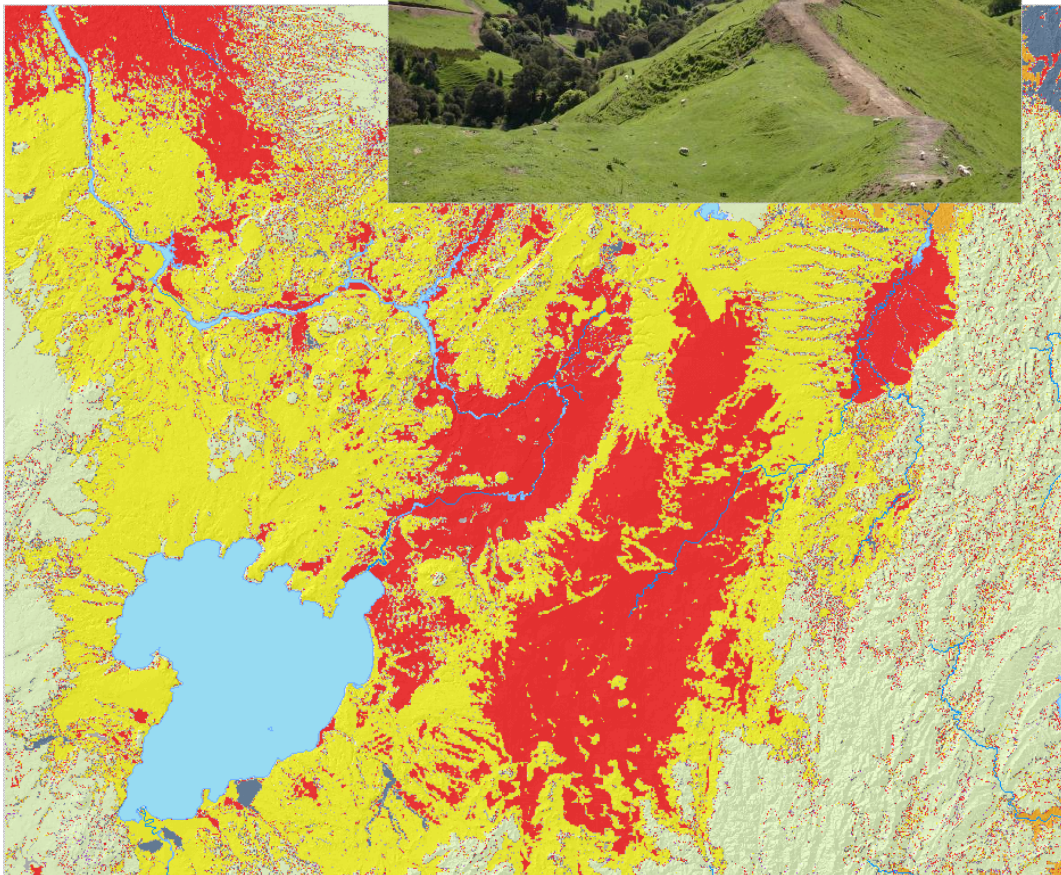
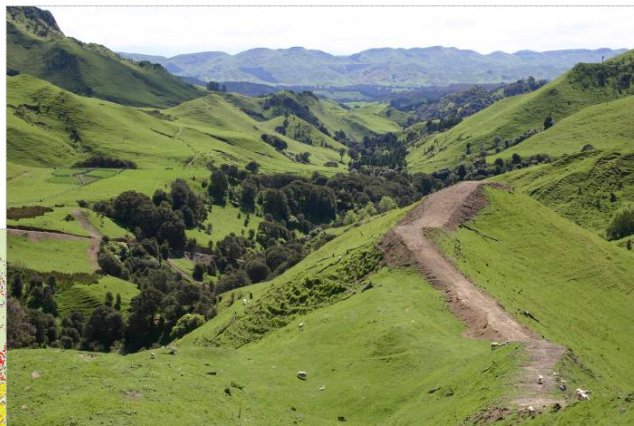


# Step-by-Step Guide to Uploading the Threatened Environment Classification into a GIS

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## Introduction

The Threatened Environment Classification has been developed by Landcare Research – Manaaki Whenua to help identify areas in which much reduced and poorly protected indigenous ecosystems are most likely to occur. The Threatened Environment Classification can help in setting priorities for protection of indigenous biodiversity, planning biodiversity protection activities, and/or reporting achievements. It was developed with the help of end-users including regional councils, the Department of Conservation, Ministry for the Environment, and QEII National Trust.

This document provides a step-by-step guide on how to upload the Threatened Environment Classification table into a Geographical Information System (GIS) program. A basic understanding of the program is necessary to subsequently create maps.


In order to use the Threatened Environment Classification in a GIS, you will need to

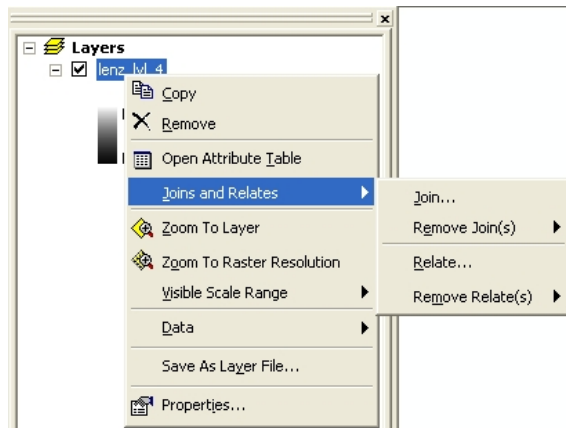
1. Have access to a GIS program, such as ArcGIS, ArcView, MapInfo.
2. Have access to the Land Environments of New Zealand data layers (especially LENZ Level 4 Classification layer. When all data is installed from the LENZ Classification CD, this raster layer “lenz\_lv\_4” will be in the folder LENZ\Classification\LENZ\_Class\
3. Download and save the Threatened Environment Classification table from the web [www.biocommunity.org.nz](http://www.biocommunity.org.nz)
  - o It is available as an Excel file, which, in addition to the Threatened Environment Classification table itself, has supplementary information in the different worksheets. This file can also be used to import directly into ArcGIS9.2
  - o On the website, the Threatened Environment Classification table is also available as a text file (.txt). It is recommended that you download this table for use in ArcView or ArcGIS9.1 or earlier.

In the next section, the steps to upload the table and display the Threatened Environment Classification on a Map in a GIS are set out in detail for the programs ArcGIS 9.1 and 9.2 and ArcView 3.2. A similar section for MapInfo is under construction and will be posted on the website in due course.

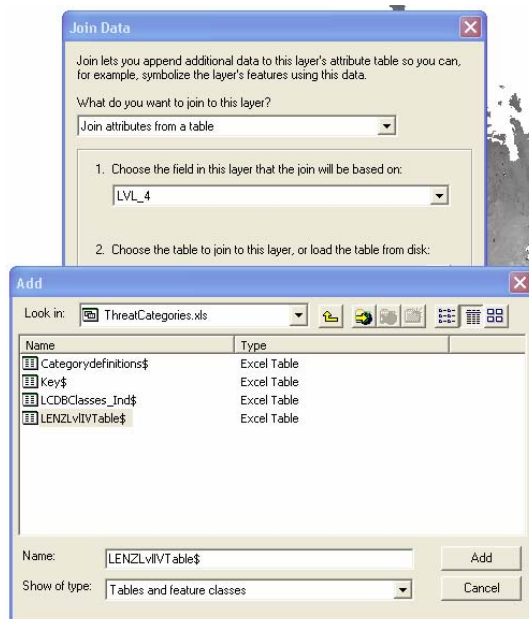
For interpretation of the Threatened Environment Classification, please refer to the “Guide for Users of the Threatened Environment Classification”, which can be found on the website [www.biocommunity.org.nz](http://www.biocommunity.org.nz) . Non-GIS users can download maps of the Threatened Environment Classification for their region or district from this website. Workshops will be held around the country in August 2007 to familiarise users with the Threatened Environment Classification.

## ArcGIS 9.1 and 9.2

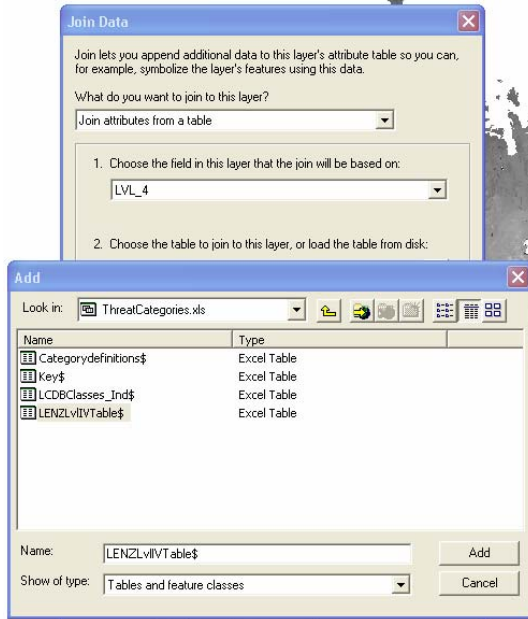
1. Download and save the Threatened Environment Classification table from the website [www.biocommunity.org.nz](http://www.biocommunity.org.nz). Users of ArcGIS9.2 can save the Excel file and directly import this into the programme. Users of ArcGIS9.1 or earlier will need to have the table in text file format (\*.txt or \*.dbf). Either download the Threatened Environment Classification table as a text file from the website, or open the Excel Table in Excel, go File > Save as >, in the drop-down box tick "Text (Tab delimited) (\*.txt)" – or if that fails "DBF4 (dBASE IV) (\*.dbf)", give it a name and click "Save".
2. Open a new map in ArcMap
3. Click the "Add Data" button   
Browse to the LENZ files, wherever they are stored on your computer. Add the Level 4 classification, which is a raster dataset (e.g. LENZ\Classification\LENZ\_Class\lenz\_lv1\_4).
4. Right click on the layer file in *Table of Contents* (left side of Map window)
5. Select "Joins and Relates" and "Join..."



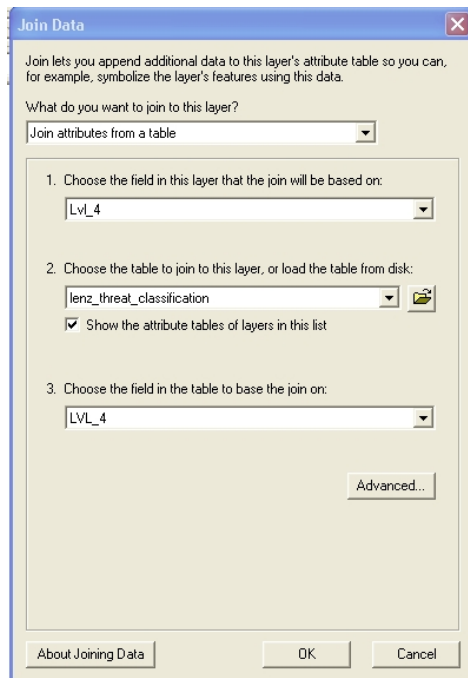
6. Select "Join attributes from a table"



7. Select the field that the join will be based on from the drop-down menu at 1. in the *Join Data Window* (Select: LVL\_4).
8. For ArcGIS9.2: Browse to the location of the downloaded Excel file with the Classification (say, Threat\_Classification.xls), and select the right worksheet (LENZLvl4Table) (see image below). Click “Add”. Continue with step 10.



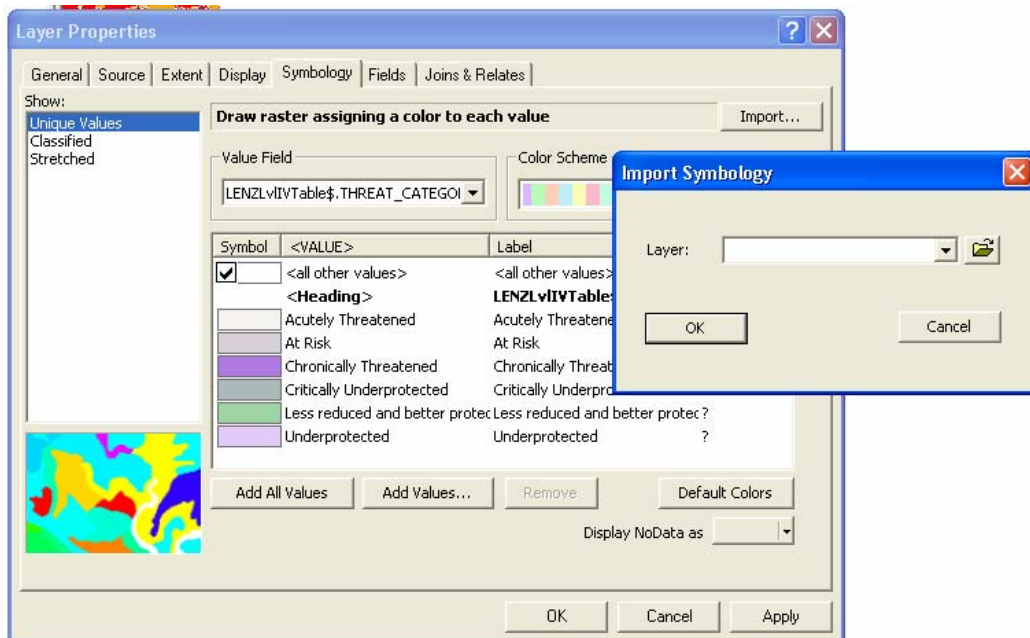
9. For ArcGIS9.1 or earlier: Browse to the location of the downloaded text file with the Classification (say, Threat\_Classification.txt). Use this file as the table to join to the LENZ layer by browsing to its location in the *Join Data Window*. Click “Add”.
10. Select the field that the join will be based on from the drop-down menu at 3. in





the *Join Data Window* (LVL\_4). The join is based on the name of the LENZ Level 4 environments in the LENZ layer and in the Threatened Environment Classification table.


11. Click “OK”
12. The Threatened Environment Classification table is now joined to the LENZ Level 4 table! (You can view it by right clicking on the layer in the *Table of Contents*, and click “Open Attribute Table”, scroll to the right of the table – you will see that the columns from the Threatened Environment Classification have been added and filled in for all the rows of the LENZ Level 4. The added columns all start with the “LENZlvIIVTable\$”, in addition to “CATEGORY\_NO”, “CRITERIA”, “THREAT\_CATEGORY\_NAME”, “%\_IND\_COVER\_REMAINING”, “%\_protected”, “ind\_cover\_change\_97-02”).
13. You can now choose to display any of these added fields in your layer. Double click the LENZ layer in the *Table of Contents*, go to the Symbology Tab. Click “Categories – Unique values” in the *Show window*, and select the Threat Classification field in the Value Field drop-down menu (LENZlvIIVTable\$THREAT\_CATEGORIES). Click “Apply” and “OK”. The map should now show the different Threat Classification categories. You can also choose to display the criteria (e.g. <10% indigenous cover left) rather than the category name (Acutely Threatened), or underlying data including % indigenous remaining and % protected for each LENZ environment, by choosing the appropriate Value Field from the drop-down menu.

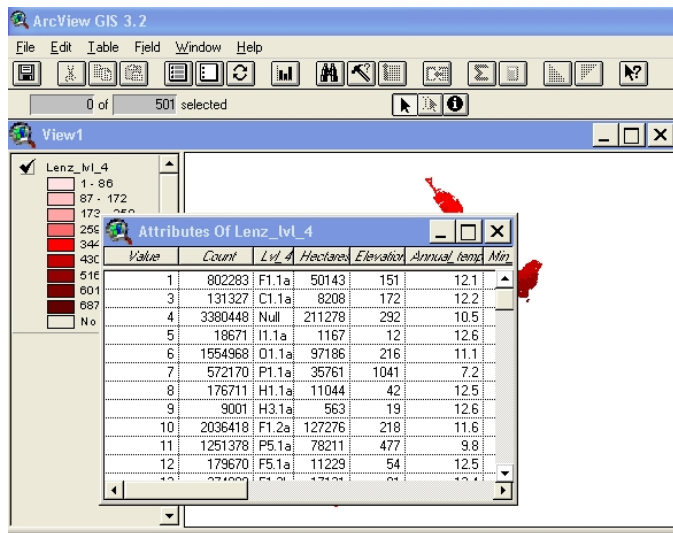



14. ArcGIS will choose a colour scheme for the categories; however, we encourage all users to use a standard colour scheme and symbology for the creation of Threatened Environment Classification maps (see section on Colour Schemes, page 9). Please download the layer file (.lyr) that has all this information included from the [www.biocommunity.org.nz](http://www.biocommunity.org.nz). Save the layer file in the same folder as your Threat Classification table.
15. In the *Layer Properties*, click “Unique Values” and “Import”. In the *Import Symbology Window* navigate to where you saved the layer file.
16. Confirm the layer this symbology applies to is “lenz\_lv\_4”. Click “Apply” and “OK”. The map will now show the Threatened Environment Classification with

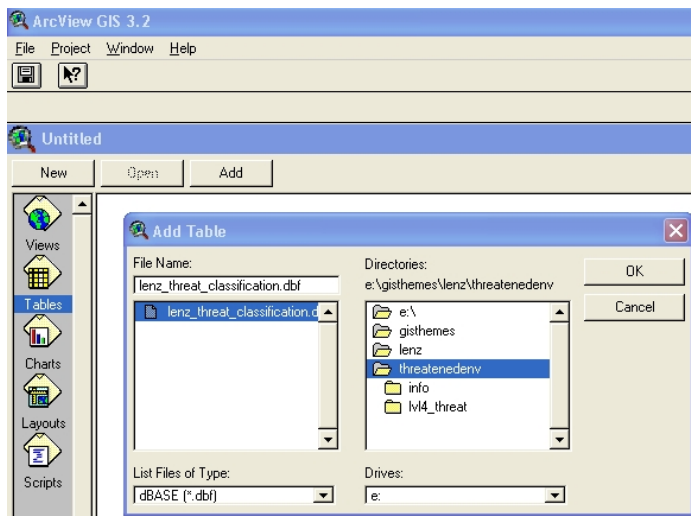
the full criteria and colours ranging red–yellow–blue–green, using the colour scheme as laid out in Table 1 (p. 9).

## ArcView 3.2

1. Download the Threatened Environment Classification table (text file) from the website [www.biocommunity.org.nz](http://www.biocommunity.org.nz)
2. Open ArcView 3.2. You also need to activate the Spatial Analyst Extension in order to view LENZ grids (Go File > Extensions and tick “Spatial Analyst”).
3. Open the *View Window*, and click the “Add Theme” button . Select “Grid data source” as a file type option and browse to the LENZ files, wherever they are stored on your computer. Add the classification for Level 4 (e.g. LENZ\Classification\LENZ\_Class\lenz\_lvl\_4).



4. This theme's Attribute Table will open automatically (If it doesn't, click )
5. In the project view, open the *Tables Window*, and click “Add” to add the Threatened Environment Classification table (as \*.txt or \*.dbf). Browse to the



location where you stored the table, and click “OK”. The table will be added to the list, click on the name to open it.

6. Now both tables are open, and we can join the two, after highlighting the fields on which the join is based (which will be the Lvl\_4 column in both tables).
7. Make the Threat Classification Table active, and click column “Lvl\_4”
8. Make the LENZ Attribute Table active, and click column “Lvl\_4”

Value	Count	Lvl_4	Hectares	Elevation	Annual temp
1	802283	F1.1a	50143	151	12.1
3	131327	C1.1a	8208	172	12.2
4	3380448	Null	211278	292	10.5
5	18671	I1.1a	1167	12	12.6
6	1554968	O1.1a	97186	216	11.1
7	572170	P1.1a	35761	1041	7.2
8	176711	H1.1a	11044	42	12.5
9	9001	H3.1a	563	19	12.6
10	2036418	F1.2a	127276	218	11.6
11	1251378	P5.1a	78211	477	9.8
12	179670	F5.1a	11229	54	12.5

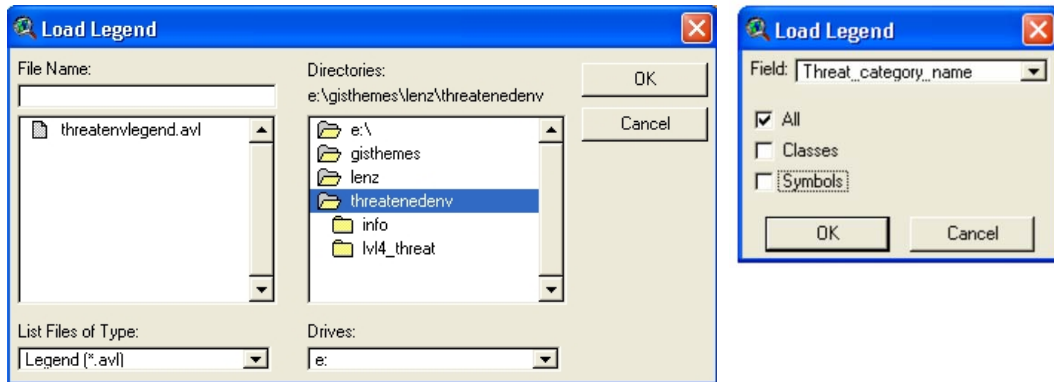
  

Lvl_4	%_ind_cove	%_protecte	Ind_cove	Threat_cls	Protec
A1.1a	83	66	No change	No Threat	>20% p
A1.1b	52	47	No change	No Threat	>20% p
A1.1c	17	7	No change	Chronical	Critical
A2.1a	33	17	Decrease	Underprot	Underp
A3.1a	91	100	No change	No Threat	>20% p
A4.1a	26	4	Decrease	At Risk	Critical
A4.2a	33	5	No change	Critical	Critical
A4.2b	5	7	No change	Acutely T	Critical
A4.2c	30	0	No change	At Risk	Critical
A5.1a	8	3	No change	Acutely T	Critical
A5.1b	5	1	Decrease	Acutely T	Critical

9. Click the “Join” button . The table that is active when you choose “Join” is the destination table (make sure this is the LENZ Attribute table), and the information in the Threat Classification table will be added to this table (check this and open the LENZ table, scroll to the right if necessary to see the added columns of “category\_no”, “criteria”, “threat\_category\_name”, “%\_ind\_cover\_remaining”, “%\_protected”, “ind\_cover\_change\_97-02”).
10. You can now choose to show the Threat Classification (rather than LENZ values) in the map in the *View Window*:
11. Double-click the “Lenz\_lvl4 Theme” in the *Contents* on the left-hand side of the screen (or go Theme > Edit Legend)
12. For “Legend Type” select “Unique Value”
13. For “Values Field” select “Threat\_category\_name”
14. We encourage users to use common colours and symbology, please upload a standard legend from [www.biocommunity.org.nz](http://www.biocommunity.org.nz) Save the legend file (.avl file) in the same folder as your Threat Classification table.

Symbol	Value	Label	Count
	Acutely Threatened	Acutely Threatened	9425292
	At Risk	At Risk	44657894
	Chronically Threatene	Chronically Threatene	37191318
	Critically Underprotect	Critically Underprotect	28354828
	Less reduced and be	Less reduced and be	18755500
	Underprotected	Underprotected	24204425
			3380448

15. Choose “Load” in the *Legend Editor Window*, and browse to the location where you saved the .avl file. Click “OK”.
16. In the next little window, choose “Threat\_category\_name” as the Field (tick “All” if it’s not already ticked). Click “OK”. Click “Apply”.



17. The map will now show the Threatened Environment Classification with the criteria as labels and colours ranging red–yellow–blue–green, using the colour scheme as laid out in Table 1 below.



## Colour schemes

We would like to encourage users to apply a common symbology (as ArcGIS calls it!) and colour scheme when producing maps, so that the results are easily exchanged and information can be absorbed at a glance. Legend files (ArcView) and Layer files (ArcGIS) can be downloaded to aid this process ([www.biocommunity.org.nz](http://www.biocommunity.org.nz)). Table 1 includes the colours that are to be used for the different categories in different GIS programmes. In ArcGIS the colours are all standard and can be chosen from the colour panel; when you hover over the boxes the names will show up. Please note: ArcView Hue/Saturation/Value values differ from standard HSVs, using the below HSV values in a different programme will therefore produce quite different colours.

**Table 1. Colour schemes for the Threatened Environment Classification**

Category	Category Criteria	Category Name	ArGIS 9.2 Colour	RGB	ArcView 3.2 HSV
		No Data	White	R: 255 G: 255 B: 255	H: 0 S: 0 V: 0
1	<10% indigenous vegetation left	Acutely Threatened	Mars Red	R: 255 G: 0 B: 0	H: 0 S: 255 V: 255
2	10–20% left	Chronically Threatened	Electron Gold	R: 255 G: 170 B: 0	H: 26 S: 255 V: 255
3	20–30% left	At Risk	Solar Yellow	R: 255 G: 255 B: 0	H: 42 S: 255 V: 255
4	>30% left and <10% protected	Critically Underprotected	Anemone Violet	R: 146 G: 0 B: 209	H: 202 S: 255 V: 255
5	>30% left and 10–20% protected	Underprotected	Larkspur Blue	R: 68 G: 101 B: 137	H: 146 S: 166 V: 135
6	>30% left and >20% protected	Less Reduced and Better Protected	Olivine Yellow	R: 233 G: 255 B: 190	H: 60 S: 60 V: 255