SANBI tools for Georeferencing, Species distributions and extensions for ArcView 3.x and other applications

Updated 12 October 2015, originally prepared 24 November 2009, Les Powrie, l.powrie@sanbi.org.za
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Cite as:

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General notes about the extensions:
The set of extensions was originally used and developed with ArcView 3.x in mind, but has become increasingly adapted for use with Google Maps, Google Earth, Quantum GIS (QGIS), Diva GIS or ArcGIS. The databases are being developed to make them more usable with these other mapping tools, for exporting results of searches for species distributions and place names, or for using coordinates from those tools. Some of the ArcView extensions are not needed in ArcGIS and QGIS and so they have not been developed further.

ArcView menu items can usually be activated by using the shortcuts indicated by underlined letters. For example, Alt-F S will select the File menu and then the Save menu item. This will work unless there is more than one possible menu or item matching the keystroke.

Where the menu shows a shortcut (a keystroke such as Ctrl+F8 or Shift+F2)

the user can use the keystroke or the menu item (or button if there is a button). Sometimes a key shortcut (e.g. ctrl-F9) may clash between extensions. In this case, one extension can be unloaded, or else the menu commands should be used rather than the shortcut as long as both extensions are loaded.

A lot of these extensions may not be immediately useful to you, but the code may give you an idea of how to solve your own problems if you are into programming. I am indebted to the very clever Avenue programmers out in Cyberspace from whom I borrowed some or many ideas for these extensions (those who did not encrypt their code 😊).

Search for and display places by name
A set of MS Access databases with place names for South Africa and some neighbouring territories. The databases contain tools for finding place names, and for adding new places or names to the gazetteer. Users are encouraged to regularly send to SANBI new names that they have added to their installation of the gazetteer so that the new information can be added to the main gazetteer.

- MSAccess database C:\SANBI\SANBIDistrnDatabases\SANBI_Gazetteer_Personal_v5.mdb
- MSAccess database C:\SANBI\SANBIDistrnDatabases\SANBI_Gazetteer_v5.mdb
- MSAccess database C:\SANBI\SANBIDistrnDatabases\SANBI_GazetteerTables_Personal_v5.mdb

Sources for Gazetteer

<table>
<thead>
<tr>
<th>Description</th>
<th>Precision</th>
<th>Records</th>
<th>Citation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digitised off Map of the Eastern Frontier of the</td>
<td></td>
<td></td>
<td><a href="http://www.ngi.gov.za/">http://www.ngi.gov.za/</a></td>
<td>Demarcation Board Pl_Name.dbf</td>
</tr>
<tr>
<td>Cape Colony 1856</td>
<td>1/2 km</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combined cadastral shapefiles from EnPAT2001</td>
<td>1/2 km</td>
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<tr>
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<td>9685</td>
<td><a href="http://www.demarcation.org.za/">http://www.demarcation.org.za/</a></td>
<td></td>
</tr>
<tr>
<td>Demarcation Board PName.dbf</td>
<td>1/2 km</td>
<td>87482</td>
<td><a href="http://www.demarcation.org.za/">http://www.demarcation.org.za/</a></td>
<td></td>
</tr>
<tr>
<td>Demarcation Board parent farm names (sa_parent_clk.dbf)</td>
<td>1/2 km</td>
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<td><a href="http://www.ngi.gov.za/">http://www.ngi.gov.za/</a></td>
<td></td>
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<tr>
<td>Built_up.shp from 1:500 000 map data</td>
<td>1/2 km</td>
<td>977</td>
<td><a href="http://www.ngi.gov.za/">http://www.ngi.gov.za/</a></td>
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<tr>
<td>MEG2006 protected areas</td>
<td>1/2 km</td>
<td>2325</td>
<td><a href="http://www.sanbi.org/node/5605">http://www.sanbi.org/node/5605</a></td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>Precision</td>
<td>Records</td>
<td>Citation</td>
<td></td>
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<tr>
<td>-------------</td>
<td>-----------</td>
<td>---------</td>
<td>----------</td>
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<tr>
<td>Magisterial districts from 1:500 000 map data</td>
<td>5-10 km</td>
<td>376</td>
<td><a href="http://www.ngi.gov.za/">http://www.ngi.gov.za/</a></td>
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<tr>
<td>SAGINS Official Database - downloaded 15 Sep 2006</td>
<td></td>
<td>59290</td>
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<td>HSRC list from SAGINS website</td>
<td>unknown</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Gazetteer from NGI - names on 1:50 000 maps</td>
<td>1:2 km</td>
<td>80776</td>
<td><a href="http://www.ngi.gov.za/">http://www.ngi.gov.za/</a></td>
<td></td>
</tr>
<tr>
<td>Acacids field notes/maps</td>
<td>1:2 km</td>
<td>24</td>
<td><a href="http://volunteer.africa.org.au/project/list?mode=4q&amp;=safa">http://volunteer.africa.org.au/project/list?mode=4q&amp;=safa</a></td>
<td></td>
</tr>
<tr>
<td>Digitised off topographical maps</td>
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<td></td>
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<tr>
<td>SfG Railway points from 1:500 000 data</td>
<td>1:2 km</td>
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<td></td>
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<tr>
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<tr>
<td>Digitised off SfSfS topographical maps</td>
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<td>73</td>
<td><a href="http://www.ngi.gov.za/">http://www.ngi.gov.za/</a></td>
<td></td>
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<tr>
<td>Digitised off SfOx topographical maps</td>
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<td>58</td>
<td><a href="http://www.ngi.gov.za/">http://www.ngi.gov.za/</a></td>
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<tr>
<td>Digitised off SfOx 1900-1919 topographical map</td>
<td>1:2 km</td>
<td>8</td>
<td><a href="http://www.ngi.gov.za/">http://www.ngi.gov.za/</a></td>
<td></td>
</tr>
<tr>
<td>Village names from Google Earth</td>
<td>1:2 km</td>
<td>7408</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data from delegate to TREES-3 workshop</td>
<td>1:2 km</td>
<td>10574</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other source not mentioned above</td>
<td>unknown</td>
<td>23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Place names other than cadasters from ENPAT</td>
<td>1:2 km</td>
<td></td>
<td><a href="http://gis.environment.gov.za/Download.aspx?m=25&amp;catid=8">http://gis.environment.gov.za/Download.aspx?m=25&amp;catid=8</a></td>
<td></td>
</tr>
<tr>
<td>Various place names from UCT georeferencing section, source unknown.</td>
<td>700m</td>
<td>49558</td>
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<td></td>
</tr>
<tr>
<td>Gazetteer for South Africa downloaded from DNA-GIS website April 2012</td>
<td>250m</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trapsin &amp; Poynton Management aid from Forestry Herbarium</td>
<td>1:2 km</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digitised off Pre 1900 topographical map</td>
<td>1:2 km</td>
<td></td>
<td><a href="http://www.ngi.gov.za/">http://www.ngi.gov.za/</a></td>
<td></td>
</tr>
<tr>
<td>Digitised off online maps (e.g. Google Maps)</td>
<td>1:2 km</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assisted by information from Google search, e.g. Gaborone</td>
<td>1:2 km</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obtained from Google Maps</td>
<td>1:2 km</td>
<td></td>
<td><a href="https://www.google.co.za/maps?source=kl&amp;hl=en">https://www.google.co.za/maps?source=kl&amp;hl=en</a></td>
<td></td>
</tr>
<tr>
<td>Obtained from Google Earth</td>
<td>1:2 km</td>
<td></td>
<td><a href="http://www.google.com/earth/">http://www.google.com/earth/</a></td>
<td></td>
</tr>
<tr>
<td>Digitised off 1885 map (e.g. Cape Of Good Hope Colony, 1895)</td>
<td>1:2 km</td>
<td></td>
<td><a href="http://www.ngi.gov.za/">http://www.ngi.gov.za/</a></td>
<td></td>
</tr>
<tr>
<td>CAPE_GOOD_HOPE_EOD_1883.tif</td>
<td>1:2 km</td>
<td></td>
<td><a href="http://www.ngi.gov.za/">http://www.ngi.gov.za/</a></td>
<td></td>
</tr>
<tr>
<td>Digitised of other map source</td>
<td>1:2 km</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Point from personal communication of someone with personal knowledge</td>
<td>1:2 km</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPS locations added by user</td>
<td></td>
<td>0-30 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>no coordinates - AFRICAN PLACENAMES from via MapStudiosWebsite.xls</td>
<td></td>
<td>None</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Description

<table>
<thead>
<tr>
<th>Description</th>
<th>Precision</th>
<th>Records</th>
<th>Citation</th>
</tr>
</thead>
</table>

Total of 531 520 records, but with at least 20% duplicates of the same place from different sources.

**ArcView extension**

_0_SANBI_Gazetteer_v5p02.avx

**Description:** Adds a Gazetteer button and menu to a view for the user to search for a place name as specified (all names starting with the search term), creates a point shapefile, and adds it to the view. Searches a compilation of data from many sources of place names and localities.

**Requires:**

- A view vSANBI
- folder C:\SANBI\TempDstrbtns
- ODBC driver with ODBC connection 'Ms Access Database'.
- Preferably also VEGMAP data (e.g. in c:\vegm2006_cd\data).
- Batch file C:\SANBI\SANBIDistrnDatabases\delGZTR.bat
- Metadata file C:\SANBI\SANBIDistrnDatabases\SANBI_Gazetteer.shp.xml
- Projection file C:\SANBI\SANBIDistrnDatabases\SpeciesDistributionMetadata.prj

**Recommended:**

- _1_LWP_togglesdisplays_for_av_v8p18.avx (or latest version) that toggles the display on/off for digital maps from National Geospatial Informatics e.g.
- WGS2628AD.TIF, WGS3318BC.TIF (older 1:50 000 map series)
- wgs_2628.tif, wgs_3318.tif (older 1:250 000 map series)
- nn_Gauteng_TOPO-UNION_OF_SOUTH-AFRICA_IRR_1936.tif (1:500 000 irrigation map series from about 1936)
- Topo_500k_SnAfr_nnnn_nnn set (South Africa, Namibia, Botswana, Zimbabwe, Mozambique, Swaziland, Lesotho)
- Acocks field maps (TOPO-UNION_OF_SOUTH-AFRICA_IRR_1936 with sample sites marked)

- Also available are
  - South Africa Imperial 1:250 000 maps from about 1900-1919
  - Union of South Africa 1:1 000 000 maps from 1923
  - Union of South Africa 1:1 500 000 maps from 1938
  - Various maps of Rhodesia, Botswana, Mozambique, Angola-Congo, etc.
  - CAPE-COLONY-EASTERN-FRONTIER-EDO_1856
  - CAPE-TOWN_EDO_1884
  - CAPE_COLONY_1901
  - CAPE-PENINSULA_EDO_1909
  - CAPE-GOOD_HOPE_EDO_1853
  - CAPE-GOOD_HOPE_EDO_1853_Inset
  - Cape-1822-Burchell
  - Map of Cape of Good Hope Colony 1895

From within a view

Click to search for a place name. For example, ‘zyv’ will give places starting with ‘zyv’ such as ZYVERGAT, ZYVERFONTEIN, Zyverbult.

SANBI_utilities

From within a table

Click to search for a place name. For example, ‘zyv’ will give places starting with ‘zyv’ such as ZYVERGAT, ZYVERFONTEIN, Zyverbult.
Display distributions of species, genus, family, species for a 1:50 000 map, collector and batch (list of taxa)

A set of MS Access databases with species distribution data that can be viewed using GIS. Data from the SANBI databases are included, and personal distribution data can be added that will then be included in results from searches.

Search by binomial: To search by binomial for the distribution of taxa.
Search by Family: To search for the distribution of a family.
Search by Genus: To search for the distribution of a genus.
Search by QDS GridRef: To search for all taxa located in a 1:50 000 (quarter degree) map sheet.
Search by Collector: To search for the records associated with a collector or observer. This enables one to track the movements of a collector which is a useful technique for georeferencing specimens with uncertain localities.
Search by batch for binomials: This uses a file C:\SANBI\SANBIDistrnDatabases\TaxList.txt that contains a list of binomials such as
- Acacia karroo
- Protea caffra
- Acacia caffra

Search by batch for grid references: This uses C:\SANBI\SANBIDistrnDatabases\GridRef.txt

- MSAccess databases
  - C:\SANBI\SANBIDistrnDatabases\SANBI_Dists_Utilities.mdb
  - C:\SANBI\SANBIDistrnDatabases\SANBI_Dists_2000_v12.mdb
  - C:\SANBI\SANBIDistrnDatabases\SANBI_Dists_Personal_v10.mdb
  - C:\SANBI\SANBIDistrnDatabases\SANBI_Dists_Personal_Table.mdb
  - C:\SANBI\SANBIDistrnDatabases\SANBI_Dists_PRECIS_v10.mdb
  - C:\SANBI\SANBIDistrnDatabases\SANBI_Dists_Acocks_v10.mdb
  - C:\SANBI\SANBIDistrnDatabases\SANBI_Dists_PAP_v10.mdb
  - C:\SANBI\SANBIDistrnDatabases\SANBI_Dists_TSP_v10.mdb
  - C:\SANBI\SANBIDistrnDatabases\SANBI_Dists_Other_v10.mdb
  - C:\SANBI\SANBIDistrnDatabases\SANBI_Dists_NV0_v10.mdb
  - C:\SANBI\SANBIDistrnDatabases\SANBI_Dists_SAPIA_v10.mdb

Sources and References for species distributions

Species distribution data are extracted from various databases available in SANBI to combine readily available distribution information in a single shapefile. Other data can be included as more databases become available.

The data sources are described as follows:

**PRECIS**
- Data taken from PRECIS (National Herbarium Pretoria (PRE) Computerized Information System) database. There are over 1 125 000 records available. Only 5% of the records have a locality confidence of less than about 1 km, and 9% more precise than a quarter degree grid (1:50 000 map sheet). Only presence data.

**ACKDAT**
- Data recorded by John Acocks during forty years of field surveying throughout most of South Africa. There are over 277 000 records available. The precision of georeferencing is about 1.6 km, and for many sample sites absences can be inferred with a low degree of confidence.

**PAP**

- A systematic search undertaken by citizen scientists for members of the family Proteaceae at the most likely localities in South Africa. There are over 265 000 records available. The precision of georeferencing is about 0.5 km, and absences can be inferred with a very high degree of confidence because there was a determined effort to record presence if a species of Proteaceae were at the locality.


**NVD**

- A compilation of vegetation survey plot data from most parts of South Africa. There are over 524 000 records available. Some 62% of the records have a locality confidence of less than about 1 km, and all included in the distributions database are more precise than a quarter degree grid (1:50 000 map sheet).


**CREW/TSP/MSB/ISEP**

- The Threatened Species Programme, funded by the Royal Norwegian Embassy from 2004-2009, is a monitoring and reporting programme that is divided into plant and animal units. The plant component comprises the Red List of South African plants and the Custodians of Rare and Endangered Wildflowers (CREW) programme. CREW is a programme that involves volunteers from the public in the monitoring and conservation of South Africa's threatened plants. CREW volunteers contribute significantly by each focusing on a small area of the country and monitoring the plant species of conservation concern of that area. There are over 24 000 records available. Presence only data, with precision of georeferencing about 0.01 km.

  - MSB (Millennium Seed Bank) Partnership is an international ex situ plant conservation project aiming to collect and conserve seeds from 25% of the world's orthodox plant species by 2020. There are over 71 records available.

  - ISEP (Information System for Endangered Plants) programme of CapeNature. There are over 2 110 records available.

    - CREW/TSP/ISEP (CapeNature Information System for Endangered Plants) – citation needed.


**SAPIA**

- Southern African Plant Invaders Atlas (SAPIA). Under the leadership of Lesley Henderson, SAPIA is an important resource for with a collection of computerized information on the distribution, abundance and habitat types of naturalized and invasive alien plants in the southern African region. There are over 64 000 records available. About 57% are more precise than a quarter degree grid (1:50 000 map sheet)of which some 20% of the records have a locality confidence of less than about 1 km. Some absences can probably be inferred when observations were made with the objective to survey all aliens at a specific place.


**ArcView extension**

- O_SANBI_Distrbns_v11p03.avx
Description: Adds a menu with items for displaying distributions of species (binomial), genus, family, collector, map sheet (e.g. 1:50 000. A button is also added to a view for the user to search for a taxon distribution. A search can be done by entering the start a word. For example, to search for a binomial, enter the start of the genus name and species name. If more than one match is found then a list is given and the user selects one or more binomials the list of all genus and species names starting with the search term. A point shapefile is created for each result, and this is added to the view. For example, ‘asp’ for genus and ‘lin’ for species will give taxa starting with ‘asp’ and ‘lin’ such as Aspalathus linearis, Aspalathus linearifolia, and their synonyms, e.g. Aspalathus cognata, Lebeckia linearis. Data are combined from 6 different databases.

Where more than one name is found a list is presented and the user can select all names, or more than one name. Just click and drag down the list instead of clicking a single name, or hold shift and click more than one name.

Requires:
- A view vSANBI
- Batch file C:\SANBI\SANBIDistrnDatabases\deldstrb.bat
- Metadata file C:\SANBI\SANBIDistrnDatabases\SpeciesDistributionMetadata.shp.xml
- Projection file C:\SANBI\SANBIDistrnDatabases\SpeciesDistributionMetadata.prj
- folder C:\SANBI\TempDstrbtns
- ODBC driver with ODBC connection 'Ms Access Database'.

It is recommended that one also uses the VEGMAP data (e.g. in c:\veg\m2006_cd\data) accompanying the book Mucina, L. & Rutherford, M.C. (eds) 2006. The Vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19. South African National Biodiversity Institute, Pretoria.

The extension is set up specifically for a PC name.

The extension requires a SQL connection to an ODBC connection 'Ms Access Database'. If it does not work try adding 'Ms Access 95 Database' and/or 'Ms Access 97 Database'

From within a view

Click to search by entering the start of a genus name and species name for the distribution of taxa. For example, ‘asp’ for genus and ‘lin’ for species will give taxa starting with ‘asp’ and ‘lin’ such as Aspalathus linearis, Aspalathus linearifolia, and their synonyms, e.g. Aspalathus cognata, Lebeckia linearis.

Keystroke that run a utility are indicated at the right of the menu bar (e.g. Ctrl+D). The keystroke offers a shortcut to run the command. Sometimes the keystroke does not work because there is a clash with the same keystroke for some other command. In such a case the item should be selected directly from the menu.

SANBI_utilities
<table>
<thead>
<tr>
<th>SANBI utilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>D SANBI distributions - search for a binomial  Ctrl+D</td>
</tr>
<tr>
<td>D SANBI distributions - search for a Family  Ctrl+Y</td>
</tr>
<tr>
<td>D SANBI distributions - search for a Genus  Ctrl+G</td>
</tr>
<tr>
<td>D SANBI distributions - search by GridRef  Ctrl+R</td>
</tr>
<tr>
<td>D SANBI distributions - for a batch list of binomials</td>
</tr>
<tr>
<td>D SANBI distributions - for a batch list of genera</td>
</tr>
<tr>
<td>D SANBI distributions - for a batch list of grids</td>
</tr>
<tr>
<td>D Open a database with Distributions utilities  Ctrl+N</td>
</tr>
<tr>
<td>D SANBI distributions - search by collector  Ctrl+B</td>
</tr>
<tr>
<td>D Open distributions utilities database</td>
</tr>
<tr>
<td>D Open the folder with distributions and gazetteer shapefiles</td>
</tr>
<tr>
<td>D Open SANBI distributions database (needs password)</td>
</tr>
<tr>
<td>D Open TaxList.txt</td>
</tr>
</tbody>
</table>

SANBI distributions – search by binomial: To search by binomial for the distribution of taxa.

SANBI distributions – search by Family: To search for the distribution of a family.

SANBI distributions – search by Genus: To search for the distribution of a genus.

SANBI distributions – search by QDS GrdRef: To search for all taxa located in a 1:50 000 (quarter degree) map sheet.

SANBI distributions – search by Collector: To search for the records associated with a collector or observer. This enables one to track the movements of a collector which may help to georeference a specimen with uncertain locality.

SANBI distributions – for a batch of binomials: This uses a file (defaults to C:\SANBI\SANBIDistrnDatabases\TaxList.txt) that contains a list of binomials such as

- Acacia karroo
- Protea caffra
- Acacia caffra

Shapefiles are then created for taxa matching those binomials.

Open a database of Taxa and Life Forms, and Specimens without co-ordinates: Enables searching for life forms etc., and taxon names for copy and paste. Also displays PRECIS records with no georeferencing that can be important, for example for assigning something like endemic status to a species.

Open the folder containing GIS shapefiles created in the searches for distributions and place names.

From within a table

D Click the button to search by binomial for the distribution of taxa.

SANBI utilities
SANBI distributions – search by binomial: To search by binomial for the distribution of taxa.

SANBI distributions – search by Family: To search for the distribution of a family.

SANBI distributions – search by Genus: To search for the distribution of a genus.

SANBI distributions – search by QDS GridRef: To search for all taxa located in a 1:50 000 (quarter degree) map sheet.

SANBI distributions – search by Collector: To search for the records associated with a collector or observer. This enables one to track the movements of a collector which may help to georeference a specimen with uncertain locality.

SANBI distributions – for a batch of binomials: This uses a file (defaults to C:\SANBI\SANBIDistrnDatabases\TaxList.txt) that contains a list of binomials such as

- Acacia karroo
- Protea caffra
- Acacia caffra

Shapefiles are then created for taxa matching those binomials.

Open a database of Taxa and Life Forms, and Specimens without co-ordinates: Enables searching for life forms etc., and taxon names for copy and paste. Also displays PRECIS records with no georeferencing that can be important, for example for assigning something like endemic status to a species.

SANBI Extensions for ArcView 3.x

Toggle display of themes
  _1_LWP_toggledisplays_for_av_v8p15.avx

From within a view

<table>
<thead>
<tr>
<th>Button</th>
<th>Tools</th>
<th>Menu</th>
</tr>
</thead>
</table>

These tools and menus will control a view vSANBI.

**Toggle**

<table>
<thead>
<tr>
<th>Toggle</th>
<th>EZ-Click</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borders</td>
<td>Shift+F2</td>
</tr>
<tr>
<td>TopoData</td>
<td>Shift+F3</td>
</tr>
<tr>
<td>1:50 000 images</td>
<td>Shift+F5</td>
</tr>
<tr>
<td>1:250 000 images</td>
<td>Shift+F6</td>
</tr>
<tr>
<td>Display VEGMAP 2006: Solid</td>
<td>Shift+F7</td>
</tr>
<tr>
<td>Toggle SPOT5 data</td>
<td>Shift+F8</td>
</tr>
<tr>
<td>EarthSat data</td>
<td>Ctrl+F7</td>
</tr>
<tr>
<td>Zoom to 10k for SPOT image</td>
<td>F8</td>
</tr>
<tr>
<td>Zoom to 20k for EarthSat image</td>
<td>F3</td>
</tr>
<tr>
<td>Zoom to 50k</td>
<td>F5</td>
</tr>
<tr>
<td>Zoom to 250k</td>
<td>F6</td>
</tr>
<tr>
<td>Zoom to 500k</td>
<td>F7</td>
</tr>
<tr>
<td>Zoom to 1:250</td>
<td>F8</td>
</tr>
<tr>
<td>Zoom to the full extent of South Africa</td>
<td>F2</td>
</tr>
</tbody>
</table>

Toggle the display of themes:

- VEGMAP borders (national and provincial) if loaded with default theme name `vegm2006o_borders.shp`
- VEGMAP topographical data (roads, rivers, places, major parks, etc. as on the printed map) if loaded with default theme names
- Scanned images (1:50 000 (e.g. WGS2228DD.TIF), 1:250 000 (e.g. wgs_2428.tif), 1:500 000 (Topographical maps dated about 1936 for old routes and place names, e.g. rsa_500k_topo_01_dd_1936.tif) if loaded with appropriate default theme names)
- VEGMAP vegetation types if loaded with default theme name `vegm2006.shp`.
- VEGMAP vegetation types can be simply switched on and off and the theme also activated for querying its attributes
• Satellite images (EarthSat (e.g. S35-E018_ul.tif in NaturalVue) or SPOT5 (e.g. 2621D.TIF) if loaded with appropriate default theme names)
• Zoom to the appropriate scale for the displayed topographical map
• Zoom to full extent of South Africa

In the case of the scanned maps, the appropriate scale for displaying the map can also be quickly selected. For example, Shift-F7 toggles the 1:50 000 maps, and F7 zooms to a scale where the 1:50 000 map detail is legible.

**Buttons:**
- [Zoom to full extent of South Africa]

**Tools:**
- Activate to click on a position in the view to get Lat & Long (e.g. -22.6409 28.6155) coordinates to paste directly into adjacent Latitude and Longitude fields in a spreadsheet or database. Copy the coordinates by pressing Ctrl-C, then click Cancel or press ESC.

Alternatively, instead of copying the presented coordinates, type a message and select OK. The message is added to the file `C:\SANBI\SANBIDistrnDatabases\WriteCursorPoint.txt`. The option is then given to open the file in Notepad to Cut/Copy the information to a database, e-mail, etc.

Example text

Acocks red dot near Atherton, Point: 23.7897 -29.0181

A tool that allows you to click on a feature and write the attribute information to file `C:\SANBI\SANBIDistrnDatabases\identify.txt`, with the option to open the file. Example text

From within a table

These tools and menus will control a view vSANBI.

**Toggle**
- VEGMAP borders (national and provincial)
- VEGMAP topographical data (roads, rivers, places, major parks, etc. as on the printed map)
- Scanned images (1:50 000, 1:250 000, 1:500 000 (Acocks field maps dated about 1936 for old routes and place names) if loaded with appropriate default theme names)
- VEGMAP vegetation types
- Satellite images (EarthSat or SPOT5 if loaded with appropriate default theme names)
- Active themes
- Zoom to the appropriate scale for the displayed topographical map
- Zoom to full extent of South Africa

In the case of the scanned maps, the appropriate scale for displaying the map can also be quickly selected. For example, Shift-F7 toggles the 1:50 000 maps, and F7 zooms to a scale where the 1:50 000 map detail is legible.

**Buttons:**
- ![Zoom to full extent of South Africa](image)

**Tools:**
- ![Click the tool, then click on a record in the table. A dialog box will allow the user to enter a message about that record, e.g. ‘Benfontein on 250k map. Suggest coordinates: 24.818 -28.8295.’](image)

The note and information from the record are used to create an email that can be sent giving feedback on the table in question.
Click the tool, then click on a record in the table. A dialog box will allow the user to enter a message about that record, e.g., ‘Benfontein on 250k map. Suggest coordinates: 24.818 -28.8295.’

The note and information from the record are written to a text file as

R:\MakeLWPExtensions\getmenusandbuttonsfordocumentation.apr
Attributes of D_oxalis pes-caprae var pes-caprae.shp
Mon Dec 07 17:54:06 2009
- PRE0834088-0, Oxalis pes-caprae var. pes-caprae, Data of: 2009-09-01 00:0, Locality: Benfontein; Koppie., at: ** Point X : 24.87500 ** Point Y : -28.87500, Note made: Mon Dec 07 17:54:31 2009 on \cptltp0176
****** Note: Benfontein on 250k map. Suggest coordinates: 24.818 -28.8295

- The last paragraph with the message can then be cut or pasted into a message, or the entire text file can be sent to Les Powrie l.powrie@sanbi.org.za or Hester Steyn h.steyn@sanbi.org.za at SANBI for updating records as appropriate. Hester will forward records for databases other than PRECIS to the appropriate data manager.

Utilities to zoom to selected themes
_LWP_View_ZoomToSelected750_vegm2006_v1p7.avx

From within a view

 Zoom to selected, but zoomed out scale 15 as opposed to the normal scale 1.1 for ‘Zoom to selected’ to see the context of a small selected feature.

 Click to centre the view on coordinates entered by the user. With matching menu item Pan to coordinates specified by user.

 Click to set default printer (e.g. printing to PDF), then the Layout to print (e.g. LPrintPDF), and thereafter click themes to display, and click this button to print the specified document to the specified printer.

 Menu item under Edit, to subtract graphics (normally there, but this assigns the Ctrl-O key to the function).

From within a table
Controls a view called vSANBI. Also gives control tips and help in the

 Zoom to scale 1 for the selected table record (theme with name as from position 14 of table name) in view vSANBI. Ctrl+F9

 Zoom to selected at the normal scale 1.1.

 Zoom tight to selected at the scale 1 (fits display to selected feature).

 Zoom to selected at scale 15 as opposed to the normal scale 1.1 for zoom to selected to see the context of a small selected feature.

 Zoom in.

 Zoom out.

 Zoom to previous extent.

LWP utilities
Zoom to selected at the normal scale 1.1.

Zoom tight to selected at the scale 1 (fits display to selected feature).

Zoom to selected at scale 15 as opposed to the normal scale 1.1 for zoom to selected to see the context of a small selected feature.

Zoom out.

Zoom in.

Zoom to previous extent.

**Various utilities created while working on the vegetation map of South Africa**

_1_LWP_Utlities_v1p01.avx

Adds buttons to View for clipping one theme by another, or cutting one of them by another.

*From within a view*

- Clips one theme by a selected polygon theme, returning a new shapefile with the clipped features and their attributes.

- Splits polygons or polylines using selected graphics or selected features from polyline themes. Operates like the existing split line features tool in the view.

**Table of Contents utilities**

_LWP_View_HideShowLegendsEtc_v5p2.avx

Adds menu items to View to select, deselect themes, LegendTextItem, Gen2Shp, Unembed script, etc.

*From within a view*

- Find, activate and display a theme with name starting with the characters as entered.

- Toggle display of theme/s with names ending with ‘isplay’ and set active for promote or demote.

- Summarize a zone theme (point, line or polygon) by a grid in the view. It asks for the field by which to summarize, and the name of the table to create (file name and name in project window).

**LWP utilities**
Find, activate and display a theme with name starting with the characters as entered.

Add a theme (e.g. point, line, polygon) from a generate file (see help for details of generate files).

Create a theme for a feature theme (e.g. point, line, polygon). This can be used to create polygon from line or line from polygon, e.g. by using a word processor for adding or removing 'Auto' after feature ID.

Legend text for label allows the user to assign attribute item values to 'Text' field of legend ' that correspond to the values of the item used for the 'Value' field. ' Works for joined (lookup table) items too! If a one-to-many relationship exists between the value field and the ' text field, the first value encountered will be used.


Activate all image or grid themes in the view, or all themes.

Toggle display of active themes, or of all themes, or of all image themes.

---

**From within a table**

**Utilities to print or export view or layout with date stamp**

_add_Name_\_View_\_Layout_\_Print_or_\_Export_v5p4.avx

Adds a button to the View button bar to export a layout as print, jpg, bmp or eps. Well, it actually does a whole lot more.

Needs view vSANBI and layouts LViewOnly & LLegend.

---

**From within a view**

 amat Export or print the view. The user is prompted to enter text for a label to be created giving details of project name and path, date of printout, etc. to help identify versions of maps (this became necessary with the very many printouts of VEGMAP (Mucina, L. & Rutherford, M.C. (eds) 2006. The Vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19. South African National Biodiversity Institute, Pretoria.) so that I had some idea of the history behind a printout). The user is then asked if the view is to be printed as well as exported. The user can also specify a resolution for the JPEG. A file name and path can also be specified.
Example of label:

It also writes the label information to a file in the working directory, e.g.

```
 Demo 2
 R:\MakeLPExtensions\getmenusandbuttonsfordocumentation.apr
 Work Dir.: $HOME\ Document: View!
 Demo 2 date
 $HOME\01_v_Demo_2_300dpi.jpg
```

Print or export a layout from within a view. It reminds the user about things like isolines to be displayed, no polygons selected giving different colours, codes switched on or off, sequence of layers. The user then selects which layout to export. The result is similar to View print or export.

```
23 Nov 2009, 15:22. R:\MakeLPExtensions\getmenusandbuttonsfordocumentation.apr
 Work Dir.: $HOME\ Document: LLayout
 Demo view - layout export
 $HOME\01_v_l_Demo_view_-_layout_export_144dpi.jpg
```

Export the view as a JPEG, simple and quick. Simple export, allows user to give file name and select a path, and writes to a text file giving date, source, project, etc.

```
23 Nov 2009 15:28 file written:           $HOME\ demo view to jpeg
 using:                  getmenusandbuttonsfordocumentation.apr
 with Working Directory: $HOME\ 
```

View – export a layout as a JPEG. Exports the layout (lViewOnly) and legend (LLegend) to u:\graphics. These are useful for inserting into PowerPoint. Writes to text file to identify source.

```
23 Nov 2009 15:33 u:\graphics\LayoutAsJPEG
```

**LWP utilities**

| X Export view to GeoJPEG | Writes the view to a GeoJPEG that has a world file. This is about 96 dpi, but is useful for adding as a theme to a view, or sending to someone who can add it as a theme in a view. It can also be opened as a graphic. It is also useful for displaying on a palmtop with ArcPad. For example I export a portion of a 1:50 000 map and add it to the palmtop. |

**From within a table**

| X Writes view vSANBI to GeoJPEG as above. |

| X Requires view vSANBI, layout LSANBI, table with field Taxon. Designed for use with a table (e.g. ‘TaxonList’) containing a list of taxa for which distribution maps are to be exported, but will work with a record of any attribute table as it is selected using the tool. The table would contain a field with the name ‘Taxon’ for use in the file name, such as the following .txt file. |

```
Taxon
Acacia ataxacantha
Acacia borleae
```
The view vSANBI would contain a theme with records for each taxon name in table ‘TaxonList’. Open the theme attribute table, activate the field containing the taxon names, then return to the table ‘TaxonList’, make the field Taxon active, and link the tables (Table | Link). It is recommended that a suitable selection colour be selected in the project property (Window | | nameofproject.apr | Project | Properties | Selection Color | and select a suitable colour, such as red or black). The theme legend would typically be a solid marker and with transparent colour so that only selected points become visible (with the selection colour) when a record is selected in table ‘TaxonList’. Test the link with the button. Click names to observe the theme display change. Then when a record in table ‘TaxonList’ is clicked with this tool active, the records for the taxon in the theme are displayed, and JPEG and GeoJPEG files are exported from vSANBI and LSANBI to the project Working Directory. Make sure that distribution points from one taxon are cleared when a new taxon record is selected. It might be necessary to have a copy of the same point theme at the bottom of the Table of Contents in vSANBI that will force the view to refresh each time a new record is selected, otherwise previous selection may not be replaced, but added to.

From within a layout
LWP utilities

Exports the Layout to a 330dpi JPEG.

Print or export the layout as above.

Export 300dpi JPEG of the layout.

Add latitude and longitude, area and ID to tables

Add buttons to View for adding AreaHa, Lat/Long and ID to table.

From within a view

Adds two new fields named LWP_Ha to the table of the first active theme in the TOC and fills the respective fields with the area in hectares. It uses [shape].return area in a projected view to give the area for the selected polygons (or all polygons if no selection is defined) in a poly theme. It requires an active polygon theme. This script does minimal error checking and assumes that there is an active theme. If the theme is not in a projected view the user is advised to paste it into a projected view to calculate the area.

Adds two new fields, named Long and Lat, to the table of the first active theme in the TOC and fills the respective fields with the Long,Lat coordinates of the selected points (or all points if no selection is defined) in a point theme. If instead the active theme is a polygon theme, then the Long,Lat coordinates of the polygon centroid are calculated. If the theme is projected, the output coordinates will also be projected. Requires an active point or polygon theme. This script does minimal error checking and assumes that there is an active theme.

Adds a field to the table (user selects name for field) and inserts the unique ID for each record into the field.

LWP utilities
Copy and paste theme legend

_Z_0_LWPpasteleg.avx

Copies legends from one feature theme to another.

Copy legend: Copies the legend of the active theme. Needs the shape class of this source theme, the symbolization fields, and the legend.

Paste legend: Pastes a copied legend onto the active theme. For Single Symbol legends the target theme must be the same feature type as the source. For Unique Value the target theme must have the same field name and field type used for symbolization. If the field name is different, but the field type is the same the user can save the legend as an .avl file and load it for the other theme, and point it to the appropriate field.

Database of taxon information and for capturing other distributions data

From within ArcView one can Open a database with taxon information from PRECIS. You can also capture additional distribution data.
Allows the user to search for a taxon by entering the starting characters of the genus and species names to get the information in PRECIS regarding its life cycle, life form heights, family and current name as for the following search for 'oxal' 'pes'. This also enables the user to copy and paste the full name when preparing documents. One can also download a spell-checker dictionary for MS Office and LibreOffice from www.sanbi.org.za.

Enables the user to view a table of distribution information for a taxon. This is valuable for viewing the locality information for specimens that have not yet had the best latitude and longitude assigned based on information in the specimen Locality and Notes fields. Records with no latitude and longitude are not displayed in GIS, but are displayed in this table. For example, a search for 'oxa' 'pes'

Enables the user to search for all records containing a search term in the Locality field. This is a fairly slow search. The following shows records matching 'abels'.
Enables the user to search for all records containing a collector by surname. This is a fairly slow search. The following shows records matching 'powrie'.

Enables the user to search for all records containing a collector by surname to see where the collector may have been at a given period. The following shows records matching 'powrie' and records sorted by year, month, day, collector.

Enables the user to check the accuracy of names typed in TaxList.txt, and fix errors as needed.
Creating grid lines for maps.

Enables the user to capture additional distributions data in the table PersonalDistributionsForArcView. These will then be included in future searches for distributions data.

Upon closing the database using this button you will be prompted to send your species distributions data to SANBI to be added to the SABIF (The South African Biodiversity Information Facility) database that feeds into GBIF (Global Biodiversity Information Facility). It is important to verify the correct species names and localities, although these will be checked for quality control before being incorporated into the SABIF dataset.

Databases for personal location data

From within ArcView you can Open a database for personal place names or named GPS points that are not in the SANBI Gazetteer. You are also give the option to send information that you add to SANBI to be added to the SANBI Gazetteer.

You need to edit the batch file that opens the database to make sure that it works on your computer. Open the file and insert or remove ‘Rem’ at the start of lines as needed for your computer.

C:\SANBI\SANBI\DistrnDatabases\OpenPersonalDistributionsDatabase.bat
The instructions differ depending on which version of Windows and MS Office you have running.

You can search for places starting with a search string, containing a search string (slower option), and other search functions.

You can add your personal place names data.
Upon closing the database using the Exit button the user is prompted to add his/her place names to the local copy of the SANBI Gazetteer so that they will be included in future searches.

The user can also send new place names data to SANBI to be added to the SANBI Gazetteer. This is of great value so that others can benefit from place names located by the user that are not in the Gazetteer. Selecting the option to send the information, an e-mail is prepared with an attachment containing place names data in an Excel spreadsheet.

When capturing a place located onscreen using ArcView 3.x and the **Toggle Themes** extension, the tool returns latitude and longitude to paste into block 2. Coordinates from ArcGIS, Google Maps, etc can also be pasted into a block to populate fields in the form. Upon exiting the block, the pasted information will be translated to Latitude, Longitude and quarter degree grid reference.

Describe the source of the place name information (e.g. Digitised off 250k topographical maps).

Select the province using the list to the right (normally a single province per quarter degree grid).

Select the Source of the location, as well as the kind of feature that describes the location.

Give whatever information in the Notes field as will be useful to other users.

If pasting Latitude and Longitude from Google Earth or other source into individual fields, the user can double-click in the Grid Reference field and the quarter degree grid reference will be calculated.

The ID and Link fields are used in the database, so should not be altered.
Table of menu items, buttons, tools, and shortcut keys used in extensions

The following is a list of shortcuts that are intended to work - many do, but some don’t work as expected. Feedback will be useful in improving them. It is a challenge keeping the list and documentation up-to-date with changes to the extensions.

<table>
<thead>
<tr>
<th>Menu &amp; extension</th>
<th>View Function</th>
<th>View keystroke</th>
<th>View shortcut</th>
<th>Table Function</th>
<th>Table keystroke</th>
<th>Table shortcut</th>
</tr>
</thead>
<tbody>
<tr>
<td>SANBI utilities</td>
<td>Search by collector</td>
<td>Ctrl+B</td>
<td>Alt-B-B</td>
<td>Search by collector</td>
<td>Ctrl+B</td>
<td>Alt-B-B</td>
</tr>
<tr>
<td>– Distributions</td>
<td>Search by binomial</td>
<td>Ctrl+D</td>
<td>Alt-B-S</td>
<td>Search by binomial</td>
<td>Ctrl+D</td>
<td>Alt-B-S</td>
</tr>
<tr>
<td>– Distributions</td>
<td>Search by genus</td>
<td>Ctrl+G</td>
<td>Alt-B-E</td>
<td>Search by genus</td>
<td>Ctrl+G</td>
<td>Alt-B-E</td>
</tr>
<tr>
<td>– Distributions</td>
<td>Open database of taxa, life forms etc.,</td>
<td></td>
<td></td>
<td>Open database of taxa, life forms etc.,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>– Distributions</td>
<td>Search by gridref</td>
<td>Ctrl+R</td>
<td>Alt-B-I</td>
<td>Search by gridref</td>
<td>Ctrl+R</td>
<td>Alt-B-I</td>
</tr>
<tr>
<td>– Distributions</td>
<td>Search by family</td>
<td>Ctrl+Y</td>
<td>Alt-B-Y</td>
<td>Search by family</td>
<td>Ctrl+Y</td>
<td>Alt-B-Y</td>
</tr>
<tr>
<td>– Distributions</td>
<td>Distributions for a list of binomials</td>
<td></td>
<td>Alt-B-H</td>
<td></td>
<td>Alt-B-H</td>
<td></td>
</tr>
<tr>
<td>– Distributions</td>
<td>Open folder containing distribution and place shapefiles</td>
<td></td>
<td></td>
<td>Open folder containing distribution and place shapefiles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>– Gazetteer</td>
<td>Search the gazetteer for a place name</td>
<td>Ctrl+W</td>
<td>Alt-B-Z</td>
<td>Search the gazetteer for a place name</td>
<td>Ctrl+W</td>
<td>Alt-B-Z</td>
</tr>
<tr>
<td>– Gazetteer</td>
<td>Gazetteer from original legend to source legend</td>
<td></td>
<td>Alt-B-G</td>
<td></td>
<td>Alt-B-G</td>
<td></td>
</tr>
<tr>
<td>– Gazetteer</td>
<td>Gazetteer from source legend to original legend</td>
<td></td>
<td>Alt-B-O</td>
<td></td>
<td>Alt-B-O</td>
<td></td>
</tr>
<tr>
<td>Toggle</td>
<td>Toggle EarthSat</td>
<td>Ctrl+F7</td>
<td>Alt-L-E</td>
<td>Toggle EarthSat</td>
<td>Ctrl+F7</td>
<td>Alt-L-E</td>
</tr>
<tr>
<td>Toggle</td>
<td>Toggle and activate VEGMAP</td>
<td>Ctrl+F8</td>
<td>Alt-L-V</td>
<td>Toggle and activate VEGMAP</td>
<td>Ctrl+F8</td>
<td>Alt-L-V</td>
</tr>
<tr>
<td>Toggle</td>
<td>Zooms to the full extent of South Africa</td>
<td>F2</td>
<td>Alt-L-X</td>
<td>Zoom to full extent of South Africa</td>
<td>F2</td>
<td>Alt-L-X</td>
</tr>
<tr>
<td>Toggle</td>
<td>Zoom to 30k for EarthSat</td>
<td>F3</td>
<td>Alt-L-3</td>
<td>Zoom to 30k for EarthSat</td>
<td>F3</td>
<td>Alt-L-3</td>
</tr>
<tr>
<td>Toggle</td>
<td>Zoom to 50k</td>
<td>F5</td>
<td>Alt-L-K</td>
<td>Zoom to 50k</td>
<td>F5</td>
<td>Alt-L-K</td>
</tr>
<tr>
<td>Toggle</td>
<td>Zoom to 250k</td>
<td>F6</td>
<td>Alt-L-Z</td>
<td>Zoom to 250k</td>
<td>F6</td>
<td>Alt-L-Z</td>
</tr>
<tr>
<td>Toggle</td>
<td>Zoom to 500k</td>
<td>F7</td>
<td>Alt-L-H</td>
<td>Zoom to 500k</td>
<td>F7</td>
<td>Alt-L-H</td>
</tr>
<tr>
<td>Toggle</td>
<td>Zoom to 1 000 000</td>
<td>F8</td>
<td>Alt-L-M</td>
<td>Zoom to 1 000 000</td>
<td>F8</td>
<td>Alt-L-M</td>
</tr>
<tr>
<td>Toggle</td>
<td>Zoom to 10k for SPOT</td>
<td>F9</td>
<td>Alt-L-1</td>
<td>Zoom to 10k for SPOT</td>
<td>F9</td>
<td>Alt-L-1</td>
</tr>
<tr>
<td>Menu &amp; extension</td>
<td>View Function</td>
<td>View keystroke</td>
<td>View shortcut</td>
<td>Table Function</td>
<td>Table keystroke</td>
<td>Table shortcut</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------</td>
<td>----------------</td>
<td>---------------</td>
<td>----------------</td>
<td>----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Toggle</td>
<td>Toggle display of political borders</td>
<td>Shift+F2</td>
<td>Alt-L-B</td>
<td>Toggle borders</td>
<td>Shift+F2</td>
<td>Alt-L-B</td>
</tr>
<tr>
<td>Toggle</td>
<td>Toggle topo data</td>
<td>Shift+F3</td>
<td>Alt-L-T</td>
<td>Toggle topo data</td>
<td>Shift+F3</td>
<td>Alt-L-T</td>
</tr>
<tr>
<td>Toggle</td>
<td>Toggle 50k</td>
<td>Shift+F5</td>
<td>Alt-L-5</td>
<td>Toggle 50k</td>
<td>Shift+F5</td>
<td>Alt-L-5</td>
</tr>
<tr>
<td>Toggle</td>
<td>Toggle 250k</td>
<td>Shift+F6</td>
<td>Alt-L-2</td>
<td>Toggle 250k</td>
<td>Shift+F6</td>
<td>Alt-L-2</td>
</tr>
<tr>
<td>Toggle</td>
<td>Toggle VEGMAP</td>
<td>Shift+F8</td>
<td>Alt-L-D</td>
<td>Toggle VEGMAP</td>
<td>Shift+F8</td>
<td>Alt-L-D</td>
</tr>
<tr>
<td>Toggle</td>
<td>Toggle SPOT</td>
<td>Shift+F9</td>
<td>Alt-L-S</td>
<td>Toggle SPOT</td>
<td>Shift+F9</td>
<td>Alt-L-S</td>
</tr>
<tr>
<td>Toggle</td>
<td>One-click tool. Click on a position in the view to get Lat &amp; Long coordinates to paste directly into two fields, or write a message when prompted, then use the information from the text file</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toggle</td>
<td>Lists the attributes for a feature, writes to file C:SANBI\SANBIDistrnDatabases\identify.txt</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zoom</td>
<td>Print specified layout to specified printer.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zoom</td>
<td>Zoom tight to selected</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zoom</td>
<td>Zoom to Selected, scale 1 to the selected features of the active theme in the current view.</td>
<td>Ctrl+F9</td>
<td></td>
<td></td>
<td>Ctrl+F9</td>
<td>Alt-P-t</td>
</tr>
<tr>
<td>Zoom</td>
<td>Zoom to Selected, scale 15 to the selected features of the active theme in the current view.</td>
<td>Ctrl+F11</td>
<td></td>
<td></td>
<td>Ctrl+F11</td>
<td>Alt-P-1</td>
</tr>
<tr>
<td>Zoom</td>
<td>Pan to coordinates specified by the user.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zoom</td>
<td>Zoom out (in view vSANBI)</td>
<td></td>
<td></td>
<td></td>
<td>Alt-P-z</td>
<td></td>
</tr>
<tr>
<td>Zoom</td>
<td>Zoom in (in view vSANBI)</td>
<td></td>
<td></td>
<td></td>
<td>Alt-P-i</td>
<td></td>
</tr>
<tr>
<td>Zoom</td>
<td>Zoom to previous extent (in view vSANBI)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Menu &amp; extension</td>
<td>View Function</td>
<td>View keystroke</td>
<td>View shortcut</td>
<td>Table Function</td>
<td>Table keystroke</td>
<td>Table shortcut</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------</td>
<td>----------------</td>
<td>---------------</td>
<td>----------------</td>
<td>----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Clip</td>
<td>Clip any line or polygon theme on polygon theme. If there are problems, work in a view with only the two themes loaded.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clip</td>
<td>Split a polygon theme using a line graphic or theme. If there are problems, work in a view with only the two themes loaded.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hide/Show</td>
<td>Toggle display of themes ending with 'isplay'.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hide/Show</td>
<td>Find, activate and display a theme in the TOC</td>
<td>Ctrl+J</td>
<td>Alt-P-f</td>
<td>Find and display theme</td>
<td>Ctrl+J</td>
<td></td>
</tr>
<tr>
<td>Hide/Show</td>
<td>Add GENERATE theme</td>
<td>Alt-P-E</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hide/Show</td>
<td>Export GENERATE theme</td>
<td>Alt-P-T</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hide/Show</td>
<td>Legend text for Label. Use this to use different field (than the Value field) in the attribute table for Labels in the legend.</td>
<td>Alt-P-d</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hide/Show</td>
<td>Make all themes active.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hide/Show</td>
<td>Make grid themes active.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hide/Show</td>
<td>Toggle active themes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hide/Show</td>
<td>Toggle display of themes</td>
<td></td>
<td>Alt-P-D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hide/Show</td>
<td>Toggle display of image themes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Table</td>
<td>Add area and perimeter to FTab - theme must be in a projected view</td>
<td>Alt-P-A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Table</td>
<td>Add latitude and longitude fields and data to FTab</td>
<td>Alt-P-C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Table</td>
<td>Adds an ID field to the theme table. User can change the default field name</td>
<td>Alt-P-H</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Print/export</td>
<td>Export view to GeoJPEG.</td>
<td>Alt-P-G</td>
<td></td>
<td>Export view vSANBI to GeoJPEG.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Print/export</td>
<td>Export graphic file of a layout. Prompt given for a file name, resolution, output path, etc..</td>
<td></td>
<td></td>
<td>Export Layout as 300dpi JPEG.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Print/export</td>
<td>Quick export of 144dpi JPEG file.</td>
<td></td>
<td></td>
<td></td>
<td>144dpi JPEG file</td>
<td></td>
</tr>
<tr>
<td>Print/export</td>
<td>Export Layouts 'LViewOnly' and 'LLegend' as 300dpi JPEG image files. Useful for pasting in PowerPoint.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Print/export</td>
<td>Export image files of view, prompts for filename</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Print/export</td>
<td>Export image files of layout, prompts for filename</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Extensions from other sources that I find particularly useful

There are some extensions that I have downloaded for use, or for assisting in writing scripts for solving my own problems. Visit [http://arcscripts.esri.com/](http://arcscripts.esri.com/), enter Avenue as the language, ArcView GIS as the application, and a search term, then see what other users have put there. For example, entering 'legend cmyk' I found 'Create Legend from RGB, HSV or CMYK colors (Version 1.6)' written for ArcView GIS using Avenue by Johannes Weigel in Jun 14 2005, download number 3669.

Easy click features for working with themes (EZ-Click from ESRI site)

_z_0_ezclick-3_2.avx

Quickly select, sort, move, and turn on/off themes in the TOC. Finally, take control of your themes in the Table of Contents (TOC). First, select a range of themes quickly without having to shift-click each theme. Then move the active themes anywhere in your TOC without having to drag each one up or down the list. Alphabetically sort active themes or sort all the themes by theme type. Launch Windows Explorer to the location of the active theme.

Selection from their ReadMe.txt

"Powerful & easy to use -- the tools every ArcView user needs to get point-and-click access to GIS data."

Visit GeoGlimpse.com for additional information.

Make shapefile indexes of all your GIS data. EZClick Tools traverses up and down through multiple folders and creates a shapefile index out of your georeferenced images, your ArcView Shapefiles, Microstation (DGN) and AutoCAD (DWG) files, and all your Arc/Info Coverages and GRIDs. Once you tell EZClick Tools what kind of data you want indexed, it automatically searches through only the folders you want it to, from the folder or drive you specify.

Click on the view to interactively add your GIS data. Once you have created the index shapefile, use the EZClick Tool to click or draw a box on the view. A dialog box shows you all the GIS data categories you have existing at that location. Select the data you would like displayed, and your GIS data is automatically loaded into the view. No longer do you have to repeatedly navigate folders to view your data in ArcView. Interactively remove GIS data from your view by holding down the Ctrl key while clicking or drawing the box.

Create image catalogs in record time. While indexing georeferenced images or grids, you also have the choice of simultaneously creating an image catalog. EZClick Tools is without a doubt the fastest and easiest method for creating image catalogs from thousands of images buried inside hundreds of folders. These image catalogs are also compatible with ArcGIS 8.1 (ArcMap) software.

Quickly select, sort, move, and turn on/off themes in the TOC. Finally, take control of your themes in the Table of Contents (TOC). First, select a range of themes quickly without having to
shift-click each theme. Then move the active themes anywhere in your TOC without having to drag each one up or down the list. Alphabetically sort active themes or sort all the themes by theme type. Launch Windows Explorer to the location of the active theme.

See the coverage area of your data. Graphically display the location and extent of your GIS data to see which sections are missing, and what areas have duplicate or overlapping data coverage. Quickly identify data that is georeferenced incorrectly or projected to the wrong coordinate system. See which files are lacking locational information.

Validate your GIS data. Quickly check your data for corrupt files, incomplete files, and for datasets that don’t contain any features.

"EZClick Tools works best with tiled data -- data that has been split up into sections or map tiles. The tools are perfect for ‘clicking in’ GIS data to the view."

Supported georeferenced image formats: TIF, JPG, IMG, MrSID, BMP, BSQ, BIL, BIP, LAN, GIS, RLC, RS, RAS, SUN and ECW. EZClick supports all the same image formats that ArcView 3.x supports, including GRIDs.

Set of basic theme tools (1st Tools from ESRI site)

"1ST tools - DEMO - this extension provides group of basic tools for working with POINT, LINE or POLYGON themes. It also include numbers of other goodies that make life easier. Extension is activate with right click buttom in View GUI. Collected, written and organized by Andrej TRDIN, December 2001. V 1.8"

List of help notes in the extension.

"Add new location with input X and Y coordinate//Add new graphics to View - if point theme is editable then add point to FTAB,"
"Add or update AUTOID ( unique ) to FTAB//"
"Add X and Y coordinate to FTAB//"
"Calculate a distance matrix table from point inputs//"
"Calculate Features geometry ( Length, Perimeter and Area )//"
"Calculates the location of intersections points of two themes: polylines and/or polygon.//"
"Check for Overlaps//"
"Clean POLYGON theme//"
"Concatenate 2 fields//"
"Convert 3D shape --> 2D//"
"Convert a cluster of points to a polygon// This script creates a polygon representing the connection of the outermost points from a cluster of graphic points.Requires: The active view must have at least 3 graphic points."
"Converts a polyline theme into a point theme, where each point represents each vertex on all polylines.//"
"Converts multi-part polygons to single-part polygons//"
"Converts polygons in active theme to polylines//"
"Converts polygons in the active theme to centroid points//"
"Copy LAYOUT to New LAYOUT//"
"Copy View to New View//"
"Count legend // The theme must be classified."
"Count points being contained in polygons//
"Create arrow - flow direction in polyline.\\n"
"Creates a Flow Vector theme from a point theme with magnitude and
azimuth fields//\\n"
"Creates a theme with the cross-points from a line-theme, that is a
point theme with representing a place where more then two
polylines connect.\\n"
"Creates an SVG file from a View\\n"
"Edit features without start edit theme\\n"
"Export view to geo JPEG file\\n"
"Exports Selected Themes to DXF // Exports Selected Themes to DXF"
"Find bether//Advanced search in active theme"
"Find dangle nodes for polyline themes//Find dangle nodes for polyline
themes and create point theme with all dangle nodes."
"Flipline ( flow direction )//Reverse line directions"
"Generate center points - polyline//Active theme must be polyline"
"Identify features - format and write to textfile ( Write )\\n"
"Launch 1st Tools"
"Merge polygons if they are adjacent//The polygon theme must be
editable and least 2 polygons must be selected."
"Multipart polygons - highlights polygons which have been combined but
are not adjacent\\n"
"Pick and show coordinate\\n"
"Renumbers nodes for arc features and and update ( or create if not
exist ) values for FNODE and TNODE in the active theme. // "
"Selects arcs connected to the currently selected set// You must first
select polyline."
"Selects edit theme features and opens a MsgBox.MultiInput to edit all
fields\\n"
"Set ALL themes active //"
"Shifts features in the current active Theme in the\\ninput X and Y
distance.\\n"
"Show environment Paths\\n"
"Show nodes// Show nodes - GREEN regular, CYAN pseudo, RED dangle, BLUE
vertex"
"Sort order of TOC by type of theme\\n"
"Toggle Legend//Toggles the legend of the active theme on and off"

Named extent (from ESRI site)
namedext.avx, namedext.hdr, namedext.apr

Title: Named Extents

Topic: Views

Description: The Named Extents extension adds a new menu to specified DocGUIs that support Views. The new menu contains two choices: Add Named Extent and Delete Named Extent. You use these choices to make or remove extents you wish to keep. When you arrive at an extent that you may wish to revisit, use the Add Named Extent choice to save the extent with the name you specify. The new extent name appears in the Named Extent menu. To go to that extent, simply click on the choice labeled with the name. The named extents are saved with each individual view. If you open a new view, there will be no named extents associated with it.

When you first install this extension in a project file, you will be prompted to select the View DocGUIs to install the extension in.
Requires: This requires a View document.

**COS explode multipart shapes (from ESRI site)**

*COS_Explode_MultiPart_Shapes.avx*

Explodes MultiPart Shapes in the Theme of Your Choice.

For example, when a polygon is split by the width of a road going through it, it remains one polygon with two or more parts. This extension separates the parts and gives attribute data for the columns selected to each new feature (polygon, line, point). I typically select all fields after learning the hard way when I first used the extension.

**Setting up an ODBC driver connection**

Start | Settings | Control panel | Administrative tools | Data sources (ODBC)

![ODBC Data Source Administrator](image)

Click Add to add the driver,

![Create New Data Source](image)

Select one e.g. Microsoft Access Driver (*.mdb) and click Finish

Enter a data source name MS Access Database.
Preparing and Installing Distributions and Gazetteer extensions

Step 1
You need about 800MB on C:\ for this installation.

Copy the extension _0_SANBI_Distribtns_v11p02_CDrive.avx to the C:\ESRI\AV_GIS30\ARCVIEW\EXT32 folder on the PC

Step 2
If not already done, create folders C:\SANBI\SANBIDistrnDatabases and C:\SANBI\TempDstrbtns. This can be done by right-clicking on SANBI_Distribs_Basic.zip and extracting to c:\

This will then give folders and contents

- C:\vegm2006_cd\APPS\ArcView3Extensions
- C:\SANBI\SANBIDistrnDatabases
- C:\SANBI\TempDstrbtns
- C:\ESRI\AV_GIS30\ARCVIEW\EXT32

Alternatively, you can create these folders manually and put in the files as needed.

You now need the following databases in the C:\SANBI\SANBIDistrnDatabases folder:

- SANBI_Distribs_2000_v12.mdb
- SANBI_Distribs_Acocks_v10.mdb
- SANBI_Distribs_NVD_v10.mdb
- SANBI_Distribs.Other_v10.mdb
- SANBI_Distribs_PAP_v10.mdb
- SANBI_Distribs.Personal_Table.mdb
- SANBI_Distribs.Personal_v10.mdb
- SANBI_Distribs_PRECIS_v10.mdb
- SANBI_Distribs_SAPIA_v10.mdb
- SANBI_Distribs.TempDistribTable.mdb
- SANBI_Distribs_TSP_v10.mdb
- SANBI_Distribs_Utilities.mdb
- SANBI_sp_distrib_metadata.pdf
- SANBI_sp_distrib_metadata.prj
- SANBI_sp_distrib_metadata.shp.xml

Also, various .bat files, readme.txt.
The Gazetteer uses the folders C:\SANBI\SANBIDistrnDatabases and C:\SANBI\TempDistrtns. These can be created by right-clicking on SANBI_Distribs_Basic.zip and extracting to c:\

The following MSAccess databases are required

- SANBI_Gazetteer_v5.mdb
- SANBI_Gazetteer_Personal_v5.mdb
- SANBI_Gazetteer_Utilities_v5.mdb
- SANBI_GazetteerTables_Personal_v5.mdb

And other files are required.

- Batch file C:\SANBI\SANBIDistrnDatabases\delGZTR.bat
- Metadata files C:\SANBI\SANBIDistrnDatabases\SANBI_Gazetteer.shp.xml and C:\SANBI\SANBIDistrnDatabases\SANBI_Gazetteer_metadata.pdf
- Projection file C:\SANBI\SANBIDistrnDatabases\SpeciesDistributionMetadata.prj

There is a sample project _LWP_default_dist&gaz_h.UseExtensions.apr

A view vSANBI is required, with at least one feature theme in it for the extension/s to work properly.

**Step 3**

In an ArcView project, add the extension _0_SANBI_Distribtns_v11p06.avx (or current version number).

**Step 4**

To do a search for a species distribution, Ctrl-D, click the D button, or select the menu item SANBI distributions – search for a binomial
To do a search for a place name use **Ctrl-W**, click the **G** button, or select the menu item **SANBI Gazetteer**.

### Step 5
Test that you can open the distributions and gazetteer utilities databases.

You may need to edit the batch files that open the databases to make sure that they work on your computer. Open each batch file and insert or remove ‘Rem’ at the start of lines as needed for your computer.

```
c:\SANBI\SANBIDistrnDatabases\OpenSANBIDistributionsDatabase.bat

```
c:\SANBI\SANBIDistrnDatabases\OpenPersonalGazetteerDatabase.bat

The instructions vary depending on which version of Windows and MS Office you have running on your computer.

That should be it.

---

**Les Powrie**

*with comments from Fhatani Ramwashe*

12 Oct 2015

021-799-8703

l.powrie@sanbi.org.za