GeoSAMS GUI

Thomas Callaghan
Version 0.1

Contents

GeoSAMS GUI i
Thomas Callaghan i
Version 0.1 i
1 GeoSAMS GUI 1
1.1 SHOW Args 1
1.2 START Sim 1
1.3 SAVE ALL Configs 1
1.4 Year in file names 1
2 Math Setup Frame 3
2.1 Radio Button 3
2.2 Write Startup File 3
3 Set Fishing Mortality in Special Access Areas 4
3.1 Number Defined 4
3.2 Load and Save Fishing Mortality Files 4
3.3 Area SubFrames 4
3.3.1 Year Definitions 4
3.3.2 Corners, or Fields of Defined Mortalities by Area 4
4 Growth Frame 5
4.1 Mortality 5
4.1.1 Fishing Mortality 5
4.1.2 Alpha Mortality 5
4.1.3 Adult Mortality 5
4.1.4 Computing Alpha 5
4.1.5 Computing Natural Mortality 5
4.2 Selectivity 6
4.3 Incidental 6
4.4 Discard 6
4.5 Overall Mortality, M 6
4.6 Computing Landings Per Unit Effort, LPUE 6
5 Main 8
5.1 Growth subframe that identifies 8
5.2 Recuitment 8
5.3 Configuration Files 8
5.4 Output Selection 8
6 Sort By Area Frame 9
6.1 Number of Areas 9
6.2 Output Parameters 9
6.3 Load and Save Data Sort Files 9
6.4 Run Sort 9
6.5 Area SubFrames 9
6.5.1 YYYY 9
6.5.2 Comment 9
6.5.3 # Corners 9
6.5.4 Corner N 9
7 Sort By Region Frame 11
7.1 Output Parameters 11
7.2 Run Sort 11
8 Special Access Area 12
8.1 Number of Areas 12
8.2 Special Access File 12
8.3 Area Definitions 12
8.3.1 Area N 12
8.3.2 Corners: 12
8.3.3 Corner N 12

9 Namespace Index 13
9.1 Package List 13
10 Hierarchical Index 14
10.1 Class Hierarchy 14
11 Class Index 16
11.1 Class List 16
12 File Index 17
12.1 File List 17
13 Namespace Documentation 18
13.1 AreaManager Namespace Reference 18
13.1.1 Classes 18
13.2 EditMathSetupFrame Namespace Reference 19
13.2.1 Classes 19
13.3 FishMortBySpecAcc Namespace Reference 20
13.3.1 Classes 20
13.4 GeoSams Namespace Reference 21
13.4.1 Classes 21
13.4.2 Functions 21
13.4.3 Function Documentation 21
13.5 Globals Namespace Reference 22
13.5.1 Functions 22
13.5.2 Variables 22
13.5.3 Function Documentation 22
13.5.4 Variable Documentation 24
13.6 GrowthFrame Namespace Reference 26
13.6.1 Classes 26
13.7 MainInputFrame Namespace Reference 27
13.7.1 Classes 27
13.8 PointInPolygon Namespace Reference 28
13.8.1 Functions 28
13.8.2 Function Documentation 28
13.9 shapefile Namespace Reference 29
13.9.1 Classes 29
13.9.2 Functions 29
13.9.3 Variables 29
13.9.4 Detailed Description 30
13.9.5 Function Documentation 30
13.9.6 Variable Documentation 32
13.10 ShapeTest Namespace Reference 34
13.10.1 Classes 34
13.10.2 class GeoShapeVariables 34
13.10.3 Variable Documentation 35
13.11 SortByAreaFrame Namespace Reference 36
13.11.1 Classes 36
13.12 SortByRegionFrame Namespace Reference 37
13.12.1 Classes 37
13.13 SortIntoColumns Namespace Reference 38
13.13.1 Classes 38
13.13.2 Variables 38
13.13.3 Variable Documentation 39
13.14 SpecialAreaFrame Namespace Reference 41
13.14.1 Classes 41
13.15 Widgets Namespace Reference 42
13.15.1 Classes 42
13.15.2 Functions 42
13.15.3 Function Documentation 42

14 Class Documentation 43
14.1 shapefile._Array Class Reference 43
14.1.1 Public Member Functions........ 43
14.1.2 Detailed Description........ 43
14.1.3 Member Function Documentation 43
14.2 shapefile._Record Class Reference 44
14.2.1 Public Member Functions........ 44
14.2.2 Private Attributes 44
14.2.3 Detailed Description........ 45
14.2.4 Constructor & Destructor Documentation........ 45
14.2.5 Member Function Documentation 45
14.2.6 Member Data Documentation........ 46
14.3 AreaManager.AreaManager Class Reference 47
14.3.1 Public Member Functions........ 47
14.3.2 Public Attributes 47
14.3.3 Detailed Description........ 48
14.3.4 Constructor & Destructor Documentation........ 48
14.3.5 Member Function Documentation 48
14.3.6 Member Data Documentation........ 49
14.4 AreaManager.AreaMgrSubFrame Class Reference 50
14.4.1 Public Member Functions........ 50
14.4.2 Public Attributes 51
14.4.3 Constructor & Destructor Documentation........ 51
14.4.4 Member Function Documentation 51
14.4.5 Member Data Documentation........ 52
14.5 SortIntoColumns.Column Class Reference 53
14.5.1 Public Member Functions........ 53
14.5.2 Public Attributes 53
14.5.3 Constructor & Destructor Documentation........ 53
14.5.4 Member Data Documentation........ 53
14.6 AreaManager.Corner Class Reference 54
14.6.1 Public Member Functions........ 54
14.6.2 Public Attributes 54
14.6.3 Detailed Description........ 54
14.6.4 Constructor & Destructor Documentation........ 54
14.6.5 Member Data Documentation........ 54
14.7 EditMathSetupFrame.EditMathSetup Class Reference 55
14.7.1 Public Member Functions........ 55
14.7.2 Public Attributes 56
14.7.3 Detailed Description........ 56
14.7.4 Constructor & Destructor Documentation........ 56
14.7.5 Member Function Documentation 56
14.7.6 Member Data Documentation........ 57
14.8 FishMortBySpecAcc.FishMortBySpecAcc Class Reference 58
14.8.1 Public Member Functions........ 58
14.8.2 Public Attributes 59
14.8.3 Detailed Description........ 59
14.8.4 Constructor & Destructor Documentation........ 59
14.8.5 Member Function Documentation 60
14.8.6 Member Data Documentation........ 61
14.9 ShapeTest.GeoShape Class Reference 62
14.9.1 Public Member Functions........ 62
14.9.2 Public Attributes 62
14.9.3 Constructor & Destructor Documentation........ 62
14.9.4 Member Data Documentation........ 62
14.10 SortByRegionFrame.GeoShape Class Reference........ 63

14.10.1 Public Member Functions ... 63
14.10.2 Public Attributes ... 63
14.10.3 Detailed Description ... 63
14.10.4 Constructor & Destructor Documentation ... 63
14.10.5 Member Data Documentation ... 63
14.11 SortIntoColumns.GeoShape Class Reference ... 64
14.11.1 Public Member Functions ... 64
14.11.2 Public Attributes ... 64
14.11.3 Constructor & Destructor Documentation ... 64
14.11.4 Member Data Documentation ... 64
14.12 GrowthFrame.Growth Class Reference ... 65
14.12.1 Public Member Functions ... 67
14.12.2 Public Attributes ... 68
14.12.3 Detailed Description ... 70
14.12.4 Constructor & Destructor Documentation ... 70
14.12.5 Member Function Documentation ... 70
14.12.6 Member Data Documentation ... 71
14.13 GeoSams.MainApplication Class Reference ... 74
14.13.1 Public Member Functions ... 76
14.13.2 Public Attributes ... 77
14.13.3 Detailed Description ... 77
14.13.4 Constructor & Destructor Documentation ... 77
14.13.5 Member Function Documentation ... 78
14.13.6 Member Data Documentation ... 81
14.14 MainInputFrame.MainInput Class Reference ... 83
14.14.1 Public Member Functions ... 84
14.14.2 Public Attributes ... 85
14.14.3 Detailed Description ... 86
14.14.4 Constructor & Destructor Documentation ... 87
14.14.5 Member Function Documentation ... 87
14.14.6 Member Data Documentation ... 89
14.15 shapefile.Reader Class Reference ... 92
14.15.1 Public Member Functions ... 94
14.15.2 Public Attributes ... 94
14.15.3 Protected Attributes ... 94
14.15.4 Private Member Functions ... 94
14.15.5 Private Attributes ... 95
14.15.6 Detailed Description ... 95
14.15.7 Constructor & Destructor Documentation ... 95
14.15.8 Member Function Documentation ... 95
14.15.9 Member Data Documentation ... 100
14.16 Widgets.ScrollFrame Class Reference ... 102
14.16.1 Public Member Functions ... 102
14.16.2 Public Attributes ... 103
14.16.3 Detailed Description ... 103
14.16.4 Constructor & Destructor Documentation ... 103
14.16.5 Member Function Documentation ... 103
14.16.6 Member Data Documentation ... 104
14.17 shapefile.Shape Class Reference ... 105
14.17.1 Public Member Functions ... 105
14.17.2 Public Attributes ... 105
14.17.3 Static Protected Member Functions ... 105
14.17.4 Protected Attributes ... 106
14.17.5 _errorsPrivate Attributes ... 106
14.17.6 Constructor & Destructor Documentation ... 106
14.17.7 Member Function Documentation ... 106

14.17.8 Member Data Documentation 107
14.18 shapefile.ShapefileException Class Reference 108
14.18.1 Detailed Description 108
14.19 shapefile.ShapeRecord Class Reference 109
14.19.1 Public Member Functions 109
14.19.2 Public Attributes 109
14.19.3 Detailed Description 109
14.19.4 Constructor & Destructor Documentation 109
14.19.5 Member Function Documentation 109
14.19.6 Member Data Documentation 110
14.20 shapefile.ShapeRecords Class Reference 111
14.20.1 Public Member Functions 111
14.20.2 Detailed Description 111
14.20.3 Member Function Documentation 111
14.21 shapefile.Shapes Class Reference 112
14.21.1 Public Member Functions 112
14.21.2 Detailed Description 112
14.21.3 Member Function Documentation 112
14.22 SortByAreaFrame.SortByArea Class Reference 113
14.22.1 Public Member Functions 115
14.22.2 Public Attributes 115
14.22.3 Detailed Description 116
14.22.4 Constructor & Destructor Documentation 116
14.22.5 Member Function Documentation 116
14.22.6 Member Data Documentation 118
14.23 SortByRegionFrame.SortByRegion Class Reference 120
14.23.1 Public Member Functions 121
14.23.2 Public Attributes 121
14.23.3 Detailed Description 122
14.23.4 Constructor & Destructor Documentation 122
14.23.5 Member Function Documentation 122
14.23.6 Member Data Documentation 124
14.24 SpecialAreaFrame.SpecialArea Class Reference 126
14.24.1 Public Member Functions 127
14.24.2 Public Attributes 127
14.24.3 Detailed Description 127
14.24.4 Constructor & Destructor Documentation 127
14.24.5 Member Function Documentation 128
14.24.6 Member Data Documentation 129
14.25 Widgets.SubFrameElement Class Reference 130
14.25.1 Public Member Functions 130
14.25.2 Public Attributes 130
14.25.3 Detailed Description 130
14.25.4 Constructor & Destructor Documentation 130
14.25.5 Member Data Documentation 131
14.26 Widgets.SubFrameInterpFunction Class Reference 132
14.26.1 Public Member Functions 132
14.26.2 Public Attributes 132
14.26.3 Constructor & Destructor Documentation 133
14.26.4 Member Data Documentation 133
14.27 Widgets.SubFrameXY Class Reference 134
14.27.1 Public Member Functions 134
14.27.2 Public Attributes 134
14.27.3 Detailed Description 134
14.27.4 Constructor & Destructor Documentation 134
14.27.5 Member Data Documentation 135

14.28 shapefile.Writer Class Reference ... 136
14.28.1 Public Member Functions ... 138
14.28.2 Public Attributes ... 138
14.28.3 Protected Member Functions ... 138
14.28.4 Protected Attributes ... 138
14.28.5 Private Member Functions ... 139
14.28.6 Detailed Description ... 139
14.28.7 Constructor & Destructor Documentation ... 139
14.28.8 Member Function Documentation ... 139
14.28.9 Member Data Documentation ... 144
15 File Documentation ... 145
15.1 AreaManager.py File Reference ... 145
15.1.1 Classes ... 145
15.1.2 class AreaManager.AreaMgrSubFrameNamespaces ... 145
15.2 EditMathSetupFrame.py File Reference ... 146
15.2.1 Classes ... 146
15.2.2 Namespaces ... 146
15.3 FishMortBySpecAcc.py File Reference ... 147
15.3.1 Classes ... 147
15.3.2 Namespaces ... 147
15.4 GeoSams.py File Reference ... 148
15.4.1 Classes ... 148
15.4.2 Namespaces ... 148
15.4.3 Functions ... 148
15.5 Globals.py File Reference ... 149
15.5.1 Namespaces ... 149
15.5.2 Functions ... 149
15.5.3 Variables ... 149
15.6 GrowthFrame.py File Reference ... 150
15.6.1 Classes ... 150
15.6.2 Namespaces ... 150
15.7 MainInputFrame.py File Reference ... 151
15.7.1 Classes ... 151
15.7.2 Namespaces ... 151
15.8 PointInPolygon.py File Reference ... 152
15.8.1 Namespaces ... 152
15.8.2 Functions ... 152
15.9 PyshpMaster/shapefile.py File Reference ... 153
15.9.1 Classes ... 153
15.9.2 Namespaces ... 153
15.9.3 Functions ... 153
15.9.4 Variables ... 153
15.10 ShapeTest.py File Reference ... 155
15.10.1 Classes ... 155
15.10.2 class ShapeTest.GeoShapeNamespaces ... 155
15.10.3 Variables ... 155
15.11 SortByAreaFrame.py File Reference ... 156
15.11.1 Classes ... 156
15.11.2 Namespaces ... 156
15.12 SortByRegionFrame.py File Reference ... 157
15.12.1 Classes ... 157
15.12.2 Namespaces ... 157
15.13 SortIntoColumns.py File Reference ... 158
15.13.1 Classes ... 158
15.13.2 Namespaces ... 158
15.13.3 Variables ... 158

15.14 SpecialAreaFrame.py File Reference 159
15.14.1 Classes 159
15.14.2 Namespaces 159
15.15 Widgets.py File Reference 160
15.15.1 Classes 160
15.15.2 Namespaces 160
15.15.3 Functions 160
16 Index 161

1 GeoSAMS GUI

This is the main program for the GeoSAMS GUI

The GUI has 7 tabs

1. **Math Setup** : This frame allows the user to modify the Matlab/Octave startup files.
2. **Main** : Data concerning simulation duration, configutation files in use, and recruitment period
3. **Growth** : Define parameters to compute fishing mortality
4. **Special Access** : Files used to define special areas for fishing management
5. **Fishing Mort in Special Access** : This frame in conjunction with the Special Access Frame is used to define fishing mortalities within a defined area for a specified year. If a location falls within the defined area given by the area defintions in Special Access Frame and assigned the area number.
6. **Sort By Area** : Parameters that are used to sort output data and associate with areas of interest
7. **Sort By Region** : Parameters that are used to sort output data and associate with zones defined by shapefiles

The program is started by entering the following command in the root directory of the workspace
$ python .\PythonScripts\GUI\GeoSAM\GeoSams.py [10 8]

Where the last two number are optional and used to set limits on:

The maximum number of areas of interest that can be defined.
The maximum number of nodes used to specify each area of interest.

When commanded without these values the GUI defaults to 50 and 8. These values can be viewed by clicking the **SHOW Args** Button

1.1 SHOW Args

As already mention this button is used to show the setup parameters that the GUI is using for maximum number of areas, nodes, and years

1.2 START Sim

This button will start both the GeoSAMS sim and if succsessful continue with the UK interpolation. It does so by first saving the data contained in the other tabs of the GUI to configuraton files specified on this page. It will overwrite the files named if they already exist.

NOTE: The file names listed are part of the package installed when downloaded from GitHub. The user may change these names to preserve the original files. Or reinstall from GitHub to restore the original data.

1.3 SAVE ALL Configs

This is the first step in ***START Sim*** . This button will save all of the configuration files using the names given.

1.4 Year in file names

GUI specifies 2022 to 2025

X_Y_BIOM_2022_DN Initial state as of June 1, 2022 @ 00:00, i.e. May 31, 2022 @ 24:00
X_Y_BIOM_2023_DN Growth state as of May 31, 2023 @ 24:00, results for 1st year growth
X_Y_BIOM_2024_DN Growth state as of May 31, 2024 @ 24:00, results for 2nd year growth

X_Y_BIOM_2025_DN Growth state as of May 31, 2025 @ 24:00, results for 3rd year growth
X_Y_BIOM_2026_DN Growth state as of May 31, 2026 @ 24:00, results for 4th year growth

2 Math Setup Frame

Matlab should not need any modification as these are the installed directories.

The user should not need to run any Matlab scripts as these are called from the GUI.

Octave on the other hand does require some setup. The user will need to install the desired packages from `https://gnu-octave.github.io/packages/`

- io
- geometry
- mapping
- statistics

2.1 Radio Button

The user then needs to modify .octaverc to point to where these are installed. Click the Octave radio button and edit the text box to reflect your environment. Then click Write Startup File.

2.2 Write Startup File

When ready, click Write Startup File to save the content to the appropriate startup file

startup.m
.octaverc

Note 1: on a Unix/MacOS platform it is assumed that Matlab is not installed. The script Unpack.sh renames startup.m to startup.xxx so it is not taken for .octaverc

Note 2: If data intialization files have not yet been created, Upack.sh is called to do so.

3 Set Fishing Mortality in Special Access Areas

Assists the user in defining areas of interest to assess accumulated parameters located in these areas of interest.

3.1 Number Defined

The number of defined areas as determined by the user. This is limited by Max Areas of Interest. See SHOW Args button for current values.

The Number Defined is limited by default to 25. See SHOW Args for current values. The user can modify this on the command line:

```
.\PythonScripts\GUI\GeoSAM\GeoSams.py Areas Nodes
```

Default:

```
.\PythonScripts\GUI\GeoSAM\GeoSams.py 25 8
```

3.2 Load and Save Fishing Mortality Files

The name of the file used to hold this information. The user can load the default file 'FishingMortality.csv' or save their own configuration.

If this feature is not desired then enter NONE in the window

Use Load Fishing Mort File to load a predefined set of data

Use Save Fishing Mort File to save the currently displayed setting

3.3 Area SubFrames

Comment: Optional. Enter a comment to describe the area being specfied.

3.3.1 Year Definitions

The year for which Area N is valid

3.3.2 Corners, or Fields of Defined Mortalities by Area

3.3.2.1 Number of Corners

Corners: Specifically, the number of Fields for the year given. This is limited by Max Nodes in Area. See SHOW Args for current values. This can be changed on the command line. See above

3.3.2.2 Field Identifier by Special Area and Mortality

These are the area numbers as determined in Special Access Frame. Enter the area number and its Mortality.

4 Growth Frame

Allows the user to modify parameters that are used to define mortality computations.

4.1 Mortality

4.1.1 Fishing Mortality

This is the default fishing mortality in lieu of any other definition

4.1.2 Alpha Mortality

So for open areas, an overall fishing mortality F_{avg} would be specified and then F at each location would be computed so that:

1. The weighted average (by exploitable numbers), F, over all locations is equal to F_{avg} and
2. F at each location is proportional to $LPUE^{alpha_{mort}}$.

This would also apply to special access areas, but each one would have their own specified F, and the average would only be for those points within that access area.

$$f_{avg} = \frac{\vec{scallops}_{num} \cdot \vec{F}_{mort_{raw}}}{sum(scallops_{num})}$$

4.1.3 Adult Mortality

Table 1 Mortality

	Adult	Length$_0$
MA	**0.25**	**65.0**
GB	**0.2**	**70.0**

4.1.4 Computing Alpha

Alpha is based on the lengths of the shell normalized by length$_0$

$$\vec{alpha} = 1 - \frac{1}{1 + exp\left(-(\vec{length}_{shell} - length_0)/10\right))}$$

4.1.5 Computing Natural Mortality

Then natural mortality is computed from juvenile natural mortality and adult natural mortality as

$$\vec{mort}_{nat} = \vec{alpha} * mort_{nat_{juv}} + \left(1 - \vec{alpha}\right) * mort_{nat_{adult}}$$

4.2 Selectivity

These parameters are used to compute the scallop selectivity as a function of its length. MA and GB have respective values for each term. GB will also distinguish between open and closed areas.

$selectivity = 1/(1 + exp(select_a - select_b * (l_{shell} + 2.5)))$

Table 2 Selectivity

	MA	GB Open	GB Closed
FSelect A	**20.5079**	**17.72**	**21.7345**
FSelect B	**0.19845**	**0.15795**	**0.2193**

4.3 Incidental

Table 3 Incidental

MA	**0.05**
GB	**0.1**

4.4 Discard

Discard determines how many scallops are thrown out of a catch. It is determined by scallop length and if the area is closed.

```
if ((length > cull_size) OR is_closed) then
    SetDiscard = 0.0
else
    SetDiscard = discard * selectivity
```

Table 4 Discard

	Cull Size	Discard
MA	**90.0**	**0.2**
GB	**100.0**	**0.2**

4.5 Overall Mortality, M

$M = natural_{mortality} + Fishing_{effort} * (selectivity + incidental + discard))$

4.6 Computing Landings Per Unit Effort, LPUE

The simulation uses the following parameters to compute LPUE

Table 5 LPUE

	Default
LPUE Slope	**0.6556**
LPUE Slope2	**2.3**
LPUE Intercept	**1094.0**
Max # of Scallops Shucked Per Day	**56000.0**
Max # of Hours Dredging Per Day	**19.0**
Dredge Width in meters	**9.144**
Towing Speed in knots	**4.8**

$$W_{expl} = \frac{EBMS}{N_{scallops}}, \text{ weight in grams}$$

$$EBMS_{tow} = EBMS * Tow_{sqm}, \text{ biomass in grams}$$

$$slope_1 = lpue_{slope} * EBMS_{tow} + lpue_{intercept}$$

$$slope_2 = LPUE_{slope_2} * EBMS_{tow}$$

$$LPUE_{limit} = max_{per_{day}} * W_{expl}/453.592$$

$$LPUE = min(slope_1, slope_2, LPUE_{limit})$$

5 Main

5.1 Growth subframe that identifies

These are the parameters used to control how long the scallop growth is simulated as well as the granularity of the growth computations

Start Year of the simulation
Stop Year of the simulation
Time Steps per year
Domain Name or region of interest, Mid-Atlantic, MA, or Georges Bannk, GB
Sort By Statum: Used when processing Georges-Bank to break the region into quadrants due to its unique shape

5.2 Recuitment

Recruitment is only applied at a certain time of the year. These values determine this period. Combo boxes are used to format the formatting of the month and day.

Start Day, calendar day of the year when recruitment influence begins.
Stop Day, calendar day of the year when reruitment influence ends

5.3 Configuration Files

Files used by the sim to set up parameters. The GUI can use the default values or change the names before starting the sim. The initial names are the default names of the files when first downloaded from GitHub. The names can be changed and the GUI sets up the simulation to use the new names.

5.4 Output Selection

Checkboxes to allow the user to select the desired parameters of interest. This is used to save processing time rather than processing everything. Especially true during interpolation as it would take over and hour to do the interpolation. For example for MA with 11631 grid locations.

Approx 2 minutes per interpolation
Given 3 years worth of data, plus initial conditions
9 listed outputs

Thus 9 x 4 x 2 or 72 minutes. GB is proportionately shorter with only 6802 grid locations.

6 Sort By Area Frame

Assists the user in defining areas of interest to assess accumulated parameters located in these areas of interest.

6.1 Number of Areas

The number of defined areas. This is limited by Max Areas of Interest. See SHOW Args button The # of Areas is limited by default to 25. See SHOW Args for current values. The user can modify this on the command line:

```
.\PythonScripts\GUI\GeoSAM\GeoSams.py Areas Nodes
```

Default (same as started with no arguments):

```
.\PythonScripts\GUI\GeoSAM\GeoSams.py 25 8
```

6.2 Output Parameters

This is a dropbox of the selected output parameters on the main tab. After a simulation and interpolation have been run, the user would select one of these output, click Run Sort, and the amount of that output in each of the defined areas is accumulated by year to the left of each area.

6.3 Load and Save Data Sort Files

These buttons allow the user to load a predefined set of areas or to save the current set to the named file.

6.4 Run Sort

This will start the program to check if a region grid value for a given year is within one of the specified area and if so accumulate the year sum with that value.

6.5 Area SubFrames

6.5.1 YYYY

For each year, from Start Year to Stop Year as given in the Main tab an entry box is provided to store the accumulated parameter for that year. These are not populated until after the Run Sort button has been clicked.

6.5.2 Comment

Optional. Enter a comment to describe the area being specfied.

6.5.3 # Corners

Also called nodes or sides. This is limited by Max Nodes in Area. See SHOW Args for current values. This can be changed on the command line. See above

6.5.4 Corner N

These are the coordinates of the area vertices. Enter the Longitude and Latitude of the vertices for the area. It is up to the user to ensure that a closed shape is defined.

7 Sort By Region Frame

Assists the user in viewing accumulated parameters located in zones defined by shapefiles.

7.1 Output Parameters

This is a dropbox of the selected output parameters on the main tab. After a simulation and interpolation have been run, the user would select one of these output, click Run Sort, and the amount of that output in each of the shapefile regions is accumulated by year.

7.2 Run Sort

This will start the program to check if a region grid value for a given year is within one of the specified area and if so accumulate the year sum with that value.

8 Special Access Area

This frame in conjunction with the FishingMort in Special Access frame is used to define fishing mortalities within a defined area for a specified year.

If a sim data point falls within a defined area given in this frame by the assigned area number. Then if the current year is the same as the year given in the FishingMort in Special Access frame and the area number is listed then the fishing mortality is specified by the Mortality value. Otherwise it is the default value which is defined in the Growth Frame as Fishing mortality #

8.1 Number of Areas

The number of areas the user wishes to define. This is limited by Max Areas of Interest. See SHOW Args button

The # of Areas is limited by default to 25. See SHOW Args. The user can modify this on the command line:

.\PythonScripts\GUI\GeoSAM\GeoSams.py #Areas #Nodes Default: python
.\PythonScripts\GUI\GeoSAM\GeoSams.py 25 8

8.2 Special Access File

The name of the file used to hold this information. The user can load the default file 'SpecialAreas.csv' or define and save their own configuration.

If this feature is not desired then enter NONE in the window

Use Load Special Area File to load a predefined set of data

Use Save Special Area File to save the currently displayed setting

8.3 Area Definitions

8.3.1 Area N

Comment: Optional. Enter a comment to describe the area being specfied.

8.3.2 Corners:

Also called nodes or sides. This is limited by Max Nodes in Area. See SHOW Args for current values. This can be changed on the command line. See above

8.3.3 Corner N

These are the coordinates of the area vertices. Enter the Longitude and Latitude of the vertices for the area. It is up to the user to ensure that a closed shape is defined.

9 Namespace Index

9.1 Package List

Here are the packages with brief descriptions (if available):

AreaManager 18

EditMathSetupFrame 19

FishMortBySpecAcc 20

GeoSams 21

Globals 22

GrowthFrame 26

MainInputFrame 27

PointInPolygon 28

shapefile 29

ShapeTest 34

SortByAreaFrame 36

SortByRegionFrame 37

SortIntoColumns 38

SpecialAreaFrame 41

Widgets 42

10 Hierarchical Index

10.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

array.array
    shapefile._Array 43

SortIntoColumns.Column 53
AreaManager.Corner 54
Exception
    shapefile.ShapefileException 108

tk.Frame
    AreaManager.AreaMgrSubFrame 50
    Widgets.ScrollFrame 102
    Widgets.SubFrameElement 130
    Widgets.SubFrameInterpFunction 132
    Widgets.SubFrameXY 134

ttk.Frame
    AreaManager.AreaManager 47
    EditMathSetupFrame.EditMathSetup 55
    FishMortBySpecAcc.FishMortBySpecAcc 58
    GrowthFrame.Growth 65
    MainInputFrame.MainInput 83
    SortByAreaFrame.SortByArea 113
    SortByRegionFrame.SortByRegion 120
    SpecialAreaFrame.SpecialArea 126

ShapeTest.GeoShape 62
SortByRegionFrame.GeoShape 63
SortIntoColumns.GeoShape 64
list
    shapefile.ShapeRecords 111
    shapefile.Shapes 112
    shapefile._Record 44

object
    shapefile.Reader 92
    shapefile.Shape 105
    shapefile.ShapeRecord 109
    shapefile.Writer 136

tk.Tk

GeoSams.MainApplication 74
    GrowthFrame.Growth 65

11 Class Index

11.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

shapefile._Array 43

shapefile._Record 44

AreaManager.AreaManager (This class is used to paint area grouped by) 47

AreaManager.AreaMgrSubFrame 50

SortIntoColumns.Column 53

AreaManager.Corner (Defines floating point data for corner defintions) 54

EditMathSetupFrame.EditMathSetup (This class allows the user to edit the Matlab/Octave setup files to fit their environment) 55

FishMortBySpecAcc.FishMortBySpecAcc (This class is used to assist the user in defining areas of interest to assess accumulated parameters located in these areas of interest) 58

ShapeTest.GeoShape 62

SortByRegionFrame.GeoShape (This class is used to define the shape of the regional data) 63

SortIntoColumns.GeoShape 64

GrowthFrame.Growth (This class allows the user to adjust parameters used in computing scallop growth) 65

GeoSams.MainApplication (This class is the parent class for the GUI) 74

MainInputFrame.MainInput (This class displays information about GeoSAMS simulation) ... 83

shapefile.Reader 92

Widgets.ScrollFrame (Scrollable Frame Class from `https://gist.github.com/mp035/9f2027c3ef9172264532fcd6262f3b01`) 102

shapefile.Shape 105

shapefile.ShapefileException 108

shapefile.ShapeRecord 109

shapefile.ShapeRecords 111

shapefile.Shapes 112

SortByAreaFrame.SortByArea (This class is used to assist the user in defining areas of interest to assess accumulated parameters located in these areas of interest) 113

SortByRegionFrame.SortByRegion (This class is used to assist the user in defining areas of interest to assess accumulated parameters located in these areas of interest) 120

SpecialAreaFrame.SpecialArea (This class is used to assist the user in defining areas of interest to assess accumulated parameters located in these areas of interest) 126

Widgets.SubFrameElement (Generic Element) 130

Widgets.SubFrameInterpFunction 132

Widgets.SubFrameXY (Widget for XY label and entery) 134

shapefile.Writer 136

12 File Index

12.1 File List

Here is a list of all files with brief descriptions:

AreaManager.py 145
EditMathSetupFrame.py 146
FishMortBySpecAcc.py 147
GeoSams.py 148
Globals.py 149
GrowthFrame.py 150
MainInputFrame.py 151
PointInPolygon.py 152
ShapeTest.py 155
SortByAreaFrame.py 156
SortByRegionFrame.py 157
SortIntoColumns.py 158
SpecialAreaFrame.py 159
Widgets.py 160
PyshpMaster/shapefile.py 153

13 Namespace Documentation

13.1 AreaManager Namespace Reference

13.1.1 Classes

class **AreaManager***This class is used to paint area grouped by.*

class **AreaMgrSubFrame**class **Corner**

Defines floating point data for corner defintions.

13.2 EditMathSetupFrame Namespace Reference

13.2.1 Classes

class **EditMathSetup***This class allows the user to edit the Matlab/Octave setup files to fit their environment.*

13.3 FishMortBySpecAcc Namespace Reference

13.3.1 Classes

class **FishMortBySpecAcc***This class is used to assist the user in defining areas of interest to assess accumulated parameters located in these areas of interest.*

13.4 GeoSams Namespace Reference

13.4.1 Classes

class **MainApplication***This class is the parent class for the GUI.*

13.4.2 Functions

ComputeResiduals (obsFile, gridFile, procID, retDict)
main ()

13.4.3 Function Documentation

13.4.3.1 GeoSams.ComputeResiduals (*obsFile*, *gridFile*, *procID*, *retDict*)

13.4.3.2 GeoSams.main ()

13.4.3.3

13.5 Globals Namespace Reference

13.5.1 Functions

DetermineUnitsScale (desiredParam)
UpdateEntry (entry, val)
ShowMessage (heading, message, type='info', timeout=2500)
This method will display the message and then go away after the default time.

13.5.2 Variables

str **analDir** = 'Analysis'
str **configDir** = 'Configuration'
str **dataDir** = 'Data'
str **gridDir** = 'Grids'
str **interCfgDir** = 'Interpolation'
str **resultsDir** = 'Results'
str **shapeFileDir** = 'Shapefiles'
str **simCfgDir** = 'Simulation'
str **specAccCfgDir** = 'SpecialAccess'
str **surveyDataDir** = 'OriginalData'
list **comboTFStr** = ['T', 'F']
list **cornerLabelArr** = ['Corner', 'Long', 'Lat ', '0.0', '0.0']
int **frameWidth** = 400
int **frameHeight** = 200
int **scrollFrameHeight** = 600
int **helpXoffset** = 700
int **helpYoffset** = 50
int **meters_per_naut_mile** = 1852
int **grid_area_sqm** = **meters_per_naut_mile****2
str **ABUN** = 'ABUN_'
str **BIOM** = 'BIOM_'
str **EBMS** = 'EBMS_'
str **FEFF** = 'FEFF_'
str **FMOR** = 'FMOR_'
str **LAND** = 'LAND_'
str **LNDW** = 'LNDW_'
str **LPUE** = 'LPUE_'
str **RECR** = 'RECR_'
int **scrollFrameWidth** = 900
str **geometryStr** = '920x725+10+10'

13.5.3 Function Documentation

13.5.3.1 Globals.DetermineUnitsScale (*desiredParam*)

13.5.3.2 Globals.ShowMessage (*heading*, *message*, *type* = `'info'`, *timeout* = `2500`)

This method will display the message and then go away after the default time.

13.5.3.3 Globals.UpdateEntry (*entry*, *val*)

13.5.4 Variable Documentation

13.5.4.1 str Globals.ABUN = 'ABUN_'

13.5.4.2 str Globals.analDir = 'Analysis'

13.5.4.3 str Globals.BIOM = 'BIOM_'

13.5.4.4 list Globals.comboTFStr = ['T', 'F']

13.5.4.5 str Globals.configDir = 'Configuration'

13.5.4.6 list Globals.cornerLabelArr = ['Corner', 'Long', 'Lat ', '0.0', '0.0']

13.5.4.7 str Globals.dataDir = 'Data'

13.5.4.8 str Globals.EBMS = 'EBMS_'

13.5.4.9 str Globals.FEFF = 'FEFF_'

13.5.4.10 str Globals.FMOR = 'FMOR_'

13.5.4.11 int Globals.frameHeight = 200

13.5.4.12 int Globals.frameWidth = 400

13.5.4.13 str Globals.geometryStr = '920x725+10+10'

13.5.4.14 int Globals.grid_area_sqm = meters_per_naut_mile**2

13.5.4.15 str Globals.gridDir = 'Grids'

13.5.4.16 int Globals.helpXoffset = 700

13.5.4.17 int Globals.helpYoffset = 50

13.5.4.18 str Globals.interCfgDir = 'Interpolation'

13.5.4.19 str Globals.LAND = 'LAND_'

13.5.4.20 str Globals.LNDW = 'LNDW_'

13.5.4.21 str Globals.LPUE = 'LPUE_'

13.5.4.22 int Globals.meters_per_naut_mile = 1852

13.5.4.23 str Globals.RECR = 'RECR_'

13.5.4.24 str Globals.resultsDir = 'Results'

13.5.4.25 int Globals.scrollFrameHeight = 600

13.5.4.26 int Globals.scrollFrameWidth = 900

13.5.4.27 str Globals.shapeFileDir = 'Shapefiles'

13.5.4.28 str Globals.simCfgDir = 'Simulation'

13.5.4.29 str Globals.specAccCfgDir = 'SpecialAccess'

13.5.4.30 str Globals.surveyDataDir = 'OriginalData'

13.5.4.31

13.6 GrowthFrame Namespace Reference

13.6.1 Classes

class **Growth***This class allows the user to adjust parameters used in computing scallop growth.*

13.7 MainInputFrame Namespace Reference

13.7.1 Classes

class **MainInput***This class displays information about GeoSAMS simulation.*

13.8 PointInPolygon Namespace Reference

13.8.1 Functions

PointInPolygon (polyX, polyY, x, y, nodes)

13.8.2 Function Documentation

13.8.2.1 PointInPolygon.PointInPolygon (*polyX*, *polyY*, *x*, *y*, *nodes*)

```
@param float polyX Array of horizontal, coordinates of corners
@param float polyY Array of vertical    coordinates of corners
@param float x horizontal coordinate of point we wish to determine if inside polygram
@param float y vertical   coordinate of point we wish to determine if inside polygram
@param int   nodes the number of corners, edges, that define the polygon
@returns true if point is inside polygram or if on vert or horiz edge,
         false if outside
         if point is on rise of falling edge then it may return true or false
```

13.8.2.2

13.9 shapefile Namespace Reference

13.9.1 Classes

class **_Array**class **_Record**
class **Reader**
class **Shape**
class **ShapefileException**
class **ShapeRecord**
class **ShapeRecords**
class **Shapes**
class **Writer**

13.9.2 Functions

b (v, encoding='utf-8', encodingErrors='strict')
u (v, encoding='utf-8', encodingErrors='strict')
is_string (v)
pathlike_obj (path)
signed_area (coords, fast=False)
is_cw (coords)
rewind (coords)
ring_bbox (coords)
bbox_overlap (bbox1, bbox2)
bbox_contains (bbox1, bbox2)
ring_contains_point (coords, p)
ring_sample (coords, ccw=False)
ring_contains_ring (coords1, coords2)
organize_polygon_rings (rings, return_errors=None)
test (**kwargs)

13.9.3 Variables

str **__version__** = "2.3.1"
logger = logging.getLogger(__name__)
bool **VERBOSE** = True
int **NULL** = 0
int **POINT** = 1
int **POLYLINE** = 3
int **POLYGON** = 5
int **MULTIPOINT** = 8
int **POINTZ** = 11
int **POLYLINEZ** = 13
int **POLYGONZ** = 15
int **MULTIPOINTZ** = 18
int **POINTM** = 21
int **POLYLINEM** = 23
int **POLYGONM** = 25
int **MULTIPOINTM** = 28
int **MULTIPATCH** = 31
dict **SHAPETYPE_LOOKUP**
int **TRIANGLE_STRIP** = 0
int **TRIANGLE_FAN** = 1
int **OUTER_RING** = 2
int **INNER_RING** = 3
int **FIRST_RING** = 4

int **RING** = 5
dict **PARTTYPE_LOOKUP**
int **PYTHON3** = 3
xrange = range
izip = zip
list **MISSING** = [None,"]
int **NODATA** = -10e38
failure_count = **test**()

13.9.4 Detailed Description

```
shapefile.py
Provides read and write support for ESRI Shapefiles.
authors: jlawhead<at>geospatialpython.com
maintainer: karim.bahgat.norway<at>gmail.com
Compatible with Python versions 2.7-3.x
```

13.9.5 Function Documentation

13.9.5.1 shapefile.b (*v*, *encoding* = `'utf-8'`, *encodingErrors* = `'strict'`)

13.9.5.2 shapefile.bbox_contains (*bbox1*, *bbox2*)

```
Tests whether bbox1 fully contains bbox2, returning a boolean
```

13.9.5.3 shapefile.bbox_overlap (*bbox1*, *bbox2*)

```
Tests whether two bounding boxes overlap, returning a boolean
```

13.9.5.4 shapefile.is_cw (*coords*)

```
Returns True if a polygon ring has clockwise orientation, determined
by a negatively signed area.
```

13.9.5.5 shapefile.is_string (*v*)

13.9.5.6 shapefile.organize_polygon_rings (*rings*, *return_errors* = `None`)

```
Organize a list of coordinate rings into one or more polygons with holes.
Returns a list of polygons, where each polygon is composed of a single exterior
ring, and one or more interior holes. If a return_errors dict is provided (optional),
any errors encountered will be added to it.

Rings must be closed, and cannot intersect each other (non-self-intersecting polygon).
Rings are determined as exteriors if they run in clockwise direction, or interior
```

```
holes if they run in counter-clockwise direction. This method is used to construct
GeoJSON (multi)polygons from the shapefile polygon shape type, which does not
explicitly store the structure of the polygons beyond exterior/interior ring
orientation.
```

13.9.5.7 shapefile.pathlike_obj (*path*)

13.9.5.8 shapefile.rewind (*coords*)

```
Returns the input coords in reversed order.
```

13.9.5.9 shapefile.ring_bbox (*coords*)

```
Calculates and returns the bounding box of a ring.
```

13.9.5.10 shapefile.ring_contains_point (*coords*, *p*)

```
Fast point-in-polygon crossings algorithm, MacMartin optimization.

Adapted from code by Eric Haynes
http://www.realtimerendering.com/resources/GraphicsGems//gemsiv/ptpoly_haines/ptinpoly
.c

Original description:
    Shoot a test ray along +X axis.  The strategy, from MacMartin, is to
    compare vertex Y values to the testing point's Y and quickly discard
    edges which are entirely to one side of the test ray.
```

13.9.5.11 shapefile.ring_contains_ring (*coords1*, *coords2*)

```
Returns True if all vertexes in coords2 are fully inside coords1.
```

13.9.5.12 shapefile.ring_sample (*coords*, *ccw* = `False`)

```
Return a sample point guaranteed to be within a ring, by efficiently
finding the first centroid of a coordinate triplet whose orientation
matches the orientation of the ring and passes the point-in-ring test.
The orientation of the ring is assumed to be clockwise, unless ccw
(counter-clockwise) is set to True.
```

13.9.5.13 shapefile.signed_area (*coords*, *fast* = `False`)

```
Return the signed area enclosed by a ring using the linear time
algorithm. A value >= 0 indicates a counter-clockwise oriented ring.
A faster version is possible by setting 'fast' to True, which returns
2x the area, e.g. if you're only interested in the sign of the area.
```

13.9.5.14 shapefile.test (** *kwargs*)

13.9.5.15 shapefile.u (*v*, *encoding* = `'utf-8'`, *encodingErrors* = `'strict'`)

13.9.6 Variable Documentation

13.9.6.1 str shapefile.__version__ = "2.3.1" `[private]`

13.9.6.2 shapefile.failure_count = test()

13.9.6.3 int shapefile.FIRST_RING = 4

13.9.6.4 int shapefile.INNER_RING = 3

13.9.6.5 shapefile.izip = zip

13.9.6.6 shapefile.logger = logging.getLogger(__name__)

13.9.6.7 list shapefile.MISSING = [None,"]

13.9.6.8 int shapefile.MULTIPATCH = 31

13.9.6.9 int shapefile.MULTIPOINT = 8

13.9.6.10 int shapefile.MULTIPOINTM = 28

13.9.6.11 int shapefile.MULTIPOINTZ = 18

13.9.6.12 int shapefile.NODATA = -10e38

13.9.6.13 int shapefile.NULL = 0

13.9.6.14 int shapefile.OUTER_RING = 2

13.9.6.15 dict shapefile.PARTTYPE_LOOKUP

Initial value:
```
= {
      0: 'TRIANGLE_STRIP',
      1: 'TRIANGLE_FAN',
      2: 'OUTER_RING',
      3: 'INNER_RING',
      4: 'FIRST_RING',
      5: 'RING'}
```

13.9.6.16 int shapefile.POINT = 1

13.9.6.17 int shapefile.POINTM = 21

13.9.6.18 int shapefile.POINTZ = 11

13.9.6.19 int shapefile.POLYGON = 5

13.9.6.20 int shapefile.POLYGONM = 25

13.9.6.21 int shapefile.POLYGONZ = 15

13.9.6.22 int shapefile.POLYLINE = 3

13.9.6.23 int shapefile.POLYLINEM = 23

13.9.6.24 int shapefile.POLYLINEZ = 13

13.9.6.25 int shapefile.PYTHON3 = 3

13.9.6.26 int shapefile.RING = 5

13.9.6.27 dict shapefile.SHAPETYPE_LOOKUP

Initial value:

```
=  {
    0: 'NULL',
    1: 'POINT',
    3: 'POLYLINE',
    5: 'POLYGON',
    8: 'MULTIPOINT',
    11: 'POINTZ',
    13: 'POLYLINEZ',
    15: 'POLYGONZ',
    18: 'MULTIPOINTZ',
    21: 'POINTM',
    23: 'POLYLINEM',
    25: 'POLYGONM',
    28: 'MULTIPOINTM',
    31: 'MULTIPATCH'}
```

13.9.6.28 int shapefile.TRIANGLE_FAN = 1

13.9.6.29 int shapefile.TRIANGLE_STRIP = 0

13.9.6.30 bool shapefile.VERBOSE = True

13.9.6.31 shapefile.xrange = range

13.9.6.32

13.10 ShapeTest Namespace Reference

13.10.1 Classes

13.10.2 class GeoShapeVariables

sf = **shapefile.Reader**("Shapefiles/MAB_Estimation_Areas_2019_UTM18_PDT.shp")
shapes = sf.shapes()
shapeLen = len(**sf**)
list **shapeMA** = [**GeoShape**() for _ in range(**shapeLen**)]
record = sf.record(n)
as_dict = record.as_dict()
SAMS
NewSAMS
areaKm2
pointLen = len(**shapes**[n].points)
X
Y
lat
lon
list **shapeGB** = [**GeoShape**() for _ in range(**shapeLen**)]

13.10.3 Variable Documentation

13.10.3.1 ShapeTest.areaKm2

13.10.3.2 ShapeTest.as_dict = record.as_dict()

13.10.3.3 ShapeTest.lat

13.10.3.4 ShapeTest.lon

13.10.3.5 ShapeTest.NewSAMS

13.10.3.6 ShapeTest.pointLen = len(shapes[n].points)

13.10.3.7 ShapeTest.record = sf.record(n)

13.10.3.8 ShapeTest.SAMS

13.10.3.9 ShapeTest.sf = shapefile.Reader("Shapefiles/MAB_Estimation_Areas_2019_UTM18_PDT.shp")

13.10.3.10 list ShapeTest.shapeGB = [GeoShape() for _ in range(shapeLen)]

13.10.3.11 ShapeTest.shapeLen = len(sf)

13.10.3.12 list ShapeTest.shapeMA = [GeoShape() for _ in range(shapeLen)]

13.10.3.13 ShapeTest.shapes = sf.shapes()

13.10.3.14 ShapeTest.X

13.10.3.15 ShapeTest.Y

13.10.3.16

13.11 SortByAreaFrame Namespace Reference

13.11.1 Classes

class **SortByArea***This class is used to assist the user in defining areas of interest to assess accumulated parameters located in these areas of interest.*

13.12 SortByRegionFrame Namespace Reference

13.12.1 Classes

class **GeoShape***This class is used to define the shape of the regional data.*

class **SortByRegion***This class is used to assist the user in defining areas of interest to assess accumulated parameters located in these areas of interest.*

13.13SortIntoColumns Namespace Reference

13.13.1 Classes

class **Column**class **GeoShape**

13.13.2 Variables

inputFile = sys.argv[1]

l = len(**inputFile**)

domain = **inputFile**[**l**-2:**l**]

dataFile = os.path.join('Data', **inputFile**+'.csv')

outfile = os.path.join('Data', **inputFile**+'_BUFFER.csv')

M = pd.read_csv(**dataFile**)

fileName = os.environ['GBShapeBufferFile']

str **subDir** = 'GB_Buffer'

shapeFile = os.path.join('Shapefiles', **subDir**, **fileName**)

sf = **shapefile.Reader**(**shapeFile**)

shapes = sf.shapes()

shapeLen = len(**sf**)

list **shape** = [**GeoShape**() for _ in range(**shapeLen**)]

record = sf.record(n)

as_dict = record.as_dict()

Region

pointLen = len(**shapes**[n].points)

X

Y

list **columns** = [**Column**() for _ in range(**shapeLen**)]

name

X_t = **M**['UTM_X']

Y_t = **M**['UTM_Y']

rows = len(**X_t**)

nodes = len(**shape**[rgn].**X**)

sep

na_rep

index

13.13.3 Variable Documentation

13.13.3.1 SortIntoColumns.as_dict = record.as_dict()

13.13.3.2 list SortIntoColumns.columns = [Column() for _ in range(shapeLen)]

13.13.3.3 SortIntoColumns.dataFile = os.path.join('Data', inputFile+'.csv')

13.13.3.4 SortIntoColumns.domain = inputFile[l-2:l]

13.13.3.5 SortIntoColumns.fileName = os.environ['GBShapeBufferFile']

13.13.3.6 SortIntoColumns.index

13.13.3.7 SortIntoColumns.inputFile = sys.argv[1]

13.13.3.8 SortIntoColumns.l = len(inputFile)

13.13.3.9 SortIntoColumns.M = pd.read_csv(dataFile)

13.13.3.10 SortIntoColumns.na_rep

13.13.3.11 SortIntoColumns.name

13.13.3.12 SortIntoColumns.nodes = len(shape[rgn].X)

13.13.3.13 SortIntoColumns.outfile = os.path.join('Data', inputFile+'_BUFFER.csv')

13.13.3.14 SortIntoColumns.pointLen = len(shapes[n].points)

13.13.3.15 SortIntoColumns.record = sf.record(n)

13.13.3.16 SortIntoColumns.Region

13.13.3.17 SortIntoColumns.rows = len(X_t)

13.13.3.18 SortIntoColumns.sep

13.13.3.19 SortIntoColumns.sf = shapefile.Reader(shapeFile)

13.13.3.20 list SortIntoColumns.shape = [GeoShape() for _ in range(shapeLen)]

13.13.3.21 SortIntoColumns.shapeFile = os.path.join('Shapefiles', subDir, fileName)

13.13.3.22 SortIntoColumns.shapeLen = len(sf)

13.13.3.23 SortIntoColumns.shapes = sf.shapes()

13.13.3.24 str SortIntoColumns.subDir = 'GB_Buffer'

13.13.3.25 SortIntoColumns.X

13.13.3.26 SortIntoColumns.X_t = M['UTM_X']

13.13.3.27 SortIntoColumns.Y

13.13.3.28 SortIntoColumns.Y_t = M['UTM_Y']

13.13.3.29

13.14 SpecialAreaFrame Namespace Reference

13.14.1 Classes

class **SpecialArea***This class is used to assist the user in defining areas of interest to assess accumulated parameters located in these areas of interest.*

13.15Widgets Namespace Reference

13.15.1 Classes

class **ScrollFrame***Scrollable Frame Class from* *`https://gist.github.com/mp035/9f2027c3ef9172264532fcd6262f3b01`*.

class **SubFrameElement***Generic Element.*

class **SubFrameInterpFunction**class **SubFrameXY**

Widget for XY label and entery.

13.15.2 Functions

numbersCallback (input)

Allows only correctly formed positive integers, ignores non-numeric characters.

floatCallback (input)

Allows only correctly formed floats, ignores non-numeric characters.

13.15.3 Function Documentation

13.15.3.1Widgets.floatCallback (*input*)

Allows only correctly formed floats, ignores non-numeric characters.

13.15.3.2Widgets.numbersCallback (*input*)

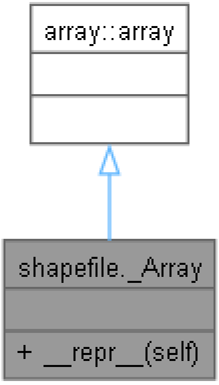
Allows only correctly formed positive integers, ignores non-numeric characters.

Only allows numeric for input

14 Class Documentation

14.1 shapefile._Array Class Reference

Inheritance diagram for shapefile._Array:



14.1.1 Public Member Functions

__repr__ (self)

14.1.2 Detailed Description

```
Converts python tuples to lists of the appropriate type.
```

Used to unpack different shapefile header parts.

14.1.3 Member Function Documentation

14.1.3.1 shapefile._Array.__repr__ (*self*)

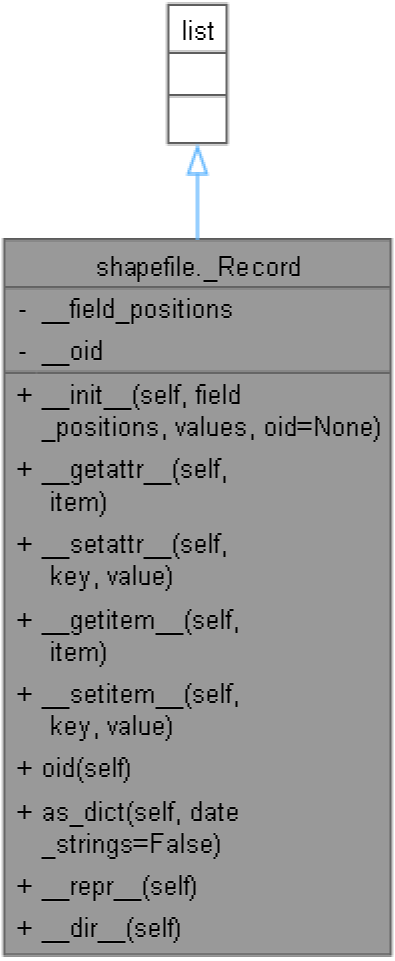
14.1.3.2 The documentation for this class was generated from the following file:

PyshpMaster/**shapefile.py**

14.1.3.3

14.2 shapefile._Record Class Reference

Inheritance diagram for shapefile._Record:


list
shapefile._Record
- __field_positions
- __oid
+ __init__(self, field _positions, values, oid=None)
+ __getattr__(self, item)
+ __setattr__(self, key, value)
+ __getitem__(self, item)
+ __setitem__(self, key, value)
+ oid(self)
+ as_dict(self, date _strings=False)
+ __repr__(self)
+ __dir__(self)

14.2.1 Public Member Functions

__init__ (self, field_positions, values, **oid**=None)
__getattr__ (self, item)
__setattr__ (self, key, value)
__getitem__ (self, item)
__setitem__ (self, key, value)
oid (self)
as_dict (self, date_strings=False)
__repr__ (self)
__dir__ (self)

14.2.2 Private Attributes

__field_positions__oid

14.2.3 Detailed Description

```
A class to hold a record. Subclasses list to ensure compatibility with
former work and to reuse all the optimizations of the builtin list.
In addition to the list interface, the values of the record
can also be retrieved using the field's name. For example if the dbf contains
a field ID at position 0, the ID can be retrieved with the position, the field name
as a key, or the field name as an attribute.

>>> # Create a Record with one field, normally the record is created by the Reader class
>>> r = _Record({'ID': 0}, [0])
>>> print(r[0])
>>> print(r['ID'])
>>> print(r.ID)
```

14.2.4 Constructor & Destructor Documentation

14.2.4.1 shapefile._Record.__init__ (*self*, *field_positions*, *values*, *oid* = `None`)

```
A Record should be created by the Reader class

:param field_positions: A dict mapping field names to field positions
:param values: A sequence of values
:param oid: The object id, an int (optional)
```

14.2.5 Member Function Documentation

14.2.5.1 shapefile._Record.__dir__ (*self*)

```
Helps to show the field names in an interactive environment like IPython.
See: http://ipython.readthedocs.io/en/stable/config/integrating.html

:return: List of method names and fields
```

14.2.5.2 shapefile._Record.__getattr__ (*self*, *item*)

```
__getattr__ is called if an attribute is used that does
not exist in the normal sense. For example r=Record(...), r.ID
calls r.__getattr__('ID'), but r.index(5) calls list.index(r, 5)
:param item: The field name, used as attribute
:return: Value of the field
:raises: AttributeError, if item is not a field of the shapefile
        and IndexError, if the field exists but the field's
        corresponding value in the Record does not exist
```

14.2.5.3 shapefile._Record.__getitem__ (*self*, *item*)

```
Extends the normal list item access with
access using a fieldname
```

```
For example r['ID'], r[0]
:param item: Either the position of the value or the name of a field
:return: the value of the field
```

14.2.5.4 shapefile._Record.__repr__ (*self*)

14.2.5.5 shapefile._Record.__setattr__ (*self*, *key*, *value*)

```
Sets a value of a field attribute
:param key: The field name
:param value: the value of that field
:return: None
:raises: AttributeError, if key is not a field of the shapefile
```

14.2.5.6 shapefile._Record.__setitem__ (*self*, *key*, *value*)

```
Extends the normal list item access with
access using a fieldname

For example r['ID']=2, r[0]=2
:param key: Either the position of the value or the name of a field
:param value: the new value of the field
```

14.2.5.7 shapefile._Record.as_dict (*self*, *date_strings* = `False`)

```
Returns this Record as a dictionary using the field names as keys
:return: dict
```

14.2.5.8 shapefile._Record.oid (*self*)

The index position of the record in the original shapefile

14.2.6 Member Data Documentation

14.2.6.1 shapefile._Record.__field_positions `[private]`

14.2.6.2 shapefile._Record.__oid `[private]`

14.2.6.3 The documentation for this class was generated from the following file:

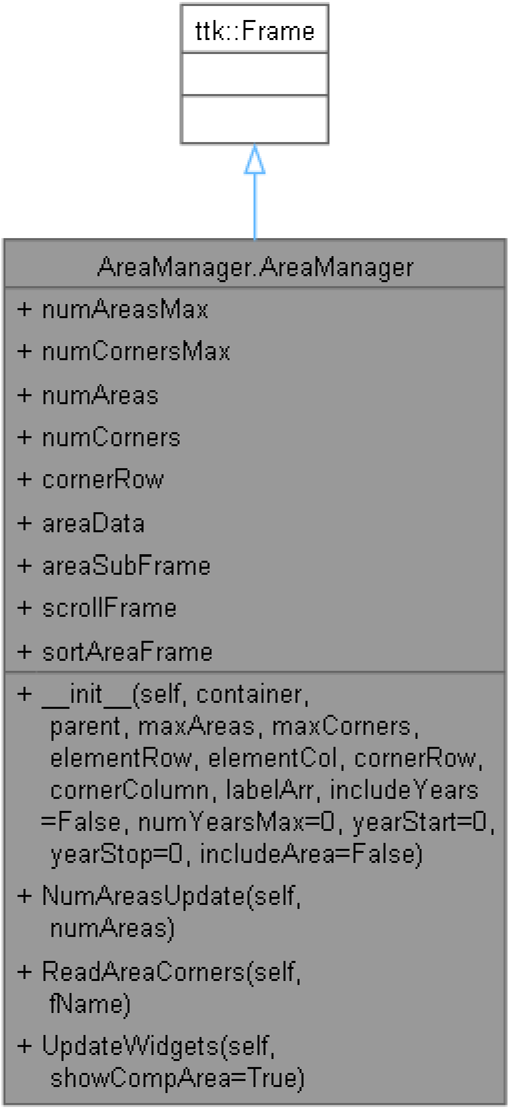
PyshpMaster/**shapefile.py**

14.2.6.4

14.3 AreaManager.AreaManager Class Reference

This class is used to paint area grouped by.

Inheritance diagram for AreaManager.AreaManager:


ttk::Frame
AreaManager.AreaManager
+ numAreasMax
+ numCornersMax
+ numAreas
+ numCorners
+ cornerRow
+ areaData
+ areaSubFrame
+ scrollFrame
+ sortAreaFrame
+ __init__(self, container, parent, maxAreas, maxCorners, elementRow, elementCol, cornerRow, cornerColumn, labelArr, includeYears =False, numYearsMax=0, yearStart=0, yearStop=0, includeArea=False)
+ NumAreasUpdate(self, numAreas)
+ ReadAreaCorners(self, fName)
+ UpdateWidgets(self, showCompArea=True)

14.3.1 Public Member Functions

__init__ (self, container, parent, maxAreas, maxCorners, elementRow, elementCol, **cornerRow**, cornerColumn, labelArr, includeYears=False, numYearsMax=0, yearStart=0, yearStop=0, includeArea=False)
NumAreasUpdate (self, **numAreas**)
ReadAreaCorners (self, fName)
UpdateWidgets (self, showCompArea=True)

14.3.2 Public Attributes

numAreasMaxnumCornersMax

numAreas
numCorners
cornerRow
areaData
areaSubFrame
scrollFrame
sortAreaFrame

14.3.3 Detailed Description

This class is used to paint area grouped by.

Area N Comment Number of Nodes Update Nodes Node 1 .... Node N X data .... X data Y data .... Y data

14.3.4 Constructor & Destructor Documentation

14.3.4.1 AreaManager.AreaManager.__init__ (*self*, *container*, *parent*, *maxAreas*, *maxCorners*, *elementRow*, *elementCol*, *cornerRow*, *cornerColumn*, *labelArr*, *includeYears* = `False`, *numYearsMax* = `0`, *yearStart* = `0`, *yearStop* = `0`, *includeArea* = `False`)

14.3.5 Member Function Documentation

14.3.5.1 AreaManager.AreaManager.NumAreasUpdate (*self*, *numAreas*)

Updates the number of areas functions.

14.3.5.2 AreaManager.AreaManager.ReadAreaCorners (*self*, *fName*)

Reads an Area file and returns the number of nodes defined

14.3.5.3 AreaManager.AreaManager.UpdateWidgets (*self*, *showCompArea* = `True`)

14.3.6 Member Data Documentation

14.3.6.1 AreaManager.AreaManager.areaData

14.3.6.2 AreaManager.AreaManager.areaSubFrame

14.3.6.3 AreaManager.AreaManager.cornerRow

14.3.6.4 AreaManager.AreaManager.numAreas

14.3.6.5 AreaManager.AreaManager.numAreasMax

14.3.6.6 AreaManager.AreaManager.numCorners

14.3.6.7 AreaManager.AreaManager.numCornersMax

14.3.6.8 AreaManager.AreaManager.scrollFrame

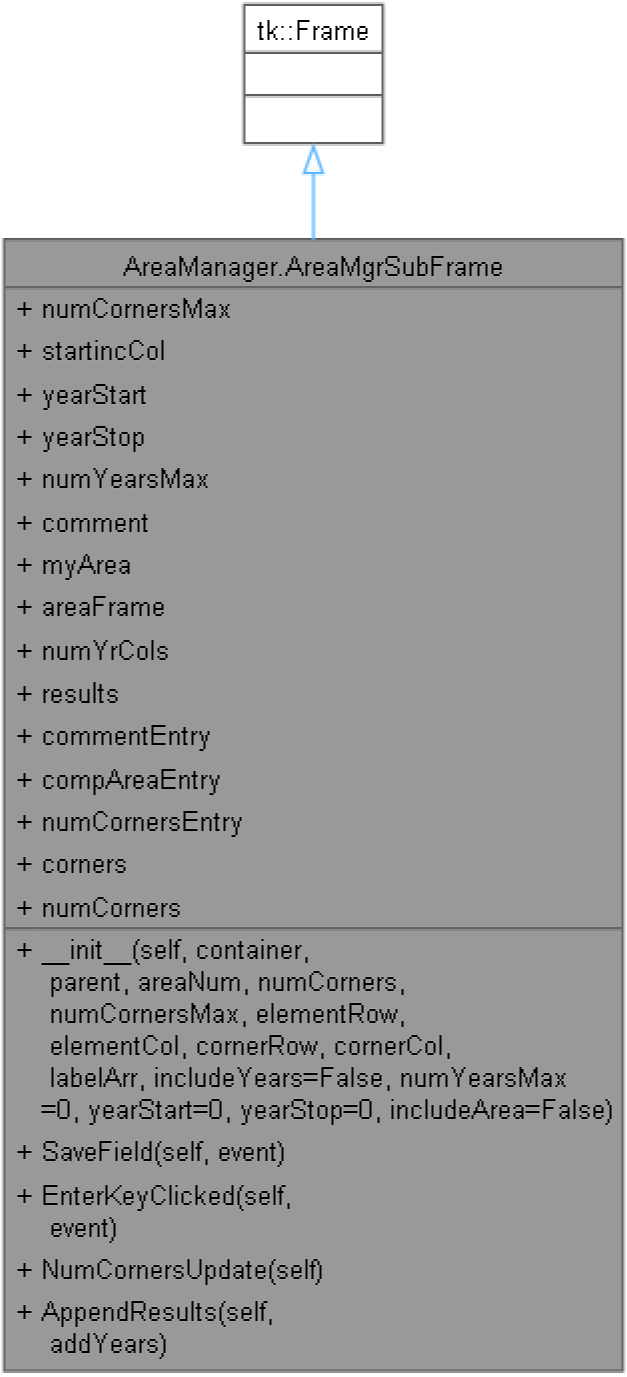
14.3.6.9 AreaManager.AreaManager.sortAreaFrame

14.3.6.10 The documentation for this class was generated from the following file:

14.3.6.11 AreaManager.py

14.4 AreaManager.AreaMgrSubFrame Class Reference

Inheritance diagram for AreaManager.AreaMgrSubFrame:


tk::Frame
AreaManager.AreaMgrSubFrame
+ numCornersMax
+ startincCol
+ yearStart
+ yearStop
+ numYearsMax
+ comment
+ myArea
+ areaFrame
+ numYrCols
+ results
+ commentEntry
+ compAreaEntry
+ numCornersEntry
+ corners
+ numCorners
+ __init__(self, container, parent, areaNum, numCorners, numCornersMax, elementRow, elementCol, cornerRow, cornerCol, labelArr, includeYears=False, numYearsMax =0, yearStart=0, yearStop=0, includeArea=False)
+ SaveField(self, event)
+ EnterKeyClicked(self, event)
+ NumCornersUpdate(self)
+ AppendResults(self, addYears)

14.4.1 Public Member Functions

__init__ (self, container, parent, areaNum, **numCorners**, **numCornersMax**, elementRow, elementCol, cornerRow, cornerCol, labelArr, includeYears=False, **numYearsMax**=0, **yearStart**=0, **yearStop**=0, includeArea=False)

SaveField (self, event)
EnterKeyClicked (self, event)
NumCornersUpdate (self)
AppendResults (self, addYears)

This method is used to add results when the original maximum number of years is exceeded.

14.4.2 Public Attributes

numCornersMaxstartincCol
yearStart
yearStop
numYearsMax
comment
myArea
areaFrame
numYrCols
results
commentEntry
compAreaEntry
numCornersEntry
corners
numCorners

14.4.3 Constructor & Destructor Documentation

14.4.3.1 AreaManager.AreaMgrSubFrame.__init__ (*self*, *container*, *parent*, *areaNum*, *numCorners*, *numCornersMax*, *elementRow*, *elementCol*, *cornerRow*, *cornerCol*, *labelArr*, *includeYears* = `False`, *numYearsMax* = `0`, *yearStart* = `0`, *yearStop* = `0`, *includeArea* = `False`)

14.4.4 Member Function Documentation

14.4.4.1 AreaManager.AreaMgrSubFrame.AppendResults (*self*, *addYears*)

This method is used to add results when the original maximum number of years is exceeded.

14.4.4.2 AreaManager.AreaMgrSubFrame.EnterKeyClicked (*self*, *event*)

14.4.4.3 AreaManager.AreaMgrSubFrame.NumCornersUpdate (*self*)

14.4.4.4 AreaManager.AreaMgrSubFrame.SaveField (*self*, *event*)

14.4.5 Member Data Documentation

14.4.5.1 AreaManager.AreaMgrSubFrame.areaFrame

14.4.5.2 AreaManager.AreaMgrSubFrame.comment

14.4.5.3 AreaManager.AreaMgrSubFrame.commentEntry

14.4.5.4 AreaManager.AreaMgrSubFrame.compAreaEntry

14.4.5.5 AreaManager.AreaMgrSubFrame.corners

14.4.5.6 AreaManager.AreaMgrSubFrame.myArea

14.4.5.7 AreaManager.AreaMgrSubFrame.numCorners

14.4.5.8 AreaManager.AreaMgrSubFrame.numCornersEntry

14.4.5.9 AreaManager.AreaMgrSubFrame.numCornersMax

14.4.5.10 AreaManager.AreaMgrSubFrame.numYearsMax

14.4.5.11 AreaManager.AreaMgrSubFrame.numYrCols

14.4.5.12 AreaManager.AreaMgrSubFrame.results

14.4.5.13 AreaManager.AreaMgrSubFrame.startincCol

14.4.5.14 AreaManager.AreaMgrSubFrame.yearStart

14.4.5.15 AreaManager.AreaMgrSubFrame.yearStop

14.4.5.16 The documentation for this class was generated from the following file:

14.4.5.17 AreaManager.py

14.5 SortIntoColumns.Column Class Reference

14.5.1 Public Member Functions

__init__ (self)

14.5.2 Public Attributes

nameinBox

14.5.3 Constructor & Destructor Documentation

14.5.3.1 SortIntoColumns.Column.__init__ (*self*)

14.5.4 Member Data Documentation

14.5.4.1 SortIntoColumns.Column.inBox

14.5.4.2 SortIntoColumns.Column.name

14.5.4.3 The documentation for this class was generated from the following file:

14.5.4.4 SortIntoColumns.py

14.6 AreaManager.Corner Class Reference

Defines floating point data for corner defintions.

14.6.1 Public Member Functions

__init__ (self, maxCorners)

14.6.2 Public Attributes

longlat
numCorners

14.6.3 Detailed Description

Defines floating point data for corner defintions.

long, lat have become interchangeable with x, y

14.6.4 Constructor & Destructor Documentation

14.6.4.1 AreaManager.Corner.__init__ (*self*, *maxCorners*)

14.6.5 Member Data Documentation

14.6.5.1 AreaManager.Corner.lat

14.6.5.2 AreaManager.Corner.long

14.6.5.3 AreaManager.Corner.numCorners

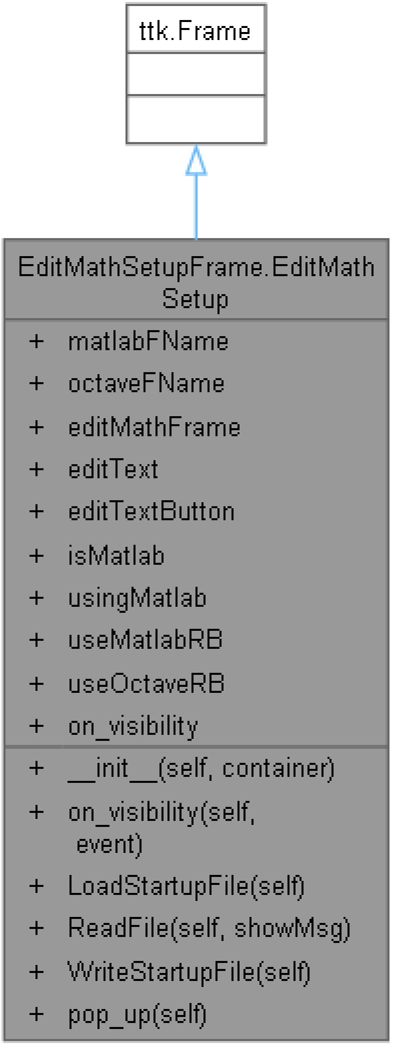
14.6.5.4 The documentation for this class was generated from the following file:

14.6.5.5 AreaManager.py

14.7 EditMathSetupFrame.EditMathSetup Class Reference

This class allows the user to edit the Matlab/Octave setup files to fit their environment.

Inheritance diagram for EditMathSetupFrame.EditMathSetup:



14.7.1 Public Member Functions

__init__ (self, container)

Constructor for Growth Class.

on_visibility (self, event)

Opens either startup.m or .octaverc depending if user selected Matlab or Octave resp.

LoadStartupFile (self)
ReadFile (self, showMsg)
WriteStartupFile (self)
pop_up (self)

14.7.2 Public Attributes

matlabFNameoctaveFName
editMathFrame
editText
editTextButton
isMatlab
usingMatlab
useMatlabRB
useOctaveRB
on_visibility

14.7.3 Detailed Description

This class allows the user to edit the Matlab/Octave setup files to fit their environment.

14.7.4 Constructor & Destructor Documentation

14.7.4.1 EditMathSetupFrame.EditMathSetup.__init__ (*self*, *container*)

Constructor for Growth Class.

14.7.5 Member Function Documentation

14.7.5.1 EditMathSetupFrame.EditMathSetup.LoadStartupFile (*self*)

14.7.5.2 EditMathSetupFrame.EditMathSetup.on_visibility (*self*, *event*)

Opens either startup.m or .octaverc depending if user selected Matlab or Octave resp.

14.7.5.3 EditMathSetupFrame.EditMathSetup.pop_up (*self*)

14.7.5.4 EditMathSetupFrame.EditMathSetup.ReadFile (*self*, *showMsg*)

14.7.5.5 EditMathSetupFrame.EditMathSetup.WriteStartupFile (*self*)

14.7.6 Member Data Documentation

14.7.6.1 EditMathSetupFrame.EditMathSetup.editMathFrame

14.7.6.2 EditMathSetupFrame.EditMathSetup.editText

14.7.6.3 EditMathSetupFrame.EditMathSetup.editTextButton

14.7.6.4 EditMathSetupFrame.EditMathSetup.isMatlab

14.7.6.5 EditMathSetupFrame.EditMathSetup.matlabFName

14.7.6.6 EditMathSetupFrame.EditMathSetup.octaveFName

14.7.6.7 EditMathSetupFrame.EditMathSetup.on_visibility

14.7.6.8 EditMathSetupFrame.EditMathSetup.useMatlabRB

14.7.6.9 EditMathSetupFrame.EditMathSetup.useOctaveRB

14.7.6.10 EditMathSetupFrame.EditMathSetup.usingMatlab

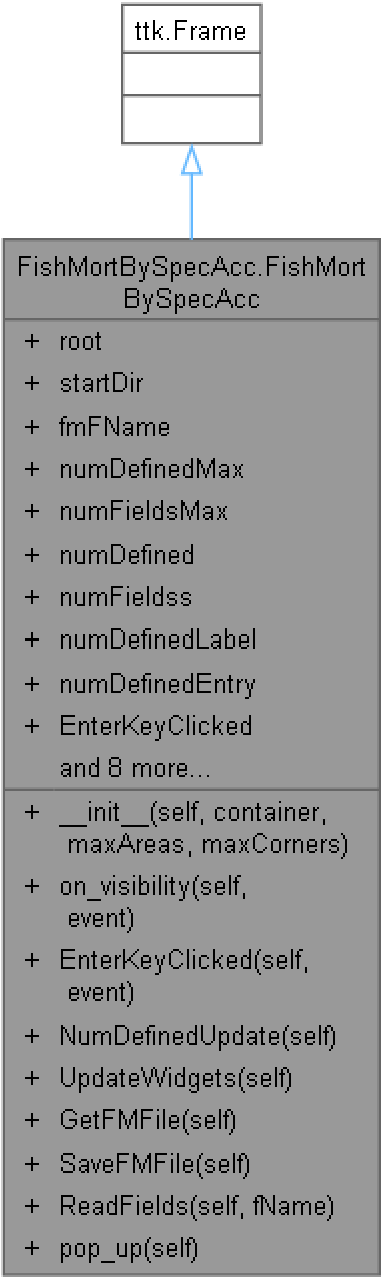
14.7.6.11 The documentation for this class was generated from the following file:

14.7.6.12 EditMathSetupFrame.py

14.8 FishMortBySpecAcc.FishMortBySpecAcc Class Reference

This class is used to assist the user in defining areas of interest to assess accumulated parameters located in these areas of interest.

Inheritance diagram for FishMortBySpecAcc.FishMortBySpecAcc:



14.8.1 Public Member Functions

__init__ (self, container, maxAreas, maxCorners)
on_visibility (self, event)
EnterKeyClicked (self, event)

NumDefinedUpdate (self)
UpdateWidgets (self)
GetFMFile (self)
SaveFMFile (self)
ReadFields (self, fName)
pop_up (self)

Help Window for Fishing Mortatlity in Special Access Area.

14.8.2 Public Attributes

rootstartDir
fmFName
numDefinedMax
numFieldsMax
numDefined
numFieldss
numDefinedLabel
numDefinedEntry
EnterKeyClicked
fishMortFile
fishMortFileLabel
openFMFileButton
saveFMFileButton
yearEntry
areaMgr
on_visibility
numAreas

14.8.3 Detailed Description

This class is used to assist the user in defining areas of interest to assess accumulated parameters located in these areas of interest.

14.8.4 Constructor & Destructor Documentation

14.8.4.1 FishMortBySpecAcc.FishMortBySpecAcc.__init__ (*self*, *container*, *maxAreas*, *maxCorners*)

14.8.5 Member Function Documentation

14.8.5.1 FishMortBySpecAcc.FishMortBySpecAcc.EnterKeyClicked (*self*, *event*)

14.8.5.2 FishMortBySpecAcc.FishMortBySpecAcc.GetFMFile (*self*)

14.8.5.3 FishMortBySpecAcc.FishMortBySpecAcc.NumDefinedUpdate (*self*)

14.8.5.4 FishMortBySpecAcc.FishMortBySpecAcc.on_visibility (*self*, *event*)

14.8.5.5 FishMortBySpecAcc.FishMortBySpecAcc.pop_up (*self*)

Help Window for Fishing Mortatlity in Special Access Area.

14.8.5.6 FishMortBySpecAcc.FishMortBySpecAcc.ReadFields (*self*, *fName*)

```
Reads an Area file and returns the number of fields.
```

Fields have a Special Area number for the x value with a Mortality setting for the y value.

14.8.5.7 FishMortBySpecAcc.FishMortBySpecAcc.SaveFMFile (*self*)

14.8.5.8 FishMortBySpecAcc.FishMortBySpecAcc.UpdateWidgets (*self*)

14.8.6 Member Data Documentation

14.8.6.1 FishMortBySpecAcc.FishMortBySpecAcc.areaMgr

14.8.6.2 FishMortBySpecAcc.FishMortBySpecAcc.EnterKeyClicked

14.8.6.3 FishMortBySpecAcc.FishMortBySpecAcc.fishMortFile

14.8.6.4 FishMortBySpecAcc.FishMortBySpecAcc.fishMortFileLabel

14.8.6.5 FishMortBySpecAcc.FishMortBySpecAcc.fmFName

14.8.6.6 FishMortBySpecAcc.FishMortBySpecAcc.numAreas

14.8.6.7 FishMortBySpecAcc.FishMortBySpecAcc.numDefined

14.8.6.8 FishMortBySpecAcc.FishMortBySpecAcc.numDefinedEntry

14.8.6.9 FishMortBySpecAcc.FishMortBySpecAcc.numDefinedLabel

14.8.6.10 FishMortBySpecAcc.FishMortBySpecAcc.numDefinedMax

14.8.6.11 FishMortBySpecAcc.FishMortBySpecAcc.numFieldsMax

14.8.6.12 FishMortBySpecAcc.FishMortBySpecAcc.numFieldss

14.8.6.13 FishMortBySpecAcc.FishMortBySpecAcc.on_visibility

14.8.6.14 FishMortBySpecAcc.FishMortBySpecAcc.openFMFileButton

14.8.6.15 FishMortBySpecAcc.FishMortBySpecAcc.root

14.8.6.16 FishMortBySpecAcc.FishMortBySpecAcc.saveFMFileButton

14.8.6.17 FishMortBySpecAcc.FishMortBySpecAcc.startDir

14.8.6.18 FishMortBySpecAcc.FishMortBySpecAcc.yearEntry

14.8.6.19 The documentation for this class was generated from the following file:

14.8.6.20 FishMortBySpecAcc.py

14.9 ShapeTest.GeoShape Class Reference

14.9.1 Public Member Functions

__init__ (self)

14.9.2 Public Attributes

XY
lat
lon
SAMS
NewSAMS
areaKm2

14.9.3 Constructor & Destructor Documentation

14.9.3.1 ShapeTest.GeoShape.__init__ (*self*)

14.9.4 Member Data Documentation

14.9.4.1 ShapeTest.GeoShape.areaKm2

14.9.4.2 ShapeTest.GeoShape.lat

14.9.4.3 ShapeTest.GeoShape.lon

14.9.4.4 ShapeTest.GeoShape.NewSAMS

14.9.4.5 ShapeTest.GeoShape.SAMS

14.9.4.6 ShapeTest.GeoShape.X

14.9.4.7 ShapeTest.GeoShape.Y

14.9.4.8 The documentation for this class was generated from the following file:

14.9.4.9 ShapeTest.py

14.10 SortByRegionFrame.GeoShape Class Reference

This class is used to define the shape of the regional data.

14.10.1 Public Member Functions

__init__ (self)

14.10.2 Public Attributes

XY
lat
lon
Zone
area

14.10.3 Detailed Description

This class is used to define the shape of the regional data.

This class uses PyShp libraries as defined in `https://github.com/GeospatialPython/pyshp` ==> Code ==> Download ZIP

14.10.4 Constructor & Destructor Documentation

14.10.4.1 SortByRegionFrame.GeoShape.__init__ (*self*)

14.10.5 Member Data Documentation

14.10.5.1 SortByRegionFrame.GeoShape.area

14.10.5.2 SortByRegionFrame.GeoShape.lat

14.10.5.3 SortByRegionFrame.GeoShape.lon

14.10.5.4 SortByRegionFrame.GeoShape.X

14.10.5.5 SortByRegionFrame.GeoShape.Y

14.10.5.6 SortByRegionFrame.GeoShape.Zone

14.10.5.7 The documentation for this class was generated from the following file:

14.10.5.8 SortByRegionFrame.py

14.11 SortIntoColumns.GeoShape Class Reference

14.11.1 Public Member Functions

__init__ (self)

14.11.2 Public Attributes

XY
lat
lon
Region

14.11.3 Constructor & Destructor Documentation

14.11.3.1 SortIntoColumns.GeoShape.__init__ (*self*)

14.11.4 Member Data Documentation

14.11.4.1 SortIntoColumns.GeoShape.lat

14.11.4.2 SortIntoColumns.GeoShape.lon

14.11.4.3 SortIntoColumns.GeoShape.Region

14.11.4.4 SortIntoColumns.GeoShape.X

14.11.4.5 SortIntoColumns.GeoShape.Y

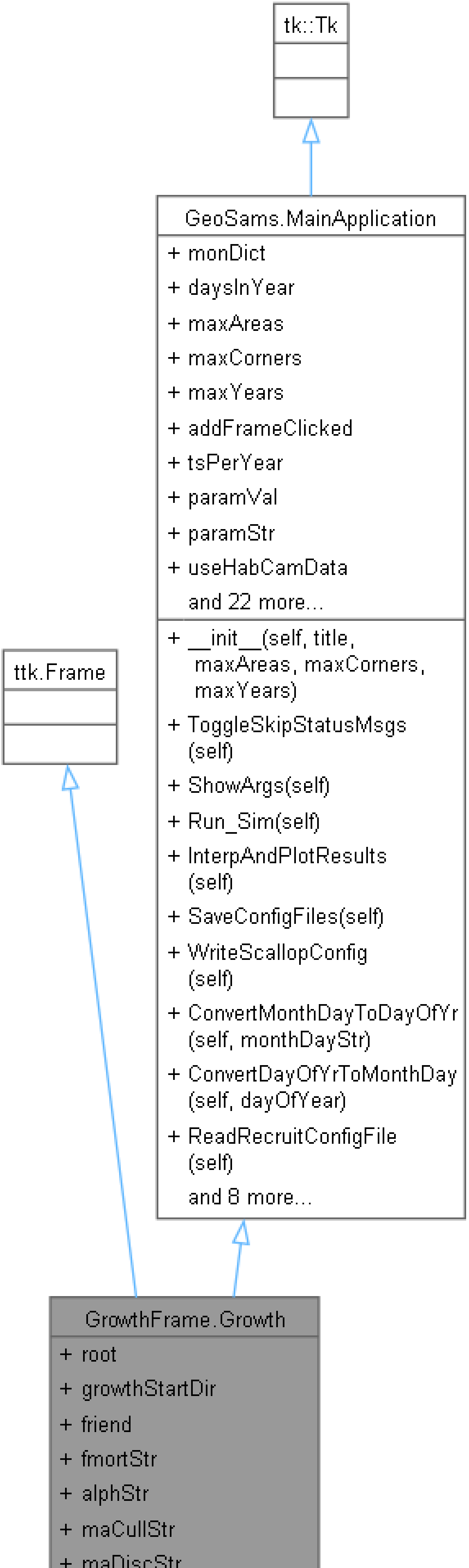
14.11.4.6 The documentation for this class was generated from the following file:

14.11.4.7 SortIntoColumns.py

14.12 GrowthFrame.Growth Class Reference

This class allows the user to adjust parameters used in computing scallop growth.

Inheritance diagram for GrowthFrame.Growth:


tk::Tk
GeoSams.MainApplication
+ monDict
+ daysInYear
+ maxAreas
+ maxCorners
+ maxYears
+ addFrameClicked
+ tsPerYear
+ paramVal
+ paramStr
+ useHabCamData
and 22 more...
+ __init__(self, title, maxAreas, maxCorners, maxYears)
+ ToggleSkipStatusMsgs (self)
+ ShowArgs(self)
+ Run_Sim(self)
+ InterpAndPlotResults (self)
+ SaveConfigFiles(self)
+ WriteScallopConfig (self)
+ ConvertMonthDayToDayOfYr (self, monthDayStr)
+ ConvertDayOfYrToMonthDay (self, dayOfYear)
+ ReadRecruitConfigFile (self)
and 8 more...
ttk.Frame
GrowthFrame.Growth
+ root
+ growthStartDir
+ friend
+ fmortStr
+ alphStr
+ maCullStr
+ maDiscStr

14.12.1 Public Member Functions

__init__ (self, container, **friend**)

Constructor for Growth Class.

on_visibility (self, event)
GetGrowthConfigFName (self)

Calls the filedialog method asksaveasfilename to name a file to be used for the Mortality Configuration file.

LoadGrowthData (self)
UpdateWidgets (self)
UpdateValues (self)

Method to read Mortality Configuration file and set values accordingly.

pop_up (self)

14.12.1.1 Public Member Functions inherited from GeoSams.MainApplication

ToggleSkipStatusMsgs (self)
ShowArgs (self)

Display setup limits here Messagebox blocks entry widgets if attempted to open before the main window completes.

Run_Sim (self)

Starts the GeoSAMS simulatation ***ScallopPopDensity*** *.*

InterpAndPlotResults (self)
SaveConfigFiles (self)

Save all of the defined configuration files.

WriteScallopConfig (self)

Saves simulation configuration file.

ConvertMonthDayToDayOfYr (self, monthDayStr)

This method is used to converty the recruitment start and stop dates from a string month numerical day into days in a year.

ConvertDayOfYrToMonthDay (self, dayOfYear)
ReadRecruitConfigFile (self)

Read in the (tag, value) parameters from the recruitment to update parameters.

WriteRecruitmentConfig (self)

Saves recruitment parameters to a configuration file.

WriteGrowthConfig (self)

Saves mortality parameters to a configuration file.

WriteGridMgrConfig (self)
Saves grid manager parameters to a configuration file.

WriteSpatialFncsConfig (self, cfgFile, functions, numFncsEntry)
Saves spatial function parameters to a configuration file.

ReadConfigFile (self, fName)
Reads a typical configuration file to recover the tags and values.

ReadSimConfigFile (self)
Read in the (tag, value) parameters from the simulation configuration file.

ReadGridMgrConfigFile (self)
Read in the (tag, value) parameters from the grid manager configuration file.

14.12.2 Public Attributes

rootgrowthStartDir
friend
fmortStr
alphStr
maCullStr
maDiscStr
gbCullStr
gbDiscStr
maFSelAStr
maFSelBStr
gbClFSelAStr
gbClFSelBStr
gbOpFSelAStr
gbOpFSelBStr
maAdultMortStr
gbAdultMortStr
maIncidStr
gbIncidStr
maLen0Str
gbLen0Str
fmortFileName
lpueSlStr
lpueSl2Str
lpueIntcStr
maxPerDayStr
maxTimeStr
dredgeWdStr
towSpdStr
fishMort
alphaMort
maAdultMort
gbAdultMort
maLength0

gbLength0
maFSelectA
maFSelectB
gbClosedFSelectA
gbClosedFSelectB
gbOpenFSelectA
gbOpenFSelectB
lpueSlope
lpueSlope2
lpueIntcept
maxPerDay
maxTime
dredgeWth
towSpeed
maIncident
gbIncident
maCullSize
maDiscard
gbCullSize
gbDiscard
growthCfgFile
saveGrowthConfigButton
loadGrowthConfigButton
on_visibility

14.12.2.1 Public Attributes inherited from GeoSams.MainApplication

monDict
daysInYear
maxAreas
maxCorners
maxYears
addFrameClicked
tsPerYear
paramVal
paramStr
useHabCamData
domainName
yearStart
yearStop
simConfigFile
style
root
notebook
frame1
recrConfigFile
frame2
frame3
frame5
frame6
frame7
frame8
gmConfigFile
specAccFileStr
isSkip
skipStatusMsgs
skipStatusMsgsRB

recruitYrStrt
recruitYrStop

14.12.3 Detailed Description

This class allows the user to adjust parameters used in computing scallop growth.

14.12.4 Constructor & Destructor Documentation

14.12.4.1 GrowthFrame.Growth.__init__ (*self*, *container*, *friend*)

Constructor for Growth Class.

Reimplemented from **GeoSams.MainApplication** (*p.77*).

14.12.5 Member Function Documentation

14.12.5.1 GrowthFrame.Growth.GetGrowthConfigFName (*self*)

Calls the filedialog method asksaveasfilename to name a file to be used for the Mortality Configuration file.

It then writes out the defined parameters to this file using the 'tag = value' format.

14.12.5.2 GrowthFrame.Growth.LoadGrowthData (*self*)

14.12.5.3 GrowthFrame.Growth.on_visibility (*self*, *event*)

14.12.5.4 GrowthFrame.Growth.pop_up (*self*)

Reimplemented from **GeoSams.MainApplication** (*p.78*).

14.12.5.5 GrowthFrame.Growth.UpdateValues (*self*)

Method to read Mortality Configuration file and set values accordingly.

14.12.5.6 GrowthFrame.Growth.UpdateWidgets (*self*)

14.12.6 Member Data Documentation

14.12.6.1 GrowthFrame.Growth.alphaMort

14.12.6.2 GrowthFrame.Growth.alphStr

14.12.6.3 GrowthFrame.Growth.dredgeWdStr

14.12.6.4 GrowthFrame.Growth.dredgeWth

14.12.6.5 GrowthFrame.Growth.fishMort

14.12.6.6 GrowthFrame.Growth.fmortFileName

14.12.6.7 GrowthFrame.Growth.fmortStr

14.12.6.8 GrowthFrame.Growth.friend

14.12.6.9 GrowthFrame.Growth.gbAdultMort

14.12.6.10 GrowthFrame.Growth.gbAdultMortStr

14.12.6.11 GrowthFrame.Growth.gbClFSelAStr

14.12.6.12 GrowthFrame.Growth.gbClFSelBStr

14.12.6.13 GrowthFrame.Growth.gbClosedFSelectA

14.12.6.14 GrowthFrame.Growth.gbClosedFSelectB

14.12.6.15 GrowthFrame.Growth.gbCullSize

14.12.6.16 GrowthFrame.Growth.gbCullStr

14.12.6.17 GrowthFrame.Growth.gbDiscard

14.12.6.18 GrowthFrame.Growth.gbDiscStr

14.12.6.19 GrowthFrame.Growth.gbIncident

14.12.6.20 GrowthFrame.Growth.gbIncidStr

14.12.6.21 GrowthFrame.Growth.gbLen0Str

14.12.6.22 GrowthFrame.Growth.gbLength0

14.12.6.23 GrowthFrame.Growth.gbOpenFSelectA

14.12.6.24 GrowthFrame.Growth.gbOpenFSelectB

14.12.6.25 GrowthFrame.Growth.gbOpFSelAStr

14.12.6.26 GrowthFrame.Growth.gbOpFSelBStr

14.12.6.27 GrowthFrame.Growth.growthCfgFile

14.12.6.28 GrowthFrame.Growth.growthStartDir

14.12.6.29 GrowthFrame.Growth.loadGrowthConfigButton

14.12.6.30 GrowthFrame.Growth.lpueIntcept

14.12.6.31 GrowthFrame.Growth.lpueIntcStr

14.12.6.32 GrowthFrame.Growth.lpueSl2Str

14.12.6.33 GrowthFrame.Growth.lpueSlope

14.12.6.34 GrowthFrame.Growth.lpueSlope2

14.12.6.35 GrowthFrame.Growth.lpueSlStr

14.12.6.36 GrowthFrame.Growth.maAdultMort

14.12.6.37 GrowthFrame.Growth.maAdultMortStr

14.12.6.38 GrowthFrame.Growth.maCullSize

14.12.6.39 GrowthFrame.Growth.maCullStr

14.12.6.40 GrowthFrame.Growth.maDiscard

14.12.6.41 GrowthFrame.Growth.maDiscStr

14.12.6.42 GrowthFrame.Growth.maFSelAStr

14.12.6.43 GrowthFrame.Growth.maFSelBStr

14.12.6.44 GrowthFrame.Growth.maFSelectA

14.12.6.45 GrowthFrame.Growth.maFSelectB

14.12.6.46 GrowthFrame.Growth.maIncident

14.12.6.47 GrowthFrame.Growth.maIncidStr

14.12.6.48 GrowthFrame.Growth.maLen0Str

14.12.6.49 GrowthFrame.Growth.maLength0

14.12.6.50 GrowthFrame.Growth.maxPerDay

14.12.6.51 GrowthFrame.Growth.maxPerDayStr

14.12.6.52 GrowthFrame.Growth.maxTime

14.12.6.53 GrowthFrame.Growth.maxTimeStr

14.12.6.54 GrowthFrame.Growth.on_visibility

14.12.6.55 GrowthFrame.Growth.root

14.12.6.56 GrowthFrame.Growth.saveGrowthConfigButton

14.12.6.57 GrowthFrame.Growth.towSpdStr

14.12.6.58 GrowthFrame.Growth.towSpeed

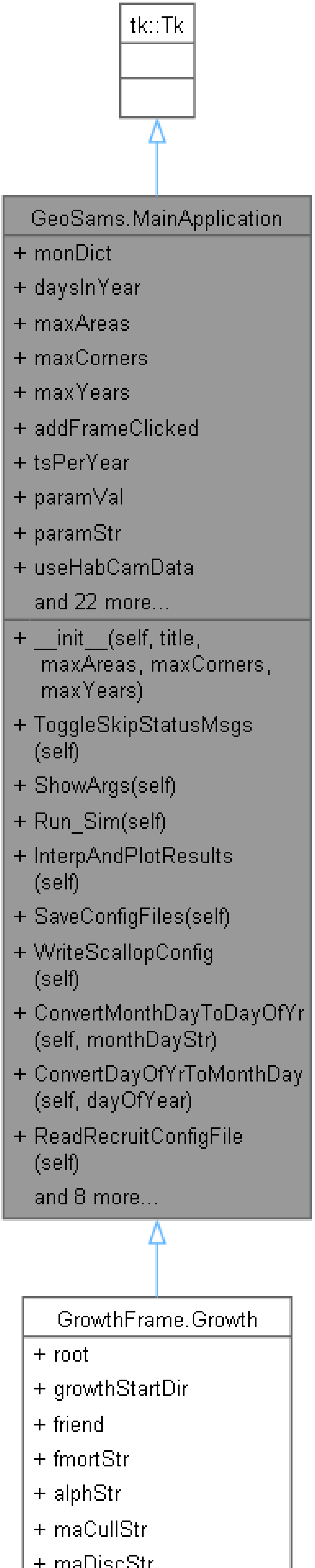
14.12.6.59 The documentation for this class was generated from the following file:

14.12.6.60 GrowthFrame.py

14.13 GeoSams.MainApplication Class Reference

This class is the parent class for the GUI.

Inheritance diagram for GeoSams.MainApplication:


tk::Tk
GeoSams.MainApplication
+ monDict
+ daysInYear
+ maxAreas
+ maxCorners
+ maxYears
+ addFrameClicked
+ tsPerYear
+ paramVal
+ paramStr
+ useHabCamData
and 22 more...
+ __init__(self, title, maxAreas, maxCorners, maxYears)
+ ToggleSkipStatusMsgs (self)
+ ShowArgs(self)
+ Run_Sim(self)
+ InterpAndPlotResults (self)
+ SaveConfigFiles(self)
+ WriteScallopConfig (self)
+ ConvertMonthDayToDayOfYr (self, monthDayStr)
+ ConvertDayOfYrToMonthDay (self, dayOfYear)
+ ReadRecruitConfigFile (self)
and 8 more...
GrowthFrame.Growth
+ root
+ growthStartDir
+ friend
+ fmortStr
+ alphStr
+ maCullStr
+ maDiscStr

14.13.1 Public Member Functions

__init__ (self, title, **maxAreas**, **maxCorners**, **maxYears**)
ToggleSkipStatusMsgs (self)
ShowArgs (self)

Display setup limits here Messagebox blocks entry widgets if attempted to open before the main window completes.

Run_Sim (self)

*Starts the GeoSAMS simulatation **ScallopPopDensity** .*

InterpAndPlotResults (self)
SaveConfigFiles (self)

Save all of the defined configuration files.

WriteScallopConfig (self)

Saves simulation configuration file.

ConvertMonthDayToDayOfYr (self, monthDayStr)

This method is used to converty the recruitment start and stop dates from a string month numerical day into days in a year.

ConvertDayOfYrToMonthDay (self, dayOfYear)
ReadRecruitConfigFile (self)

Read in the (tag, value) parameters from the recruitment to update parameters.

WriteRecruitmentConfig (self)

Saves recruitment parameters to a configuration file.

WriteGrowthConfig (self)

Saves mortality parameters to a configuration file.

WriteGridMgrConfig (self)

Saves grid manager parameters to a configuration file.

WriteSpatialFncsConfig (self, cfgFile, functions, numFncsEntry)

Saves spatial function parameters to a configuration file.

ReadConfigFile (self, fName)

Reads a typical configuration file to recover the tags and values.

ReadSimConfigFile (self)

Read in the (tag, value) parameters from the simulation configuration file.

ReadGridMgrConfigFile (self)

Read in the (tag, value) parameters from the grid manager configuration file.

pop_up (self)

14.13.2 Public Attributes

monDictdaysInYear
maxAreas
maxCorners
maxYears
addFrameClicked
tsPerYear
paramVal
paramStr
useHabCamData
domainName
yearStart
yearStop
simConfigFile
style
root
notebook
frame1
recrConfigFile
frame2
frame3
frame5
frame6
frame7
frame8
gmConfigFile
specAccFileStr
isSkip
skipStatusMsgs
skipStatusMsgsRB
recruitYrStrt
recruitYrStop

14.13.3 Detailed Description

This class is the parent class for the GUI.

14.13.4 Constructor & Destructor Documentation

14.13.4.1 GeoSams.MainApplication.__init__ (*self*, *title*, *maxAreas*, *maxCorners*, *maxYears*)

Reimplemented in **GrowthFrame.Growth** (*p.70*).

14.13.5 Member Function Documentation

14.13.5.1 GeoSams.MainApplication.ConvertDayOfYrToMonthDay (*self*, *dayOfYear*)

14.13.5.2 GeoSams.MainApplication.ConvertMonthDayToDayOfYr (*self*, *monthDayStr*)

This method is used to converty the recruitment start and stop dates from a string month numerical day into days in a year.

Changed entry to combo box to guarantee format

14.13.5.2.1 Parameters

monthDayStr	string that holds month and day in alpha format. That is 'JAN 01'

The Growth year starts on June 1st, actually May 31 at 2400 Jun 1st @ 0600 is day 0.25 which is = 0.25 /365.2425 = 0.00068 years June 1st @ 1200 is day 0.50 which is = 0.50 /365.2425 = 0.00137

June 1st @ 1800 is day 0.75 which is = 0.75 /365.2425 = 0.00205

June 1st @ 2359 is day 0.99 which is = 0.99931/365.2425 = 0.002736

Jun2 2nd @ 0000 is day 1 which is = 1.00000/365.2425 = 0.00274

Jun2 2nd @ 2400 is day 2 which is = 2.00000/365.2425 = 0.00548

Dec 31st @ 2400 is day 214 which is = 214. /365.2425 = 0.58591

Jan 1st @ 2400 is day 215 which is = 215. /365.2425 = 0.58865

= 1 + DayOfYear(12,31) - DayOfYear(5,31) Apr 10 @ 2400 is day 314 which is = 314. /365.2425 = 0.85970

if leap year 315 which is = 315. /365.2425 = 0.86244 However, leap year is handled in the main loop in which it is considered only for the current year

14.13.5.3 GeoSams.MainApplication.InterpAndPlotResults (*self*)

14.13.5.4 GeoSams.MainApplication.pop_up (*self*)

Reimplemented in **GrowthFrame.Growth** (*p.70*).

14.13.5.5 GeoSams.MainApplication.ReadConfigFile (*self*, *fName*)

Reads a typical configuration file to recover the tags and values.

The parameters in these files all have the following format:

# indicates that the line is a comment. Otherwise
'tag' = 'value

14.13.5.5.1 Parameters

fName	The name of the file to read.

14.13.5.5.2 Returns

An array of tuples showing (tag, value) found in the file

14.13.5.6 GeoSams.MainApplication.ReadGridMgrConfigFile (*self*)

Read in the (tag, value) parameters from the grid manager configuration file.

14.13.5.7 GeoSams.MainApplication.ReadRecruitConfigFile (*self*)

Read in the (tag, value) parameters from the recruitment to update parameters.

14.13.5.8 GeoSams.MainApplication.ReadSimConfigFile (*self*)

Read in the (tag, value) parameters from the simulation configuration file.

14.13.5.9 GeoSams.MainApplication.Run_Sim (*self*)

Starts the GeoSAMS simulatation **ScallopPopDensity** .

1a) TrawlData5mmbin(Year, 'DN') this will Delete bin5mm2022AL.csv INPUT: OriginalData\dredgetowbysize7917.csv OUTPUT: Data\bin5mm<yyyy><dn>.csv

14.13.5.10 GeoSams.MainApplication.SaveConfigFiles (*self*)

Save all of the defined configuration files.

14.13.5.11 GeoSams.MainApplication.ShowArgs (*self*)

Display setup limits here Messagebox blocks entry widgets if attempted to open before the main window completes.

14.13.5.12 GeoSams.MainApplication.ToggleSkipStatusMsgs (*self*)

14.13.5.13 GeoSams.MainApplication.WriteGridMgrConfig (*self*)

Saves grid manager parameters to a configuration file.

14.13.5.14 GeoSams.MainApplication.WriteGrowthConfig (*self*)

Saves mortality parameters to a configuration file.

14.13.5.15 GeoSams.MainApplication.WriteRecruitmentConfig (*self*)

Saves recruitment parameters to a configuration file.

14.13.5.16 GeoSams.MainApplication.WriteScallopConfig (*self*)

Saves simulation configuration file.

It does so by writeing the parameters for the to the name file as well as keeping helpfule comments.

14.13.5.17 GeoSams.MainApplication.WriteSpatialFncsConfig (*self*, *cfgFile*, *functions*, *numFncsEntry*)

Saves spatial function parameters to a configuration file.

14.13.6 Member Data Documentation

14.13.6.1 GeoSams.MainApplication.addFrameClicked

14.13.6.2 GeoSams.MainApplication.daysInYear

14.13.6.3 GeoSams.MainApplication.domainName

14.13.6.4 GeoSams.MainApplication.frame1

14.13.6.5 GeoSams.MainApplication.frame2

14.13.6.6 GeoSams.MainApplication.frame3

14.13.6.7 GeoSams.MainApplication.frame5

14.13.6.8 GeoSams.MainApplication.frame6

14.13.6.9 GeoSams.MainApplication.frame7

14.13.6.10 GeoSams.MainApplication.frame8

14.13.6.11 GeoSams.MainApplication.gmConfigFile

14.13.6.12 GeoSams.MainApplication.isSkip

14.13.6.13 GeoSams.MainApplication.maxAreas

14.13.6.14 GeoSams.MainApplication.maxCorners

14.13.6.15 GeoSams.MainApplication.maxYears

14.13.6.16 GeoSams.MainApplication.monDict

14.13.6.17 GeoSams.MainApplication.notebook

14.13.6.18 GeoSams.MainApplication.paramStr

14.13.6.19 GeoSams.MainApplication.paramVal

14.13.6.20 GeoSams.MainApplication.recrConfigFile

14.13.6.21 GeoSams.MainApplication.recruitYrStop

14.13.6.22 GeoSams.MainApplication.recruitYrStrt

14.13.6.23 GeoSams.MainApplication.root

14.13.6.24 GeoSams.MainApplication.simConfigFile

14.13.6.25 GeoSams.MainApplication.skipStatusMsgs

14.13.6.26 GeoSams.MainApplication.skipStatusMsgsRB

14.13.6.27 GeoSams.MainApplication.specAccFileStr

14.13.6.28 GeoSams.MainApplication.style

14.13.6.29 GeoSams.MainApplication.tsPerYear

14.13.6.30 GeoSams.MainApplication.useHabCamData

14.13.6.31 GeoSams.MainApplication.yearStart

14.13.6.32 GeoSams.MainApplication.yearStop

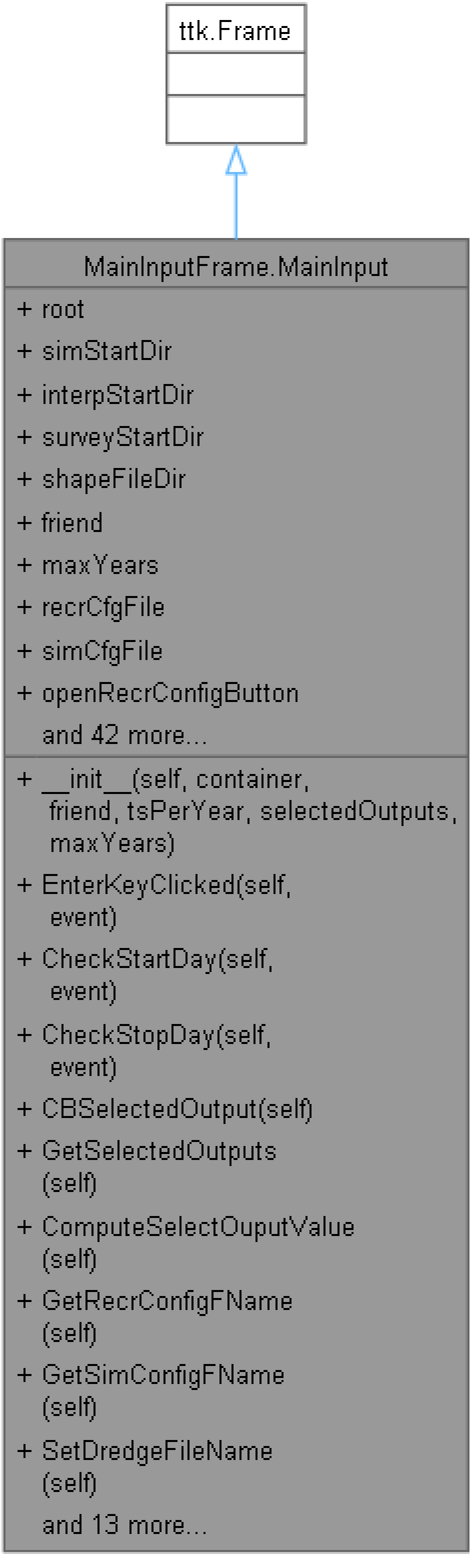
14.13.6.33 The documentation for this class was generated from the following file:

14.13.6.34 GeoSams.py

14.14 MainInputFrame.MainInput Class Reference

This class displays information about GeoSAMS simulation.

Inheritance diagram for MainInputFrame.MainInput:


ttk.Frame
MainInputFrame.MainInput
+ root
+ simStartDir
+ interpStartDir
+ surveyStartDir
+ shapeFileDir
+ friend
+ maxYears
+ recrCfgFile
+ simCfgFile
+ openRecrConfigButton
and 42 more...
+ __init__(self, container, friend, tsPerYear, selectedOutputs, maxYears)
+ EnterKeyClicked(self, event)
+ CheckStartDay(self, event)
+ CheckStopDay(self, event)
+ CBSelectedOutput(self)
+ GetSelectedOutputs (self)
+ ComputeSelectOuputValue (self)
+ GetRecrConfigFName (self)
+ GetSimConfigFName (self)
+ SetDredgeFileName (self)
and 13 more...

14.14.1 Public Member Functions

__init__ (self, container, **friend**, **tsPerYear**, selectedOutputs, **maxYears**)

EnterKeyClicked (self, event)

This method is called on both Enter Key clicked and goes out of focus.

CheckStartDay (self, event)

Checks start day to validate date is appropriate for month.

CheckStopDay (self, event)

Checks stop day to validate date is appropriate for month.

CBSelectedOutput (self)

Determines the value for which outputs are selected as they are checked.

GetSelectedOutputs (self)

Updates the final value from which outputs are selected.

ComputeSelectOuputValue (self)

Bit shifts (multiplies) checkbuttons and computes bit position value.

GetRecrConfigFName (self)

Calls the filedialog method asksaveasfilename to name a file to be used for the Recruitment Configuration file.

GetSimConfigFName (self)

Calls the filedialog method asksaveasfilename to name a file to be used for the Simulation Configuration file.

SetDredgeFileName (self)
SetDredgeFileEnvVar (self)
SetHabCamFileName (self)
SetHabCamFileEnvVar (self)
OpenPDF (self)
SetMaShapeFile (self)
SetMaShapeFileEnvVar (self)
SetGbShapeFile (self)
SetGBShapeFileEnvVar (self)
SetMaShapeBufferFile (self)
SetMaShapeBufferFileEnvVar (self)
SetGbShapeBufferFile (self)
SetGBShapeBufferFileEnvVar (self)
pop_up (self)

14.14.2 Public Attributes

rootsimStartDir
interpStartDir
surveyStartDir
shapeFileDir
friend
maxYears
recrCfgFile

simCfgFile
openRecrConfigButton
openSimConfigButton
openPDFButton
dredgeDataFile
habCamDataFile
setDredgeDataButton
setHabCamDataButton
maShapeFileEntry
gbShapeFileEntry
maShapeBufferFileEntry
gbShapeBufferFileEntry
setMaShapeFileButton
setGbShapeFileButton
setMaShapeBufferFileButton
setGbShapeBufferFileButton
monthsArr
startDayLabel
startDayComboMonth
CheckStartDay
startDayComboDay
stopDayLabel
stopDayComboMonth
CheckStopDay
stopDayComboDay
recrYrStrt
recrYrStop
numYrsAvg
startYr
stopYr
tsPerYear
domainNameLabel
domainNameCombo
lpueVar
ebmsVar
bmsVar
abunVar
lndwVar
landVar
feffVar
fmortVar
recrVar
desiredOutput
areaFName

14.14.3 Detailed Description

This class displays information about GeoSAMS simulation.

This same information is used on the command line when starting SRC\ScallopPopDensity

14.14.4 Constructor & Destructor Documentation

14.14.4.1 MainInputFrame.MainInput.__init__ (*self*, *container*, *friend*, *tsPerYear*, *selectedOutputs*, *maxYears*)

14.14.5 Member Function Documentation

14.14.5.1 MainInputFrame.MainInput.CBSelectedOutput (*self*)

Determines the value for which outputs are selected as they are checked.

14.14.5.2 MainInputFrame.MainInput.CheckStartDay (*self*, *event*)

Checks start day to validate date is appropriate for month.

Does not consider if leap year

14.14.5.3 MainInputFrame.MainInput.CheckStopDay (*self*, *event*)

Checks stop day to validate date is appropriate for month.

Does not consider if leap year

14.14.5.4 MainInputFrame.MainInput.ComputeSelectOuputValue (*self*)

Bit shifts (multiplies) checkbuttons and computes bit position value.

14.14.5.5 MainInputFrame.MainInput.EnterKeyClicked (*self*, *event*)

This method is called on both Enter Key clicked and goes out of focus.

14.14.5.6 MainInputFrame.MainInput.GetRecrConfigFName (*self*)

Calls the filedialog method asksaveasfilename to name a file to be used for the Recruitment Configuration file.

It then writes out the defined parameters to this file using the 'tag = value' format.

14.14.5.7 MainInputFrame.MainInput.GetSelectedOutputs (*self*)

Updates the final value from which outputs are selected.

14.14.5.8 MainInputFrame.MainInput.GetSimConfigFName (*self*)

Calls the filedialog method asksaveasfilename to name a file to be used for the Simulation Configuration file.

It then writes out the defined parameters to this file using the 'tag = value' format.

14.14.5.9 MainInputFrame.MainInput.OpenPDF (*self*)

14.14.5.10 MainInputFrame.MainInput.pop_up (*self*)

14.14.5.11 MainInputFrame.MainInput.SetDredgeFileEnvVar (*self*)

14.14.5.12 MainInputFrame.MainInput.SetDredgeFileName (*self*)

14.14.5.13 MainInputFrame.MainInput.SetGbShapeBufferFile (*self*)

14.14.5.14 MainInputFrame.MainInput.SetGBShapeBufferFileEnvVar (*self*)

14.14.5.15 MainInputFrame.MainInput.SetGbShapeFile (*self*)

14.14.5.16 MainInputFrame.MainInput.SetGBShapeFileEnvVar (*self*)

14.14.5.17 MainInputFrame.MainInput.SetHabCamFileEnvVar (*self*)

14.14.5.18 MainInputFrame.MainInput.SetHabCamFileName (*self*)

14.14.5.19 MainInputFrame.MainInput.SetMaShapeBufferFile (*self*)

14.14.5.20 MainInputFrame.MainInput.SetMaShapeBufferFileEnvVar (*self*)

14.14.5.21 MainInputFrame.MainInput.SetMaShapeFile (*self*)

14.14.5.22 MainInputFrame.MainInput.SetMaShapeFileEnvVar (*self*)

14.14.6 Member Data Documentation

14.14.6.1 MainInputFrame.MainInput.abunVar

14.14.6.2 MainInputFrame.MainInput.areaFName

14.14.6.3 MainInputFrame.MainInput.bmsVar

14.14.6.4 MainInputFrame.MainInput.CheckStartDay

14.14.6.5 MainInputFrame.MainInput.CheckStopDay

14.14.6.6 MainInputFrame.MainInput.desiredOutput

14.14.6.7 MainInputFrame.MainInput.domainNameCombo

14.14.6.8 MainInputFrame.MainInput.domainNameLabel

14.14.6.9 MainInputFrame.MainInput.dredgeDataFile

14.14.6.10 MainInputFrame.MainInput.ebmsVar

14.14.6.11 MainInputFrame.MainInput.feffVar

14.14.6.12 MainInputFrame.MainInput.fmortVar

14.14.6.13 MainInputFrame.MainInput.friend

14.14.6.14 MainInputFrame.MainInput.gbShapeBufferFileEntry

14.14.6.15 MainInputFrame.MainInput.gbShapeFileEntry

14.14.6.16 MainInputFrame.MainInput.habCamDataFile

14.14.6.17 MainInputFrame.MainInput.interpStartDir

14.14.6.18 MainInputFrame.MainInput.landVar

14.14.6.19 MainInputFrame.MainInput.lndwVar

14.14.6.20 MainInputFrame.MainInput.lpueVar

14.14.6.21 MainInputFrame.MainInput.maShapeBufferFileEntry

14.14.6.22 MainInputFrame.MainInput.maShapeFileEntry

14.14.6.23 MainInputFrame.MainInput.maxYears

14.14.6.24 MainInputFrame.MainInput.monthsArr

14.14.6.25 MainInputFrame.MainInput.numYrsAvg

14.14.6.26 MainInputFrame.MainInput.openPDFButton

14.14.6.27 MainInputFrame.MainInput.openRecrConfigButton

14.14.6.28 MainInputFrame.MainInput.openSimConfigButton

14.14.6.29 MainInputFrame.MainInput.recrCfgFile

14.14.6.30 MainInputFrame.MainInput.recrVar

14.14.6.31 MainInputFrame.MainInput.recrYrStop

14.14.6.32 MainInputFrame.MainInput.recrYrStrt

14.14.6.33 MainInputFrame.MainInput.root

14.14.6.34 MainInputFrame.MainInput.setDredgeDataButton

14.14.6.35 MainInputFrame.MainInput.setGbShapeBufferFileButton

14.14.6.36 MainInputFrame.MainInput.setGbShapeFileButton

14.14.6.37 MainInputFrame.MainInput.setHabCamDataButton

14.14.6.38 MainInputFrame.MainInput.setMaShapeBufferFileButton

14.14.6.39 MainInputFrame.MainInput.setMaShapeFileButton

14.14.6.40 MainInputFrame.MainInput.shapeFileDir

14.14.6.41 MainInputFrame.MainInput.simCfgFile

14.14.6.42 MainInputFrame.MainInput.simStartDir

14.14.6.43 MainInputFrame.MainInput.startDayComboDay

14.14.6.44 MainInputFrame.MainInput.startDayComboMonth

14.14.6.45 MainInputFrame.MainInput.startDayLabel

14.14.6.46 MainInputFrame.MainInput.startYr

14.14.6.47 MainInputFrame.MainInput.stopDayComboDay

14.14.6.48 MainInputFrame.MainInput.stopDayComboMonth

14.14.6.49 MainInputFrame.MainInput.stopDayLabel

14.14.6.50 MainInputFrame.MainInput.stopYr

14.14.6.51 MainInputFrame.MainInput.surveyStartDir

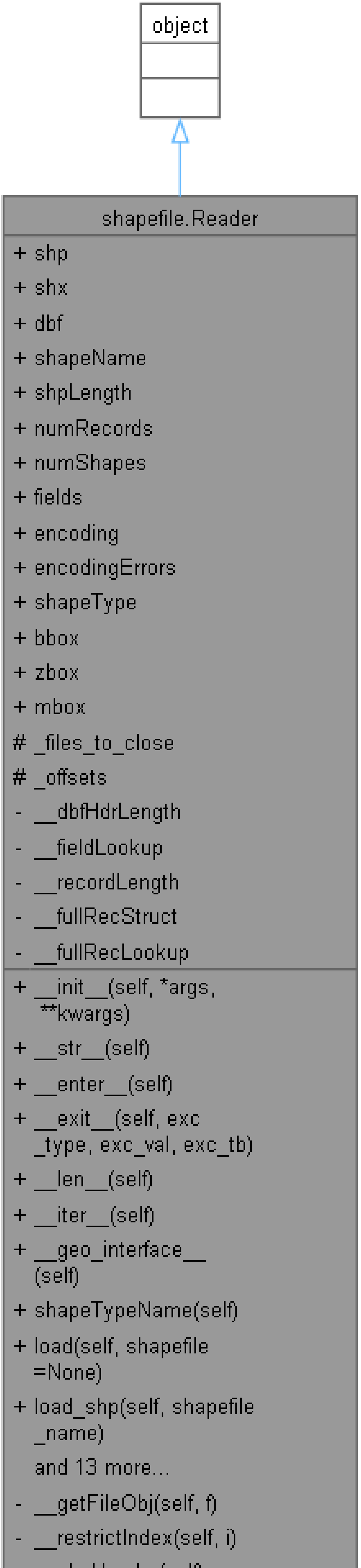
14.14.6.52 MainInputFrame.MainInput.tsPerYear

14.14.6.53 The documentation for this class was generated from the following file:

14.14.6.54 MainInputFrame.py

14.15shapefile.Reader Class Reference

Inheritance diagram for shapefile.Reader:


object
shapefile.Reader
+ shp
+ shx
+ dbf
+ shapeName
+ shpLength
+ numRecords
+ numShapes
+ fields
+ encoding
+ encodingErrors
+ shapeType
+ bbox
+ zbox
+ mbox
# _files_to_close
# _offsets
- __dbfHdrLength
- __fieldLookup
- __recordLength
- __fullRecStruct
- __fullRecLookup
+ __init__(self, *args, **kwargs)
+ __str__(self)
+ __enter__(self)
+ __exit__(self, exc_type, exc_val, exc_tb)
+ __len__(self)
+ __iter__(self)
+ __geo_interface__(self)
+ shapeTypeName(self)
+ load(self, shapefile=None)
+ load_shp(self, shapefile_name)
and 13 more...
- __getFileObj(self, f)
- __restrictIndex(self, i)

14.15.1 Public Member Functions

__init__ (self, *args, **kwargs)
__str__ (self)
__enter__ (self)
__exit__ (self, exc_type, exc_val, exc_tb)
__len__ (self)
__iter__ (self)
__geo_interface__ (self)
shapeTypeName (self)
load (self, shapefile=None)
load_shp (self, shapefile_name)
load_shx (self, shapefile_name)
load_dbf (self, shapefile_name)
__del__ (self)
close (self)
shape (self, i=0, **bbox**=None)
shapes (self, **bbox**=None)
iterShapes (self, **bbox**=None)
record (self, i=0, **fields**=None)
records (self, **fields**=None)
iterRecords (self, **fields**=None)
shapeRecord (self, i=0, **fields**=None, **bbox**=None)
shapeRecords (self, **fields**=None, **bbox**=None)
iterShapeRecords (self, **fields**=None, **bbox**=None)

14.15.2 Public Attributes

shpshx
dbf
shapeName
shpLength
numRecords
numShapes
fields
encoding
encodingErrors
shapeType
bbox
zbox
mbox

14.15.3 Protected Attributes

_files_to_close_offsets

14.15.4 Private Member Functions

__getFileObj (self, f)
__restrictIndex (self, i)
__shpHeader (self)
__shape (self, oid=None, **bbox**=None)
__shxHeader (self)
__shxOffsets (self)
__shapeIndex (self, i=None)
__dbfHeader (self)

__recordFmt (self, **fields**=None)
__recordFields (self, **fields**=None)
__record (self, fieldTuples, recLookup, recStruct, oid=None)

14.15.5 Private Attributes

__dbfHdrLength__fieldLookup
__recordLength
__fullRecStruct
__fullRecLookup

14.15.6 Detailed Description

```
Reads the three files of a shapefile as a unit or
separately.  If one of the three files (.shp, .shx,
.dbf) is missing no exception is thrown until you try
to call a method that depends on that particular file.
The .shx index file is used if available for efficiency
but is not required to read the geometry from the .shp
file. The "shapefile" argument in the constructor is the
name of the file you want to open, and can be the path
to a shapefile on a local filesystem, inside a zipfile,
or a url.

You can instantiate a Reader without specifying a shapefile
and then specify one later with the load() method.

Only the shapefile headers are read upon loading. Content
within each file is only accessed when required and as
efficiently as possible. Shapefiles are usually not large
but they can be.
```

14.15.7 Constructor & Destructor Documentation

14.15.7.1 shapefile.Reader.__init__ (*self*, * *args*, ** *kwargs*)

14.15.7.2 shapefile.Reader.__del__ (*self*)

14.15.8 Member Function Documentation

14.15.8.1 shapefile.Reader.__dbfHeader (*self*) `[private]`

Reads a dbf header. Xbase-related code borrows heavily from ActiveState Python Cookbook Recipe 362715 by Raymond Hettinger

14.15.8.2 shapefile.Reader.__enter__ (*self*)

```
Enter phase of context manager.
```

14.15.8.3 shapefile.Reader.__exit__ (*self*, *exc_type*, *exc_val*, *exc_tb*)

```
Exit phase of context manager, close opened files.
```

14.15.8.4 shapefile.Reader.__geo_interface__ (*self*)

14.15.8.5 shapefile.Reader.__getFileObj (*self*, *f*) `[private]`

```
Checks to see if the requested shapefile file object is
```

available. If not a ShapefileException is raised.

14.15.8.6 shapefile.Reader.__iter__ (*self*)

Iterates through the shapes/records in the shapefile.

14.15.8.7 shapefile.Reader.__len__ (*self*)

Returns the number of shapes/records in the shapefile.

14.15.8.8 shapefile.Reader.__record (*self*, *fieldTuples*, *recLookup*, *recStruct*, *oid* = `None`) `[private]`

```
Reads and returns a dbf record row as a list of values. Requires specifying
a list of field info tuples 'fieldTuples', a record name-index dict 'recLookup',
and a Struct instance 'recStruct' for unpacking these fields.
```

14.15.8.9 shapefile.Reader.__recordFields (*self*, *fields* = `None`) `[private]`

```
Returns the necessary info required to unpack a record's fields,
restricted to a subset of fieldnames 'fields' if specified.
Returns a list of field info tuples, a name-index lookup dict,
and a Struct instance for unpacking these fields. Note that DeletionFlag
is not a valid field.
```

14.15.8.10 shapefile.Reader.__recordFmt (*self*, *fields* = `None`) `[private]`

```
Calculates the format and size of a .dbf record. Optional 'fields' arg
specifies which fieldnames to unpack and which to ignore. Note that this
always includes the DeletionFlag at index 0, regardless of the 'fields' arg.
```

14.15.8.11 shapefile.Reader.__restrictIndex (*self*, *i*) `[private]`

```
Provides list-like handling of a record index with a clearer
```

error message if the index is out of bounds.

14.15.8.12 shapefile.Reader.__shape (*self*, *oid* = `None`, *bbox* = `None`) `[private]`

Returns the header info and geometry for a single shape.

14.15.8.13 shapefile.Reader.__shapeIndex (*self*, *i* = `None`) `[private]`

```
Returns the offset in a .shp file for a shape based on information
```

in the .shx index file.

14.15.8.14 shapefile.Reader.__shpHeader (*self*) `[private]`

Reads the header information from a .shp file.

14.15.8.15 shapefile.Reader.__shxHeader (*self*) `[private]`

Reads the header information from a .shx file.

14.15.8.16 shapefile.Reader.__shxOffsets (*self*) `[private]`

Reads the shape offset positions from a .shx file

14.15.8.17 shapefile.Reader.__str__ (*self*)

```
Use some general info on the shapefile as __str__
```

14.15.8.18 shapefile.Reader.close (*self*)

14.15.8.19 shapefile.Reader.iterRecords (*self*, *fields* = `None`)

```
Returns a generator of records in a dbf file.
Useful for large shapefiles or dbf files.
To only read some of the fields, specify the 'fields' arg as a
list of one or more fieldnames.
```

14.15.8.20 shapefile.Reader.iterShapeRecords (*self*, *fields* = `None`, *bbox* = `None`)

```
Returns a generator of combination geometry/attribute records for
all records in a shapefile.
To only read some of the fields, specify the 'fields' arg as a
list of one or more fieldnames.
To only read entries within a given spatial region, specify the 'bbox'
arg as a list or tuple of xmin,ymin,xmax,ymax.
```

14.15.8.21 shapefile.Reader.iterShapes (*self*, *bbox* = `None`)

```
Returns a generator of shapes in a shapefile. Useful
for handling large shapefiles.
To only read shapes within a given spatial region, specify the 'bbox'
arg as a list or tuple of xmin,ymin,xmax,ymax.
```

14.15.8.22 shapefile.Reader.load (*self*, *shapefile* = `None`)

```
Opens a shapefile from a filename or file-like
object. Normally this method would be called by the
```

constructor with the file name as an argument.

14.15.8.23 shapefile.Reader.load_dbf (*self*, *shapefile_name*)

```
Attempts to load file with .dbf extension as both lower and upper case
```

14.15.8.24 shapefile.Reader.load_shp (*self*, *shapefile_name*)

```
Attempts to load file with .shp extension as both lower and upper case
```

14.15.8.25 shapefile.Reader.load_shx (*self*, *shapefile_name*)

```
Attempts to load file with .shx extension as both lower and upper case
```

14.15.8.26 shapefile.Reader.record (*self*, *i* = `0`, *fields* = `None`)

```
Returns a specific dbf record based on the supplied index.
To only read some of the fields, specify the 'fields' arg as a
list of one or more fieldnames.
```

14.15.8.27 shapefile.Reader.records (*self*, *fields* = `None`)

```
Returns all records in a dbf file.
To only read some of the fields, specify the 'fields' arg as a
list of one or more fieldnames.
```

14.15.8.28 shapefile.Reader.shape (*self*, *i* = `0`, *bbox* = `None`)

```
Returns a shape object for a shape in the geometry
record file.
If the 'bbox' arg is given (list or tuple of xmin,ymin,xmax,ymax),
returns None if the shape is not within that region.
```

14.15.8.29 shapefile.Reader.shapeRecord (*self*, *i* = 0, *fields* = None, *bbox* = None)

```
Returns a combination geometry and attribute record for the
supplied record index.
To only read some of the fields, specify the 'fields' arg as a
list of one or more fieldnames.
If the 'bbox' arg is given (list or tuple of xmin,ymin,xmax,ymax),
returns None if the shape is not within that region.
```

14.15.8.30 shapefile.Reader.shapeRecords (*self*, *fields* = None, *bbox* = None)

```
Returns a list of combination geometry/attribute records for
all records in a shapefile.
To only read some of the fields, specify the 'fields' arg as a
list of one or more fieldnames.
To only read entries within a given spatial region, specify the 'bbox'
arg as a list or tuple of xmin,ymin,xmax,ymax.
```

14.15.8.31 shapefile.Reader.shapes (*self*, *bbox* = None)

```
Returns all shapes in a shapefile.
To only read shapes within a given spatial region, specify the 'bbox'
arg as a list or tuple of xmin,ymin,xmax,ymax.
```

14.15.8.32 shapefile.Reader.shapeTypeName (*self*)

14.15.9 Member Data Documentation

14.15.9.1 shapefile.Reader.__dbfHdrLength `[private]`

14.15.9.2 shapefile.Reader.__fieldLookup `[private]`

14.15.9.3 shapefile.Reader.__fullRecLookup `[private]`

14.15.9.4 shapefile.Reader.__fullRecStruct `[private]`

14.15.9.5 shapefile.Reader.__recordLength `[private]`

14.15.9.6 shapefile.Reader._files_to_close `[protected]`

14.15.9.7 shapefile.Reader._offsets `[protected]`

14.15.9.8 shapefile.Reader.bbox

14.15.9.9 shapefile.Reader.dbf

14.15.9.10 shapefile.Reader.encoding

14.15.9.11 shapefile.Reader.encodingErrors

14.15.9.12 shapefile.Reader.fields

14.15.9.13 shapefile.Reader.mbox

14.15.9.14 shapefile.Reader.numRecords

14.15.9.15 shapefile.Reader.numShapes

14.15.9.16 shapefile.Reader.shapeName

14.15.9.17 shapefile.Reader.shapeType

14.15.9.18 shapefile.Reader.shp

14.15.9.19 shapefile.Reader.shpLength

14.15.9.20 shapefile.Reader.shx

14.15.9.21 shapefile.Reader.zbox

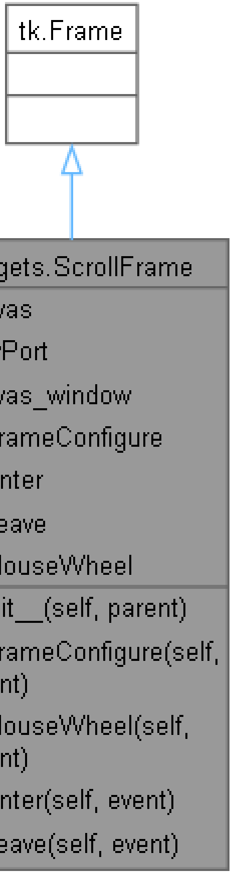
14.15.9.22 The documentation for this class was generated from the following file:

PyshpMaster/**shapefile.py**

14.15.9.23

14.16Widgets.ScrollFrame Class Reference

Scrollable Frame Class from
`https://gist.github.com/mp035/9f2027c3ef9172264532fcd6262f3b01`.
Inheritance diagram for Widgets.ScrollFrame:



14.16.1 Public Member Functions

__init__ (self, parent)
onFrameConfigure (self, event)

whenever the size of the frame changes, alter the scroll region respectively.

onMouseWheel (self, event)

cross platform scroll wheel event

onEnter (self, event)

bind wheel events when the cursor enters the control

onLeave (self, event)

unbind wheel events when the cursorl leaves the control

14.16.2 Public Attributes

canvasviewPort
canvas_window
onFrameConfigure
onEnter
onLeave
onMouseWheel

14.16.3 Detailed Description

Scrollable Frame Class from `https://gist.github.com/mp035/9f2027c3ef9172264532fcd6262f3b01`.

14.16.4 Constructor & Destructor Documentation

14.16.4.1 Widgets.ScrollFrame.__init__ (*self*, *parent*)

14.16.5 Member Function Documentation

14.16.5.1 Widgets.ScrollFrame.onEnter (*self*, *event*)

bind wheel events when the cursor enters the control

14.16.5.2 Widgets.ScrollFrame.onFrameConfigure (*self*, *event*)

whenever the size of the frame changes, alter the scroll region respectively.

Reset the scroll region to encompass the inner frame

14.16.5.3 Widgets.ScrollFrame.onLeave (*self*, *event*)

unbind wheel events when the cursorl leaves the control

14.16.5.4 Widgets.ScrollFrame.onMouseWheel (*self*, *event*)

cross platform scroll wheel event

14.16.6 Member Data Documentation

14.16.6.1 Widgets.ScrollFrame.canvas

14.16.6.2 Widgets.ScrollFrame.canvas_window

14.16.6.3 Widgets.ScrollFrame.onEnter

14.16.6.4 Widgets.ScrollFrame.onFrameConfigure

14.16.6.5 Widgets.ScrollFrame.onLeave

14.16.6.6 Widgets.ScrollFrame.onMouseWheel

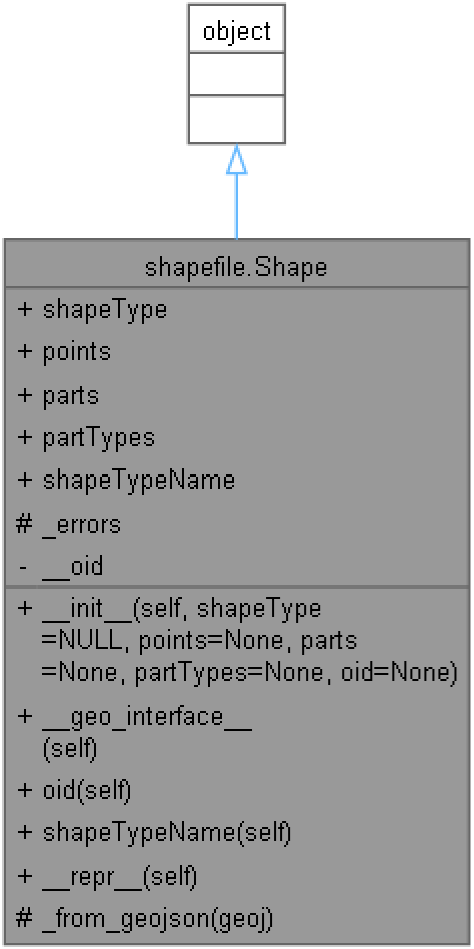
14.16.6.7 Widgets.ScrollFrame.viewPort

14.16.6.8 The documentation for this class was generated from the following file:

14.16.6.9 Widgets.py

14.17 shapefile.Shape Class Reference

Inheritance diagram for shapefile.Shape:



14.17.1 Public Member Functions

__init__ (self, **shapeType**=**NULL**, **points**=None, **parts**=None, **partTypes**=None, **oid**=None)
__geo_interface__ (self)
oid (self)
shapeTypeName (self)
__repr__ (self)

14.17.2 Public Attributes

shapeTypepoints
parts
partTypes
shapeTypeName

14.17.3 Static Protected Member Functions

_from_geojson (geoj)

14.17.4 Protected Attributes

14.17.5 _errorsPrivate Attributes

__oid

14.17.6 Constructor & Destructor Documentation

14.17.6.1 shapefile.Shape.__init__ (*self*, *shapeType* = `NULL`, *points* = `None`, *parts* = `None`, *partTypes* = `None`, *oid* = `None`)

```
Stores the geometry of the different shape types
specified in the Shapefile spec. Shape types are
usually point, polyline, or polygons. Every shape type
except the "Null" type contains points at some level for
example vertices in a polygon. If a shape type has
multiple shapes containing points within a single
geometry record then those shapes are called parts. Parts
are designated by their starting index in geometry record's
list of shapes. For MultiPatch geometry, partTypes designates
the patch type of each of the parts.
```

14.17.7 Member Function Documentation

14.17.7.1 shapefile.Shape.__geo_interface__ (*self*)

14.17.7.2 shapefile.Shape.__repr__ (*self*)

14.17.7.3 shapefile.Shape._from_geojson (*geoj*) `[static]`, `[protected]`

14.17.7.4 shapefile.Shape.oid (*self*)

The index position of the shape in the original shapefile

14.17.7.5 shapefile.Shape.shapeTypeName (*self*)

14.17.8 Member Data Documentation

14.17.8.1 shapefile.Shape.__oid [private]

14.17.8.2 shapefile.Shape._errors [protected]

14.17.8.3 shapefile.Shape.parts

14.17.8.4 shapefile.Shape.partTypes

14.17.8.5 shapefile.Shape.points

14.17.8.6 shapefile.Shape.shapeType

14.17.8.7 shapefile.Shape.shapeTypeName

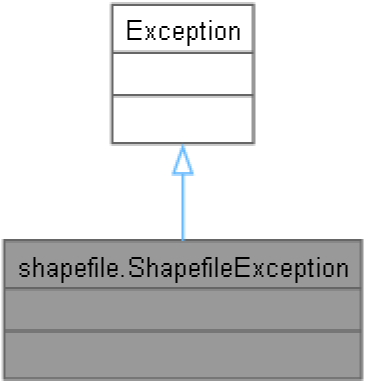
14.17.8.8 The documentation for this class was generated from the following file:

PyshpMaster/**shapefile.py**

14.17.8.9

14.18 shapefile.ShapefileException Class Reference

Inheritance diagram for shapefile.ShapefileException:



14.18.1 Detailed Description

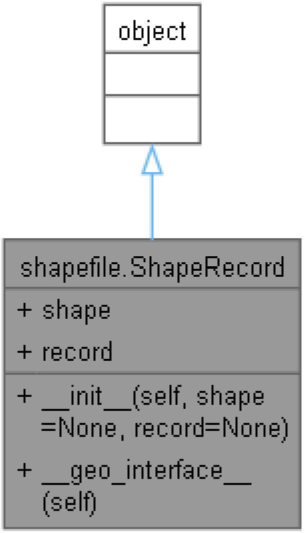
An exception to handle shapefile specific problems.

The documentation for this class was generated from the following file:

PyshpMaster/**shapefile.py**

14.19 shapefile.ShapeRecord Class Reference

Inheritance diagram for shapefile.ShapeRecord:


object
shapefile.ShapeRecord
+ shape
+ record
+ __init__(self, shape =None, record=None)
+ __geo_interface__ (self)

14.19.1 Public Member Functions

__init__ (self, **shape**=None, **record**=None)
__geo_interface__ (self)

14.19.2 Public Attributes

shaperecord

14.19.3 Detailed Description

```
A ShapeRecord object containing a shape along with its attributes.
```

Provides the GeoJSON __geo_interface__ to return a Feature dictionary.

14.19.4 Constructor & Destructor Documentation

14.19.4.1 shapefile.ShapeRecord.__init__ (*self*, *shape* = `None`, *record* = `None`)

14.19.5 Member Function Documentation

14.19.5.1 shapefile.ShapeRecord.__geo_interface__ (*self*)

14.19.6 Member Data Documentation

14.19.6.1 shapefile.ShapeRecord.record

14.19.6.2 shapefile.ShapeRecord.shape

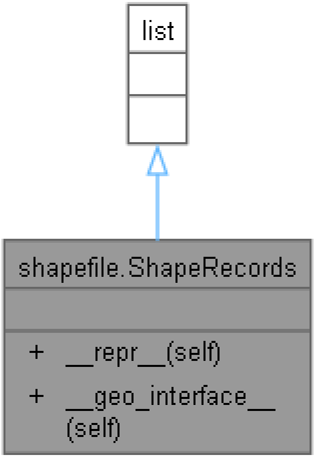
14.19.6.3 The documentation for this class was generated from the following file:

PyshpMaster/**shapefile.py**

14.19.6.4

14.20 shapefile.ShapeRecords Class Reference

Inheritance diagram for shapefile.ShapeRecords:



14.20.1 Public Member Functions

__repr__ (self)
__geo_interface__ (self)

14.20.2 Detailed Description

```
A class to hold a list of ShapeRecord objects. Subclasses list to ensure compatibility
with
former work and to reuse all the optimizations of the builtin list.
In addition to the list interface, this also provides the GeoJSON __geo_interface__
```

to return a FeatureCollection dictionary.

14.20.3 Member Function Documentation

14.20.3.1 shapefile.ShapeRecords.__geo_interface__ (*self*)

14.20.3.2 shapefile.ShapeRecords.__repr__ (*self*)

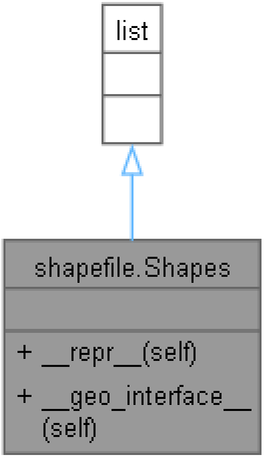
14.20.3.3 The documentation for this class was generated from the following file:

PyshpMaster/**shapefile.py**

14.20.3.4

14.21 shapefile.Shapes Class Reference

Inheritance diagram for shapefile.Shapes:



14.21.1 Public Member Functions

__repr__ (self)
__geo_interface__ (self)

14.21.2 Detailed Description

```
A class to hold a list of Shape objects. Subclasses list to ensure compatibility with
former work and to reuse all the optimizations of the builtin list.
In addition to the list interface, this also provides the GeoJSON __geo_interface__
```

to return a GeometryCollection dictionary.

14.21.3 Member Function Documentation

14.21.3.1 shapefile.Shapes.__geo_interface__ (*self*)

14.21.3.2 shapefile.Shapes.__repr__ (*self*)

14.21.3.3 The documentation for this class was generated from the following file:

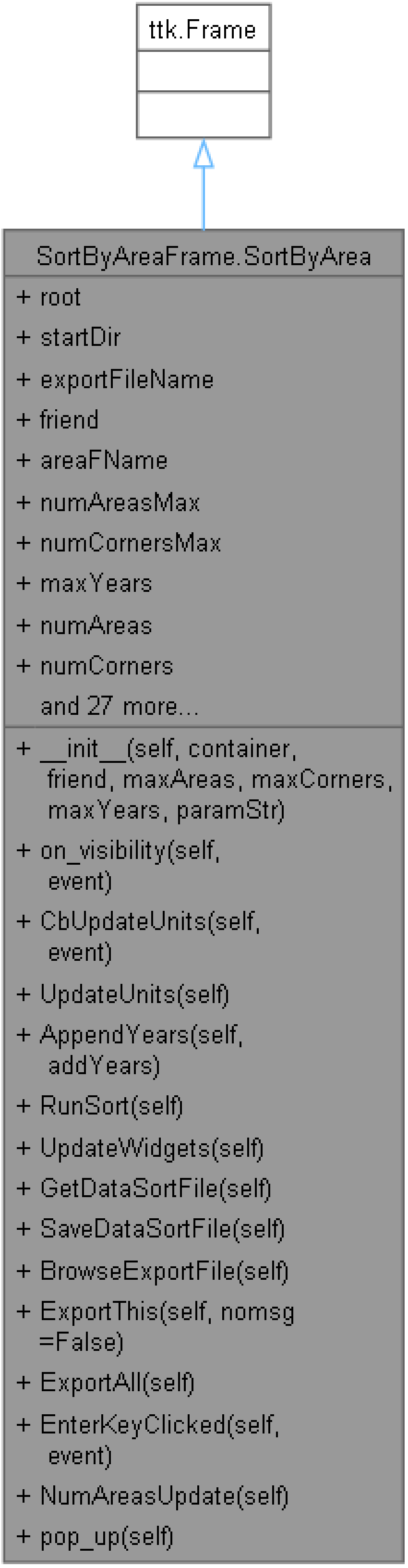
PyshpMaster/**shapefile.py**

14.21.3.4

14.22 SortByAreaFrame.SortByArea Class Reference

This class is used to assist the user in defining areas of interest to assess accumulated parameters located in these areas of interest.

Inheritance diagram for SortByAreaFrame.SortByArea:


ttk.Frame
SortByAreaFrame.SortByArea
+ root
+ startDir
+ exportFileName
+ friend
+ areaFName
+ numAreasMax
+ numCornersMax
+ maxYears
+ numAreas
+ numCorners
and 27 more...
+ __init__(self, container, friend, maxAreas, maxCorners, maxYears, paramStr)
+ on_visibility(self, event)
+ CbUpdateUnits(self, event)
+ UpdateUnits(self)
+ AppendYears(self, addYears)
+ RunSort(self)
+ UpdateWidgets(self)
+ GetDataSortFile(self)
+ SaveDataSortFile(self)
+ BrowseExportFile(self)
+ ExportThis(self, nomsg =False)
+ ExportAll(self)
+ EnterKeyClicked(self, event)
+ NumAreasUpdate(self)
+ pop_up(self)

14.22.1 Public Member Functions

__init__ (self, container, **friend**, maxAreas, maxCorners, **maxYears**, **paramStr**)
on_visibility (self, event)
CbUpdateUnits (self, event)
UpdateUnits (self)
AppendYears (self, addYears)
RunSort (self)
UpdateWidgets (self)
GetDataSortFile (self)
SaveDataSortFile (self)
BrowseExportFile (self)
ExportThis (self, nomsg=False)

This method exports the current page of data, just a single output parameter.

ExportAll (self)

Export all select parameters.

EnterKeyClicked (self, event)
NumAreasUpdate (self)
pop_up (self)

Help Window for Sort By Area.

14.22.2 Public Attributes

rootstartDir
exportFileName
friend
areaFName
numAreasMax
numCornersMax
maxYears
numAreas

f.write('AREA,YEAR,' + outStr + ' ('+ units + ')

') Write Header

numCornersparamStr
yearStart

f.write('AREA,YEAR,' + outStr + ' ('+ units + ')

') Write Header

yearStopnumYears

f.write('AREA,YEAR,' + outStr + ' ('+ units + ')

') Write Header

areaDatascrollFrame
numAreasLabel
numAreasEntry
EnterKeyClicked
outputParmLabel

comboParameter
CbUpdateUnits
dataSortFileLabel
dataSortFileEntry
dataSortUnitsLabel
dataSortUnitsEntry
openDataSortButton
saveDataSortButton
runSortButton
exportThisSortButton
exportAllSortButton
exportFileLabel
exportFileEntry
browseExportButton
areas
on_visibility
domainName

14.22.3 Detailed Description

This class is used to assist the user in defining areas of interest to assess accumulated parameters located in these areas of interest.

14.22.3.1.1Parameters

friend	is used to access Start and Stop year from the Main Frame
maxAreas	defined at start up for the maximum allowed areas
maxCorners	defined at start up for the maximum allowed corners or nodes
maxYears	defined at start up for the maximum allowed year range
paramStr	defined at start up for the desired outputs

14.22.4 Constructor & Destructor Documentation

14.22.4.1 SortByAreaFrame.SortByArea.__init__ (*self*, *container*, *friend*, *maxAreas*, *maxCorners*, *maxYears*, *paramStr*)

14.22.5 Member Function Documentation

14.22.5.1 SortByAreaFrame.SortByArea.AppendYears (*self*, *addYears*)

14.22.5.2 SortByAreaFrame.SortByArea.BrowseExportFile (*self*)

14.22.5.3 SortByAreaFrame.SortByArea.CbUpdateUnits (*self*, *event*)

14.22.5.4 SortByAreaFrame.SortByArea.EnterKeyClicked (*self*, *event*)

14.22.5.5 SortByAreaFrame.SortByArea.ExportAll (*self*)

Export all select parameters.

For each parameter

Verify data file exists, Lat_Lon_Grid_ + ABUN_ + AL + _ 2015_2017

14.22.5.6 SortByAreaFrame.SortByArea.ExportThis (*self*, *nomsg* = `False`)

This method exports the current page of data, just a single output parameter.

First row : AREA YEAR PARAMETER (UNITS) 1 StartYear
1 ... 1 StopYear ... ... N StartYear
N ... N StopYear

14.22.5.7 SortByAreaFrame.SortByArea.GetDataSortFile (*self*)

14.22.5.8 SortByAreaFrame.SortByArea.NumAreasUpdate (*self*)

Updates the number of areas functions.

14.22.5.9 SortByAreaFrame.SortByArea.on_visibility (*self*, *event*)

14.22.5.10 SortByAreaFrame.SortByArea.pop_up (*self*)

Help Window for Sort By Area.

14.22.5.11 SortByAreaFrame.SortByArea.RunSort (*self*)

14.22.5.12 SortByAreaFrame.SortByArea.SaveDataSortFile (*self*)

14.22.5.13 SortByAreaFrame.SortByArea.UpdateUnits (*self*)

14.22.5.14 SortByAreaFrame.SortByArea.UpdateWidgets (*self*)

14.22.6 Member Data Documentation

14.22.6.1 SortByAreaFrame.SortByArea.areaData

14.22.6.2 SortByAreaFrame.SortByArea.areaFName

14.22.6.3 SortByAreaFrame.SortByArea.areas

14.22.6.4 SortByAreaFrame.SortByArea.browseExportButton

14.22.6.5 SortByAreaFrame.SortByArea.CbUpdateUnits

14.22.6.6 SortByAreaFrame.SortByArea.comboParameter

14.22.6.7 SortByAreaFrame.SortByArea.dataSortFileEntry

14.22.6.8 SortByAreaFrame.SortByArea.dataSortFileLabel

14.22.6.9 SortByAreaFrame.SortByArea.dataSortUnitsEntry

14.22.6.10 SortByAreaFrame.SortByArea.dataSortUnitsLabel

14.22.6.11 SortByAreaFrame.SortByArea.domainName

14.22.6.12 SortByAreaFrame.SortByArea.EnterKeyClicked

14.22.6.13 SortByAreaFrame.SortByArea.exportAllSortButton

14.22.6.14 SortByAreaFrame.SortByArea.exportFileEntry

14.22.6.15 SortByAreaFrame.SortByArea.exportFileLabel

14.22.6.16 SortByAreaFrame.SortByArea.exportFileName

14.22.6.17 SortByAreaFrame.SortByArea.exportThisSortButton

14.22.6.18 SortByAreaFrame.SortByArea.friend

14.22.6.19 SortByAreaFrame.SortByArea.maxYears

14.22.6.20 SortByAreaFrame.SortByArea.numAreas

f.write('AREA,YEAR,' + outStr + ' ('+ units + ')
') Write Header

14.22.6.21 SortByAreaFrame.SortByArea.numAreasEntry

14.22.6.22 SortByAreaFrame.SortByArea.numAreasLabel

14.22.6.23 SortByAreaFrame.SortByArea.numAreasMax

14.22.6.24 SortByAreaFrame.SortByArea.numCorners

14.22.6.25 SortByAreaFrame.SortByArea.numCornersMax

14.22.6.26 SortByAreaFrame.SortByArea.numYears

f.write('AREA,YEAR,' + outStr + ' ('+ units + ')
') Write Header

14.22.6.27 SortByAreaFrame.SortByArea.on_visibility

14.22.6.28 SortByAreaFrame.SortByArea.openDataSortButton

14.22.6.29 SortByAreaFrame.SortByArea.outputParmLabel

14.22.6.30 SortByAreaFrame.SortByArea.paramStr

14.22.6.31 SortByAreaFrame.SortByArea.root

14.22.6.32 SortByAreaFrame.SortByArea.runSortButton

14.22.6.33 SortByAreaFrame.SortByArea.saveDataSortButton

14.22.6.34 SortByAreaFrame.SortByArea.scrollFrame

14.22.6.35 SortByAreaFrame.SortByArea.startDir

14.22.6.36 SortByAreaFrame.SortByArea.yearStart

f.write('AREA,YEAR,' + outStr + ' ('+ units + ')
') Write Header

14.22.6.37 SortByAreaFrame.SortByArea.yearStop

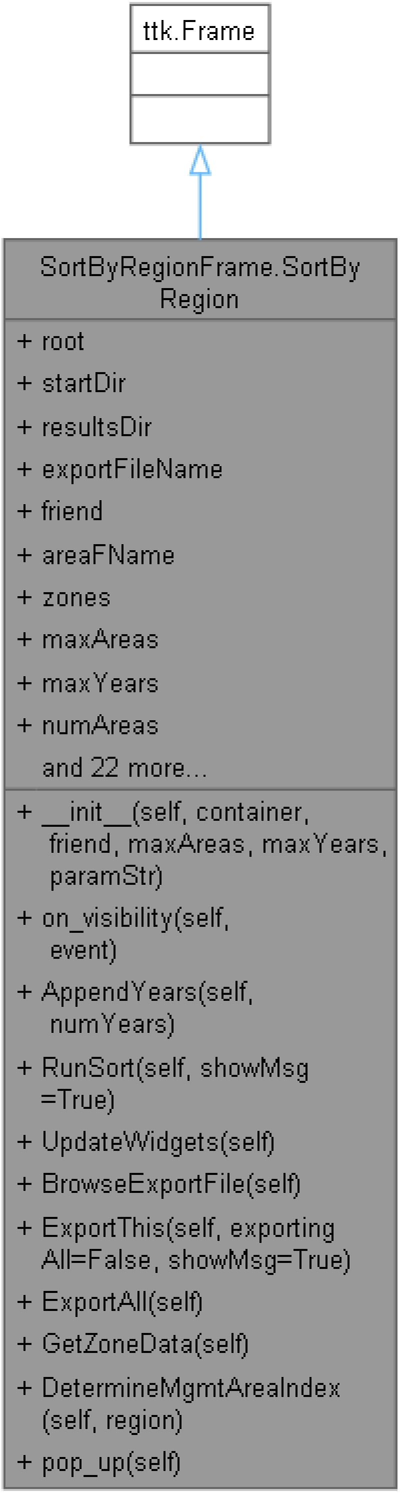
14.22.6.38 The documentation for this class was generated from the following file:

14.22.6.39 SortByAreaFrame.py

14.23 SortByRegionFrame.SortByRegion Class Reference

This class is used to assist the user in defining areas of interest to assess accumulated parameters located in these areas of interest.

Inheritance diagram for SortByRegionFrame.SortByRegion:


ttk.Frame
SortByRegionFrame.SortBy Region
+ root
+ startDir
+ resultsDir
+ exportFileName
+ friend
+ areaFName
+ zones
+ maxAreas
+ maxYears
+ numAreas
and 22 more...
+ __init__(self, container, friend, maxAreas, maxYears, paramStr)
+ on_visibility(self, event)
+ AppendYears(self, numYears)
+ RunSort(self, showMsg =True)
+ UpdateWidgets(self)
+ BrowseExportFile(self)
+ ExportThis(self, exporting All=False, showMsg=True)
+ ExportAll(self)
+ GetZoneData(self)
+ DetermineMgmtAreaIndex (self, region)
+ pop_up(self)

14.23.1 Public Member Functions

__init__ (self, container, **friend**, **maxAreas**, **maxYears**, **paramStr**)
on_visibility (self, event)
AppendYears (self, **numYears**)
Max Number of years has increased, need to add additional columns.

RunSort (self, showMsg=True)
UpdateWidgets (self)
BrowseExportFile (self)
ExportThis (self, exportingAll=False, showMsg=True)
This method exports ouput parameter table to its own file name.

ExportAll (self)
Export all select parameters.

GetZoneData (self)
Gets shape data and places it into a array of GeoShape.

DetermineMgmtAreaIndex (self, region)
determine Management Area Index

pop_up (self)
Help Window for Sort By Area.

14.23.2 Public Attributes

rootstartDir
resultsDir
exportFileName
friend
areaFName
zones
maxAreas
maxYears
numAreas
numCorners
paramStr
areaKm2
yearStart
yearStop
numYears
scrollFrame
sortAreaFrame
outputParmLabel
comboParameter
runSortButton
exportThisSortButton
exportAllSortButton

exportFileLabel
exportFileEntry
browseExportButton
tableRows
tableCols
firstYrCol
table
on_visibility
domainName

14.23.3 Detailed Description

This class is used to assist the user in defining areas of interest to assess accumulated parameters located in these areas of interest.

14.23.3.1.1 Parameters

friend	is used to access Start and Stop year from the Main Frame
maxAreas	defined at start up for the maximum allowed areas
maxCorners	defined at start up for the maximum allowed corners or nodes
maxYears	defined at start up for the maximum allowed year range
paramStr	defined at start up for the desired outputs

14.23.4 Constructor & Destructor Documentation

14.23.4.1 SortByRegionFrame.SortByRegion.__init__ (*self*, *container*, *friend*, *maxAreas*, *maxYears*, *paramStr*)

14.23.5 Member Function Documentation

14.23.5.1 SortByRegionFrame.SortByRegion.AppendYears (*self*, *numYears*)

Max Number of years has increased, need to add additional columns.

14.23.5.2 SortByRegionFrame.SortByRegion.BrowseExportFile (*self*)

14.23.5.3 SortByRegionFrame.SortByRegion.DetermineMgmtAreaIndex (*self*, *region*)

determine Management Area Index

14.23.5.4 SortByRegionFrame.SortByRegion.ExportAll (*self*)

Export all select parameters.

For each parameter

Verify data file exists, Lat_Lon_Grid_ + ABUN_ + AL + _ 2015_2017

14.23.5.5 SortByRegionFrame.SortByRegion.ExportThis (*self*, *exportingAll* = `False`, *showMsg* = `True`)

This method exports ouput parameter table to its own file name.

14.23.5.6 SortByRegionFrame.SortByRegion.GetZoneData (*self*)

Gets shape data and places it into a array of GeoShape.

MA regions, if selected, are first placed into array followed by GB regions, selected. Logic will always have either MA, GB, or both

14.23.5.7 SortByRegionFrame.SortByRegion.on_visibility (*self*, *event*)

14.23.5.8 SortByRegionFrame.SortByRegion.pop_up (*self*)

Help Window for Sort By Area.

14.23.5.9 SortByRegionFrame.SortByRegion.RunSort (*self*, *showMsg* = `True`)

14.23.5.10 SortByRegionFrame.SortByRegion.UpdateWidgets (*self*)

14.23.6 Member Data Documentation

14.23.6.1 SortByRegionFrame.SortByRegion.areaFName

14.23.6.2 SortByRegionFrame.SortByRegion.areaKm2

14.23.6.3 SortByRegionFrame.SortByRegion.browseExportButton

14.23.6.4 SortByRegionFrame.SortByRegion.comboParameter

14.23.6.5 SortByRegionFrame.SortByRegion.domainName

14.23.6.6 SortByRegionFrame.SortByRegion.exportAllSortButton

14.23.6.7 SortByRegionFrame.SortByRegion.exportFileEntry

14.23.6.8 SortByRegionFrame.SortByRegion.exportFileLabel

14.23.6.9 SortByRegionFrame.SortByRegion.exportFileName

14.23.6.10 SortByRegionFrame.SortByRegion.exportThisSortButton

14.23.6.11 SortByRegionFrame.SortByRegion.firstYrCol

14.23.6.12 SortByRegionFrame.SortByRegion.friend

14.23.6.13 SortByRegionFrame.SortByRegion.maxAreas

14.23.6.14 SortByRegionFrame.SortByRegion.maxYears

14.23.6.15 SortByRegionFrame.SortByRegion.numAreas

14.23.6.16 SortByRegionFrame.SortByRegion.numCorners

14.23.6.17 SortByRegionFrame.SortByRegion.numYears

14.23.6.18 SortByRegionFrame.SortByRegion.on_visibility

14.23.6.19 SortByRegionFrame.SortByRegion.outputParmLabel

14.23.6.20 SortByRegionFrame.SortByRegion.paramStr

14.23.6.21 SortByRegionFrame.SortByRegion.resultsDir

14.23.6.22 SortByRegionFrame.SortByRegion.root

14.23.6.23 SortByRegionFrame.SortByRegion.runSortButton

14.23.6.24 SortByRegionFrame.SortByRegion.scrollFrame

14.23.6.25 SortByRegionFrame.SortByRegion.sortAreaFrame

14.23.6.26 SortByRegionFrame.SortByRegion.startDir

14.23.6.27 SortByRegionFrame.SortByRegion.table

14.23.6.28 SortByRegionFrame.SortByRegion.tableCols

14.23.6.29 SortByRegionFrame.SortByRegion.tableRows

14.23.6.30 SortByRegionFrame.SortByRegion.yearStart

14.23.6.31 SortByRegionFrame.SortByRegion.yearStop

14.23.6.32 SortByRegionFrame.SortByRegion.zones

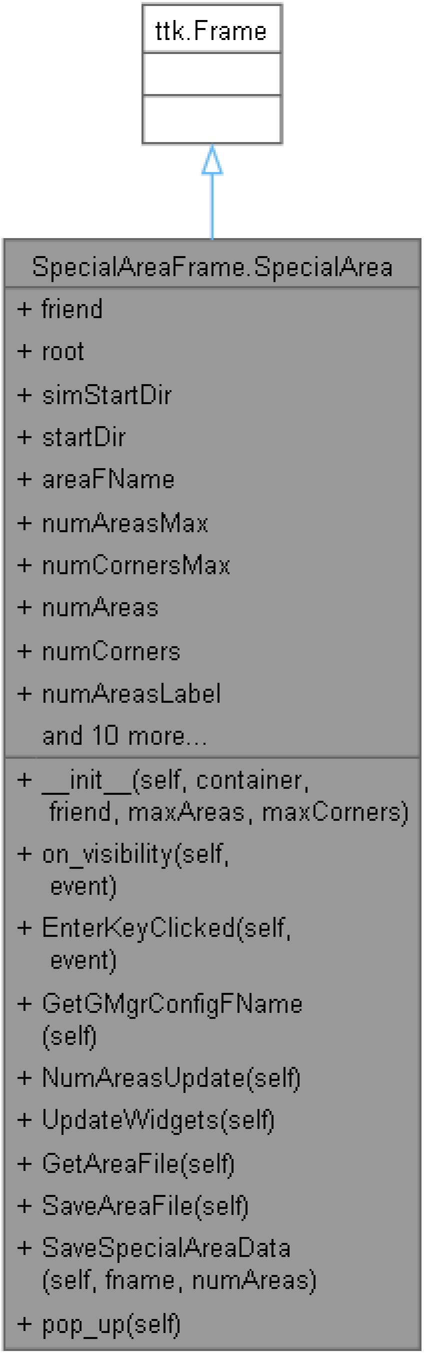
14.23.6.33 The documentation for this class was generated from the following file:

14.23.6.34 SortByRegionFrame.py

14.24 SpecialAreaFrame.SpecialArea Class Reference

This class is used to assist the user in defining areas of interest to assess accumulated parameters located in these areas of interest.

Inheritance diagram for SpecialAreaFrame.SpecialArea:



14.24.1 Public Member Functions

__init__ (self, container, **friend**, maxAreas, maxCorners)
on_visibility (self, event)
EnterKeyClicked (self, event)
GetGMgrConfigFName (self)

> *Calls the filedialog method asksaveasfilename to name a file to be used for the Grid Manager Configuration file.*

NumAreasUpdate (self)
UpdateWidgets (self)
GetAreaFile (self)
SaveAreaFile (self)
SaveSpecialAreaData (self, fname, **numAreas**)
pop_up (self)

> *Help Window for Special Access Area.*

14.24.2 Public Attributes

friendroot
simStartDir
startDir
areaFName
numAreasMax
numCornersMax
numAreas
numCorners
numAreasLabel
numAreasEntry
EnterKeyClicked
gmCfgFile
openGmgrConfigButton
openAreaFileButton
specAccFile
specAccFileLabel
saveAreaFileButton
areaMgr
on_visibility

14.24.3 Detailed Description

This class is used to assist the user in defining areas of interest to assess accumulated parameters located in these areas of interest.

14.24.4 Constructor & Destructor Documentation

14.24.4.1 SpecialAreaFrame.SpecialArea.__init__ (*self*, *container*, *friend*, *maxAreas*, *maxCorners*)

14.24.5 Member Function Documentation

14.24.5.1 SpecialAreaFrame.SpecialArea.EnterKeyClicked (*self*, *event*)

14.24.5.2 SpecialAreaFrame.SpecialArea.GetAreaFile (*self*)

14.24.5.3 SpecialAreaFrame.SpecialArea.GetGMgrConfigFName (*self*)

Calls the filedialog method asksaveasfilename to name a file to be used for the Grid Manager Configuration file.

It then writes out the defined parameters to this file using the 'tag = value' format.

14.24.5.4 SpecialAreaFrame.SpecialArea.NumAreasUpdate (*self*)

14.24.5.5 SpecialAreaFrame.SpecialArea.on_visibility (*self*, *event*)

14.24.5.6 SpecialAreaFrame.SpecialArea.pop_up (*self*)

Help Window for Special Access Area.

14.24.5.7 SpecialAreaFrame.SpecialArea.SaveAreaFile (*self*)

14.24.5.8 SpecialAreaFrame.SpecialArea.SaveSpecialAreaData (*self*, *fname*, *numAreas*)

14.24.5.9 SpecialAreaFrame.SpecialArea.UpdateWidgets (*self*)

14.24.6 Member Data Documentation

14.24.6.1 SpecialAreaFrame.SpecialArea.areaFName

14.24.6.2 SpecialAreaFrame.SpecialArea.areaMgr

14.24.6.3 SpecialAreaFrame.SpecialArea.EnterKeyClicked

14.24.6.4 SpecialAreaFrame.SpecialArea.friend

14.24.6.5 SpecialAreaFrame.SpecialArea.gmCfgFile

14.24.6.6 SpecialAreaFrame.SpecialArea.numAreas

14.24.6.7 SpecialAreaFrame.SpecialArea.numAreasEntry

14.24.6.8 SpecialAreaFrame.SpecialArea.numAreasLabel

14.24.6.9 SpecialAreaFrame.SpecialArea.numAreasMax

14.24.6.10 SpecialAreaFrame.SpecialArea.numCorners

14.24.6.11 SpecialAreaFrame.SpecialArea.numCornersMax

14.24.6.12 SpecialAreaFrame.SpecialArea.on_visibility

14.24.6.13 SpecialAreaFrame.SpecialArea.openAreaFileButton

14.24.6.14 SpecialAreaFrame.SpecialArea.openGmgrConfigButton

14.24.6.15 SpecialAreaFrame.SpecialArea.root

14.24.6.16 SpecialAreaFrame.SpecialArea.saveAreaFileButton

14.24.6.17 SpecialAreaFrame.SpecialArea.simStartDir

14.24.6.18 SpecialAreaFrame.SpecialArea.specAccFile

14.24.6.19 SpecialAreaFrame.SpecialArea.specAccFileLabel

14.24.6.20 SpecialAreaFrame.SpecialArea.startDir

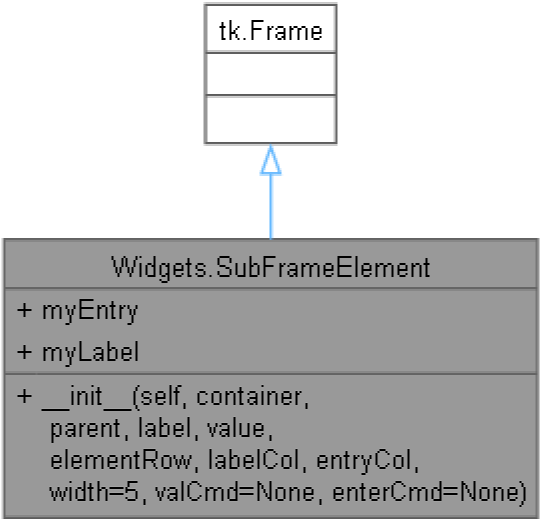
14.24.6.21 The documentation for this class was generated from the following file:

14.24.6.22 SpecialAreaFrame.py

14.25 Widgets.SubFrameElement Class Reference

Generic Element.

Inheritance diagram for Widgets.SubFrameElement:


tk.Frame
Widgets.SubFrameElement
+ myEntry
+ myLabel
+ __init__(self, container, parent, label, value, elementRow, labelCol, entryCol, width=5, valCmd=None, enterCmd=None)

14.25.1 Public Member Functions

__init__ (self, container, parent, label, value, elementRow, labelCol, entryCol, width=5, valCmd=None, enterCmd=None)

14.25.2 Public Attributes

myEntrymyLabel

14.25.3 Detailed Description

Generic Element.

Provides a label and an entery field. Optionally allows programmer to specify a method to validate entry and another method to respond to Enter Key.

14.25.4 Constructor & Destructor Documentation

14.25.4.1 Widgets.SubFrameElement.__init__ (*self*, *container*, *parent*, *label*, *value*, *elementRow*, *labelCol*, *entryCol*, *width* = `5`, *valCmd* = `None`, *enterCmd* = `None`)

14.25.5 Member Data Documentation

14.25.5.1 Widgets.SubFrameElement.myEntry

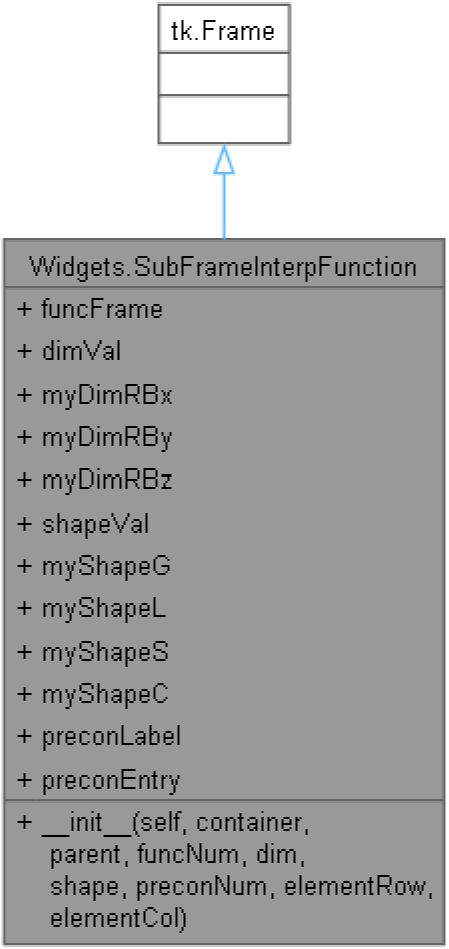
14.25.5.2 Widgets.SubFrameElement.myLabel

14.25.5.3 The documentation for this class was generated from the following file:

14.25.5.4 Widgets.py

14.26 Widgets.SubFrameInterpFunction Class Reference

Inheritance diagram for Widgets.SubFrameInterpFunction:



14.26.1 Public Member Functions

__init__ (self, container, parent, funcNum, dim, shape, preconNum, elementRow, elementCol)

14.26.2 Public Attributes

funcFramedimVal
myDimRBx
myDimRBy
myDimRBz
shapeVal
myShapeG
myShapeL
myShapeS
myShapeC
preconLabel
preconEntry

14.26.3 Constructor & Destructor Documentation

14.26.3.1 Widgets.SubFrameInterpFunction.__init__ (*self*, *container*, *parent*, *funcNum*, *dim*, *shape*, *preconNum*, *elementRow*, *elementCol*)

14.26.4 Member Data Documentation

14.26.4.1 Widgets.SubFrameInterpFunction.dimVal

14.26.4.2 Widgets.SubFrameInterpFunction.funcFrame

14.26.4.3 Widgets.SubFrameInterpFunction.myDimRBx

14.26.4.4 Widgets.SubFrameInterpFunction.myDimRBy

14.26.4.5 Widgets.SubFrameInterpFunction.myDimRBz

14.26.4.6 Widgets.SubFrameInterpFunction.myShapeC

14.26.4.7 Widgets.SubFrameInterpFunction.myShapeG

14.26.4.8 Widgets.SubFrameInterpFunction.myShapeL

14.26.4.9 Widgets.SubFrameInterpFunction.myShapeS

14.26.4.10 Widgets.SubFrameInterpFunction.preconEntry

14.26.4.11 Widgets.SubFrameInterpFunction.preconLabel

14.26.4.12 Widgets.SubFrameInterpFunction.shapeVal

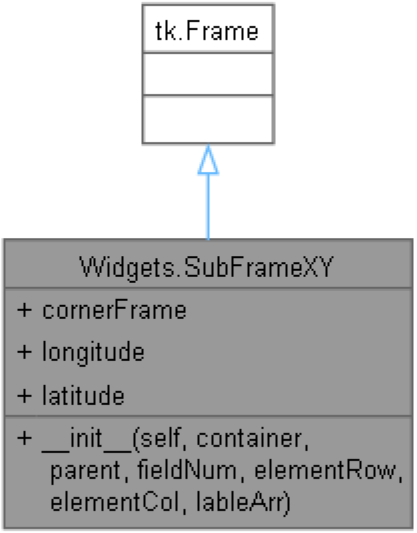
14.26.4.13 The documentation for this class was generated from the following file:

14.26.4.14 Widgets.py

14.27 Widgets.SubFrameXY Class Reference

Widget for XY label and entery.

Inheritance diagram for Widgets.SubFrameXY:


tk.Frame
Widgets.SubFrameXY
+ cornerFrame
+ longitude
+ latitude
+ __init__(self, container, parent, fieldNum, elementRow, elementCol, lableArr)

14.27.1 Public Member Functions

__init__ (self, container, parent, fieldNum, elementRow, elementCol, lableArr)

14.27.2 Public Attributes

cornerFramelongitude
latitude

14.27.3 Detailed Description

Widget for XY label and entery.

Longitude, Latitude have become interchangeable with X, Y

14.27.4 Constructor & Destructor Documentation

14.27.4.1 Widgets.SubFrameXY.__init__ (*self*, *container*, *parent*, *fieldNum*, *elementRow*, *elementCol*, *lableArr*)

14.27.5 Member Data Documentation

14.27.5.1 Widgets.SubFrameXY.cornerFrame

14.27.5.2 Widgets.SubFrameXY.latitude

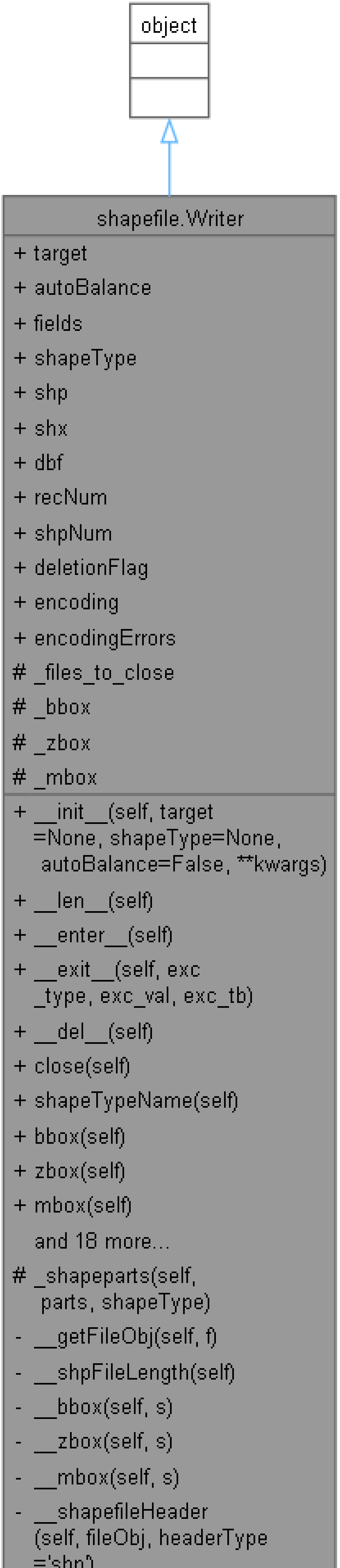
14.27.5.3 Widgets.SubFrameXY.longitude

14.27.5.4 The documentation for this class was generated from the following file:

14.27.5.5 Widgets.py

14.28 shapefile.Writer Class Reference

Inheritance diagram for shapefile.Writer:


object
shapefile.Writer
+ target
+ autoBalance
+ fields
+ shapeType
+ shp
+ shx
+ dbf
+ recNum
+ shpNum
+ deletionFlag
+ encoding
+ encodingErrors
# _files_to_close
# _bbox
# _zbox
# _mbox
+ __init__(self, target =None, shapeType=None, autoBalance=False, **kwargs)
+ __len__(self)
+ __enter__(self)
+ __exit__(self, exc _type, exc_val, exc_tb)
+ __del__(self)
+ close(self)
+ shapeTypeName(self)
+ bbox(self)
+ zbox(self)
+ mbox(self)
and 18 more...
# _shapeparts(self, parts, shapeType)
- __getFileObj(self, f)
- __shpFileLength(self)
- __bbox(self, s)
- __zbox(self, s)
- __mbox(self, s)
- __shapefileHeader (self, fileObj, headerType ='shp')

14.28.1 Public Member Functions

__init__ (self, **target**=None, **shapeType**=None, **autoBalance**=False, **kwargs)
__len__ (self)
__enter__ (self)
__exit__ (self, exc_type, exc_val, exc_tb)
__del__ (self)
close (self)
shapeTypeName (self)
bbox (self)
zbox (self)
mbox (self)
shape (self, s)
record (self, *recordList, **recordDict)
balance (self)
null (self)
point (self, x, y)
pointm (self, x, y, m=None)
pointz (self, x, y, z=0, m=None)
multipoint (self, points)
multipointm (self, points)
multipointz (self, points)
line (self, lines)
linem (self, lines)
linez (self, lines)
poly (self, polys)
polym (self, polys)
polyz (self, polys)
multipatch (self, parts, partTypes)
field (self, name, fieldType="C", size="50", decimal=0)

14.28.2 Public Attributes

targetautoBalance
fields
shapeType
shp
shx
dbf
recNum
shpNum
deletionFlag
encoding
encodingErrors

14.28.3 Protected Member Functions

_shapeparts (self, parts, **shapeType**)

14.28.4 Protected Attributes

_files_to_close_bbox
_zbox
_mbox

14.28.5 Private Member Functions

__getFileObj (self, f)
__shpFileLength (self)
__bbox (self, s)
__zbox (self, s)
__mbox (self, s)
__shapefileHeader (self, fileObj, headerType='**shp**')
__dbfHeader (self)
__shpRecord (self, s)
__shxRecord (self, offset, length)
__dbfRecord (self, **record**)

14.28.6 Detailed Description

Provides write support for ESRI Shapefiles.

14.28.7 Constructor & Destructor Documentation

14.28.7.1 shapefile.Writer.__init__ (*self*, *target* = `None`, *shapeType* = `None`, *autoBalance* = `False`, ** *kwargs*)

14.28.7.2 shapefile.Writer.__del__ (*self*)

14.28.8 Member Function Documentation

14.28.8.1 shapefile.Writer.__bbox (*self*, *s*) `[private]`

14.28.8.2 shapefile.Writer.__dbfHeader (*self*) `[private]`

Writes the dbf header and field descriptors.

14.28.8.3 shapefile.Writer.__dbfRecord (*self*, *record*) `[private]`

Writes the dbf records.

14.28.8.4 shapefile.Writer.__enter__ (*self*)

```
Enter phase of context manager.
```

14.28.8.5 shapefile.Writer.__exit__ (*self*, *exc_type*, *exc_val*, *exc_tb*)

```
Exit phase of context manager, finish writing and close the files.
```

14.28.8.6 shapefile.Writer.__getFileObj (*self*, *f*) [private]

Safety handler to verify file-like objects

14.28.8.7 shapefile.Writer.__len__ (*self*)

```
Returns the current number of features written to the shapefile.
If shapes and records are unbalanced, the length is considered the highest
```

of the two.

14.28.8.8 shapefile.Writer.__mbox (*self*, *s*) [private]

14.28.8.9 shapefile.Writer.__shapefileHeader (*self*, *fileObj*, *headerType* = 'shp') [private]

```
Writes the specified header type to the specified file-like object.
Several of the shapefile formats are so similar that a single generic
```

method to read or write them is warranted.

14.28.8.10 shapefile.Writer.__shpFileLength (*self*) [private]

Calculates the file length of the shp file.

14.28.8.11 shapefile.Writer.__shpRecord (*self*, *s*) [private]

14.28.8.12 shapefile.Writer.__shxRecord (*self*, *offset*, *length*) [private]

Writes the shx records.

14.28.8.13 shapefile.Writer.__zbox (*self*, *s*) [private]

14.28.8.14 shapefile.Writer._shapeparts (*self*, *parts*, *shapeType*) [protected]

```
Internal method for adding a shape that has multiple collections of points (parts):
lines, polygons, and multipoint shapes.
```

14.28.8.15 shapefile.Writer.balance (*self*)

```
Adds corresponding empty attributes or null geometry records depending
on which type of record was created to make sure all three files
```

are in synch.

14.28.8.16 shapefile.Writer.bbox (*self*)

```
Returns the current bounding box for the shapefile which is
the lower-left and upper-right corners. It does not contain the
```

elevation or measure extremes.

14.28.8.17 shapefile.Writer.close (*self*)

```
Write final shp, shx, and dbf headers, close opened files.
```

14.28.8.18 shapefile.Writer.field (*self*, *name*, *fieldType* = `"C"`, *size* = `"50"`, *decimal* = `0`)

Adds a dbf field descriptor to the shapefile.

14.28.8.19 shapefile.Writer.line (*self*, *lines*)

```
Creates a POLYLINE shape.
```

Lines is a collection of lines, each made up of a list of xy values.

14.28.8.20 shapefile.Writer.linem (*self*, *lines*)

```
Creates a POLYLINEM shape.
Lines is a collection of lines, each made up of a list of xym values.
```

If the m (measure) value is not included, it defaults to None (NoData).

14.28.8.21 shapefile.Writer.linez (*self*, *lines*)

```
Creates a POLYLINEZ shape.
Lines is a collection of lines, each made up of a list of xyzm values.
If the z (elevation) value is not included, it defaults to 0.
```

If the m (measure) value is not included, it defaults to None (NoData).

14.28.8.22 shapefile.Writer.mbox (*self*)

Returns the current m extremes for the shapefile.

14.28.8.23 shapefile.Writer.multipatch (*self*, *parts*, *partTypes*)

```
Creates a MULTIPATCH shape.
Parts is a collection of 3D surface patches, each made up of a list of xyzm values.
PartTypes is a list of types that define each of the surface patches.
The types can be any of the following module constants: TRIANGLE_STRIP,
TRIANGLE_FAN, OUTER_RING, INNER_RING, FIRST_RING, or RING.
If the z (elevation) value is not included, it defaults to 0.
```

If the m (measure) value is not included, it defaults to None (NoData).

14.28.8.24 shapefile.Writer.multipoint (*self*, *points*)

```
Creates a MULTIPOINT shape.
```

Points is a list of xy values.

14.28.8.25 shapefile.Writer.multipointm (*self*, *points*)

```
Creates a MULTIPOINTM shape.
Points is a list of xym values.
```

If the m (measure) value is not included, it defaults to None (NoData).

14.28.8.26 shapefile.Writer.multipointz (*self*, *points*)

```
Creates a MULTIPOINTZ shape.
Points is a list of xyzm values.
If the z (elevation) value is not included, it defaults to 0.
```

If the m (measure) value is not included, it defaults to None (NoData).

14.28.8.27 shapefile.Writer.null (*self*)

Creates a null shape.

14.28.8.28 shapefile.Writer.point (*self*, *x*, *y*)

Creates a POINT shape.

14.28.8.29 shapefile.Writer.pointm (*self*, *x*, *y*, *m* = `None`)

```
Creates a POINTM shape.
```

If the m (measure) value is not set, it defaults to NoData.

14.28.8.30 shapefile.Writer.pointz (*self*, *x*, *y*, *z* = `0`, *m* = `None`)

```
Creates a POINTZ shape.
If the z (elevation) value is not set, it defaults to 0.
```

If the m (measure) value is not set, it defaults to NoData.

14.28.8.31 shapefile.Writer.poly (*self*, *polys*)

```
Creates a POLYGON shape.
Polys is a collection of polygons, each made up of a list of xy values.
Note that for ordinary polygons the coordinates must run in a clockwise direction.
```

If some of the polygons are holes, these must run in a counterclockwise direction.

14.28.8.32 shapefile.Writer.polym (*self*, *polys*)

```
Creates a POLYGONM shape.
Polys is a collection of polygons, each made up of a list of xym values.
```

```
Note that for ordinary polygons the coordinates must run in a clockwise direction.
If some of the polygons are holes, these must run in a counterclockwise direction.
```

If the m (measure) value is not included, it defaults to None (NoData).

14.28.8.33 shapefile.Writer.polyz (*self*, *polys*)

```
Creates a POLYGONZ shape.
Polys is a collection of polygons, each made up of a list of xyzm values.
Note that for ordinary polygons the coordinates must run in a clockwise direction.
If some of the polygons are holes, these must run in a counterclockwise direction.
If the z (elevation) value is not included, it defaults to 0.
```

If the m (measure) value is not included, it defaults to None (NoData).

14.28.8.34 shapefile.Writer.record (*self*, * *recordList*, ** *recordDict*)

```
Creates a dbf attribute record. You can submit either a sequence of
field values or keyword arguments of field names and values. Before
adding records you must add fields for the record values using the
field() method. If the record values exceed the number of fields the
extra ones won't be added. In the case of using keyword arguments to specify
field/value pairs only fields matching the already registered fields
```

will be added.

14.28.8.35 shapefile.Writer.shape (*self*, *s*)

14.28.8.36 shapefile.Writer.shapeTypeName (*self*)

14.28.8.37 shapefile.Writer.zbox (*self*)

Returns the current z extremes for the shapefile.

14.28.9 Member Data Documentation

14.28.9.1 shapefile.Writer._bbox [protected]

14.28.9.2 shapefile.Writer._files_to_close [protected]

14.28.9.3 shapefile.Writer._mbox [protected]

14.28.9.4 shapefile.Writer._zbox [protected]

14.28.9.5 shapefile.Writer.autoBalance

14.28.9.6 shapefile.Writer.dbf

14.28.9.7 shapefile.Writer.deletionFlag

14.28.9.8 shapefile.Writer.encoding

14.28.9.9 shapefile.Writer.encodingErrors

14.28.9.10 shapefile.Writer.fields

14.28.9.11 shapefile.Writer.recNum

14.28.9.12 shapefile.Writer.shapeType

14.28.9.13 shapefile.Writer.shp

14.28.9.14 shapefile.Writer.shpNum

14.28.9.15 shapefile.Writer.shx

14.28.9.16 shapefile.Writer.target

14.28.9.17 The documentation for this class was generated from the following file:

PyshpMaster/**shapefile.py**

15 File Documentation

15.1 AreaManager.py File Reference

15.1.1 Classes

class **AreaManager.AreaManager***This class is used to paint area grouped by.*

class **AreaManager.Corner***Defines floating point data for corner defintions.*

15.1.2 class AreaManager.AreaMgrSubFrameNamespaces

namespace **AreaManager**

15.2 EditMathSetupFrame.py File Reference

15.2.1 Classes

class **EditMathSetupFrame.EditMathSetup***This class allows the user to edit the Matlab/Octave setup files to fit their environment.*

15.2.2 Namespaces

namespace **EditMathSetupFrame**

15.3 FishMortBySpecAcc.py File Reference

15.3.1 Classes

class **FishMortBySpecAcc.FishMortBySpecAcc***This class is used to assist the user in defining areas of interest to assess accumulated parameters located in these areas of interest.*

15.3.2 Namespaces

namespace **FishMortBySpecAcc**

15.4 GeoSams.py File Reference

15.4.1 Classes

class **GeoSams.MainApplication***This class is the parent class for the GUI.*

15.4.2 Namespaces

namespace **GeoSams**

15.4.3 Functions

GeoSams.ComputeResiduals (obsFile, gridFile, procID, retDict)
GeoSams.main ()

15.5 Globals.py File Reference

15.5.1 Namespaces

namespace **Globals**

15.5.2 Functions

Globals.DetermineUnitsScale (desiredParam)
Globals.UpdateEntry (entry, val)
Globals.ShowMessage (heading, message, type='info', timeout=2500)

This method will display the message and then go away after the default time.

15.5.3 Variables

str **Globals.analDir** = 'Analysis'
str **Globals.configDir** = 'Configuration'
str **Globals.dataDir** = 'Data'
str **Globals.gridDir** = 'Grids'
str **Globals.interCfgDir** = 'Interpolation'
str **Globals.resultsDir** = 'Results'
str **Globals.shapeFileDir** = 'Shapefiles'
str **Globals.simCfgDir** = 'Simulation'
str **Globals.specAccCfgDir** = 'SpecialAccess'
str **Globals.surveyDataDir** = 'OriginalData'
list **Globals.comboTFStr** = ['T', 'F']
list **Globals.cornerLabelArr** = ['Corner', 'Long', 'Lat ', '0.0', '0.0']
int **Globals.frameWidth** = 400
int **Globals.frameHeight** = 200
int **Globals.scrollFrameHeight** = 600
int **Globals.helpXoffset** = 700
int **Globals.helpYoffset** = 50
int **Globals.meters_per_naut_mile** = 1852
int **Globals.grid_area_sqm** = **meters_per_naut_mile****2
str **Globals.ABUN** = 'ABUN_'
str **Globals.BIOM** = 'BIOM_'
str **Globals.EBMS** = 'EBMS_'
str **Globals.FEFF** = 'FEFF_'
str **Globals.FMOR** = 'FMOR_'
str **Globals.LAND** = 'LAND_'
str **Globals.LNDW** = 'LNDW_'
str **Globals.LPUE** = 'LPUE_'
str **Globals.RECR** = 'RECR_'
int **Globals.scrollFrameWidth** = 900
str **Globals.geometryStr** = '920x725+10+10'

15.6 GrowthFrame.py File Reference

15.6.1 Classes

class **GrowthFrame.Growth***This class allows the user to adjust parameters used in computing scallop growth.*

15.6.2 Namespaces

namespace **GrowthFrame**

15.7 MainInputFrame.py File Reference

15.7.1 Classes

class **MainInputFrame.MainInput***This class displays information about GeoSAMS simulation.*

15.7.2 Namespaces

namespace **MainInputFrame**

15.8 PointInPolygon.py File Reference

15.8.1 Namespaces

namespace **PointInPolygon**

15.8.2 Functions

PointInPolygon.PointInPolygon (polyX, polyY, x, y, nodes)

15.9 PyshpMaster/shapefile.py File Reference

15.9.1 Classes

class **shapefile._Array**class **shapefile.Shape**
class **shapefile._Record**
class **shapefile.ShapeRecord**
class **shapefile.Shapes**
class **shapefile.ShapeRecords**
class **shapefile.ShapefileException**
class **shapefile.Reader**
class **shapefile.Writer**

15.9.2 Namespaces

namespace **shapefile**

15.9.3 Functions

shapefile.b (v, encoding='utf-8', encodingErrors='strict')
shapefile.u (v, encoding='utf-8', encodingErrors='strict')
shapefile.is_string (v)
shapefile.pathlike_obj (path)
shapefile.signed_area (coords, fast=False)
shapefile.is_cw (coords)
shapefile.rewind (coords)
shapefile.ring_bbox (coords)
shapefile.bbox_overlap (bbox1, bbox2)
shapefile.bbox_contains (bbox1, bbox2)
shapefile.ring_contains_point (coords, p)
shapefile.ring_sample (coords, ccw=False)
shapefile.ring_contains_ring (coords1, coords2)
shapefile.organize_polygon_rings (rings, return_errors=None)
shapefile.test (**kwargs)

15.9.4 Variables

str **shapefile.__version__** = "2.3.1"
shapefile.logger = logging.getLogger(__name__)
bool **shapefile.VERBOSE** = True
int **shapefile.NULL** = 0
int **shapefile.POINT** = 1
int **shapefile.POLYLINE** = 3
int **shapefile.POLYGON** = 5
int **shapefile.MULTIPOINT** = 8
int **shapefile.POINTZ** = 11
int **shapefile.POLYLINEZ** = 13
int **shapefile.POLYGONZ** = 15
int **shapefile.MULTIPOINTZ** = 18
int **shapefile.POINTM** = 21
int **shapefile.POLYLINEM** = 23
int **shapefile.POLYGONM** = 25
int **shapefile.MULTIPOINTM** = 28
int **shapefile.MULTIPATCH** = 31
dict **shapefile.SHAPETYPE_LOOKUP**
int **shapefile.TRIANGLE_STRIP** = 0

int **shapefile.TRIANGLE_FAN** = 1
int **shapefile.OUTER_RING** = 2
int **shapefile.INNER_RING** = 3
int **shapefile.FIRST_RING** = 4
int **shapefile.RING** = 5
dict **shapefile.PARTTYPE_LOOKUP**
int **shapefile.PYTHON3** = 3
shapefile.xrange = range
shapefile.izip = zip
list **shapefile.MISSING** = [None,'']
int **shapefile.NODATA** = -10e38
shapefile.failure_count = **test**()

15.10ShapeTest.py File Reference

15.10.1 Classes

15.10.2 class ShapeTest.GeoShape**Namespaces**

namespace **ShapeTest**

15.10.3 Variables

ShapeTest.sf = **shapefile.Reader**("Shapefiles/MAB_Estimation_Areas_2019_UTM18_PDT.shp")
ShapeTest.shapes = sf.shapes()
ShapeTest.shapeLen = len(**sf**)
list **ShapeTest.shapeMA** = [**GeoShape**() for _ in range(**shapeLen**)]
ShapeTest.record = sf.record(n)
ShapeTest.as_dict = record.as_dict()
ShapeTest.SAMS
ShapeTest.NewSAMS
ShapeTest.areaKm2
ShapeTest.pointLen = len(**shapes**[n].points)
ShapeTest.X
ShapeTest.Y
ShapeTest.lat
ShapeTest.lon
list **ShapeTest.shapeGB** = [**GeoShape**() for _ in range(**shapeLen**)]

15.11 SortByAreaFrame.py File Reference

15.11.1 Classes

class **SortByAreaFrame.SortByArea***This class is used to assist the user in defining areas of interest to assess accumulated parameters located in these areas of interest.*

15.11.2 Namespaces

namespace **SortByAreaFrame**

15.12 SortByRegionFrame.py File Reference

15.12.1 Classes

class **SortByRegionFrame.GeoShape***This class is used to define the shape of the regional data.*

class **SortByRegionFrame.SortByRegion***This class is used to assist the user in defining areas of interest to assess accumulated parameters located in these areas of interest.*

15.12.2 Namespaces

namespace **SortByRegionFrame**

15.13 SortIntoColumns.py File Reference

15.13.1 Classes

class **SortIntoColumns.GeoShape**class **SortIntoColumns.Column**

15.13.2 Namespaces

namespace **SortIntoColumns**

15.13.3 Variables

SortIntoColumns.inputFile = sys.argv[1]
SortIntoColumns.l = len(**inputFile**)
SortIntoColumns.domain = **inputFile**[**l**-2:**l**]
SortIntoColumns.dataFile = os.path.join('Data', **inputFile**+'.csv')
SortIntoColumns.outfile = os.path.join('Data', **inputFile**+'_BUFFER.csv')
SortIntoColumns.M = pd.read_csv(**dataFile**)
SortIntoColumns.fileName = os.environ['GBShapeBufferFile']
str **SortIntoColumns.subDir** = 'GB_Buffer'
SortIntoColumns.shapeFile = os.path.join('Shapefiles', **subDir**, **fileName**)
SortIntoColumns.sf = **shapefile.Reader**(**shapeFile**)
SortIntoColumns.shapes = sf.shapes()
SortIntoColumns.shapeLen = len(**sf**)
list **SortIntoColumns.shape** = [**GeoShape**() for _ in range(**shapeLen**)]
SortIntoColumns.record = sf.record(n)
SortIntoColumns.as_dict = record.as_dict()
SortIntoColumns.Region
SortIntoColumns.pointLen = len(**shapes**[n].points)
SortIntoColumns.X
SortIntoColumns.Y
list **SortIntoColumns.columns** = [**Column**() for _ in range(**shapeLen**)]
SortIntoColumns.name
SortIntoColumns.X_t = **M**['UTM_X']
SortIntoColumns.Y_t = **M**['UTM_Y']
SortIntoColumns.rows = len(**X_t**)
SortIntoColumns.nodes = len(**shape**[rgn].**X**)
SortIntoColumns.sep
SortIntoColumns.na_rep
SortIntoColumns.index

15.14SpecialAreaFrame.py File Reference

15.14.1 Classes

class **SpecialAreaFrame.SpecialArea***This class is used to assist the user in defining areas of interest to assess accumulated parameters located in these areas of interest.*

15.14.2 Namespaces

namespace **SpecialAreaFrame**

15.15Widgets.py File Reference

15.15.1 Classes

class **Widgets.SubFrameElement***Generic Element.*

class **Widgets.SubFrameInterpFunction**class **Widgets.SubFrameXY**

Widget for XY label and entery.

class **Widgets.ScrollFrame***Scrollable Frame Class from* `https://gist.github.com/mp035/9f2027c3ef9172264532fcd6262f3b01`.

15.15.2 Namespaces

namespace **Widgets**

15.15.3 Functions

Widgets.numbersCallback (input)

Allows only correctly formed positive integers, ignores non-numeric characters.

Widgets.floatCallback (input)

Allows only correctly formed floats, ignores non-numeric characters.

16 Index

__bbox
  shapefile.Writer, 140
__dbfHdrLength
  shapefile.Reader, 101
__dbfHeader
  shapefile.Reader, 96
  shapefile.Writer, 140
__dbfRecord
  shapefile.Writer, 140
__del__
  shapefile.Reader, 96
  shapefile.Writer, 140
__dir__
  shapefile._Record, 46
__enter__
  shapefile.Reader, 96
  shapefile.Writer, 140
__exit__
  shapefile.Reader, 97
  shapefile.Writer, 141
__field_positions
  shapefile._Record, 47
__fieldLookup
  shapefile.Reader, 101
__fullRecLookup
  shapefile.Reader, 101
__fullRecStruct
  shapefile.Reader, 101
__geo_interface__
  shapefile.Reader, 97
  shapefile.Shape, 107
  shapefile.ShapeRecord, 110
  shapefile.ShapeRecords, 112
  shapefile.Shapes, 113
__getattr__
  shapefile._Record, 46
__getFileObj
  shapefile.Reader, 97
  shapefile.Writer, 141
__getitem__
  shapefile._Record, 46
__init__
  AreaManager.AreaManager, 49
  AreaManager.AreaMgrSubFrame, 52
  AreaManager.Corner, 55
  EditMathSetupFrame.EditMathSetup, 57
  FishMortBySpecAcc.FishMortBySpecAcc, 60
  GeoSams.MainApplication, 78
  GrowthFrame.Growth, 71
  MainInputFrame.MainInput, 88
  shapefile._Record, 46
  shapefile.Reader, 96
  shapefile.Shape, 107
  shapefile.ShapeRecord, 110
  shapefile.Writer, 140
  ShapeTest.GeoShape, 63
  SortByAreaFrame.SortByArea, 117
  SortByRegionFrame.GeoShape, 64
  SortByRegionFrame.SortByRegion, 123
  SortIntoColumns.Column, 54
  SortIntoColumns.GeoShape, 65
  SpecialAreaFrame.SpecialArea, 128
  Widgets.ScrollFrame, 104
  Widgets.SubFrameElement, 131
  Widgets.SubFrameInterpFunction, 134
  Widgets.SubFrameXY, 135
__iter__
  shapefile.Reader, 97
__len__
  shapefile.Reader, 97
  shapefile.Writer, 141
__mbox
  shapefile.Writer, 141
__oid
  shapefile._Record, 47
  shapefile.Shape, 108
__record
  shapefile.Reader, 97
__recordFields
  shapefile.Reader, 97
__recordFmt
  shapefile.Reader, 97
__recordLength
  shapefile.Reader, 101
__repr__
  shapefile._Array, 44
  shapefile._Record, 47
  shapefile.Shape, 107
  shapefile.ShapeRecords, 112
  shapefile.Shapes, 113
__restrictIndex
  shapefile.Reader, 98
__setattr__
  shapefile._Record, 47
__setitem__
  shapefile._Record, 47
__shape
  shapefile.Reader, 98
__shapefileHeader
  shapefile.Writer, 141
__shapeIndex
  shapefile.Reader, 98
__shpFileLength
  shapefile.Writer, 141

- __shpHeader
  - shapefile.Reader, 98
- __shpRecord
  - shapefile.Writer, 141
- __shxHeader
  - shapefile.Reader, 98
- __shxOffsets
  - shapefile.Reader, 98
- __shxRecord
  - shapefile.Writer, 141
- __str__
  - shapefile.Reader, 98
- __version__
  - shapefile, 33
- __zbox
  - shapefile.Writer, 141
- _bbox
  - shapefile.Writer, 145
- _errors
  - shapefile.Shape, 108
- _files_to_close
  - shapefile.Reader, 101
  - shapefile.Writer, 145
- _from_geojson
  - shapefile.Shape, 107
- _mbox
  - shapefile.Writer, 145
- _offsets
  - shapefile.Reader, 101
- _shapeparts
  - shapefile.Writer, 141
- _zbox
  - shapefile.Writer, 145
- ABUN
  - Globals, 25
- abunVar
  - MainInputFrame.MainInput, 90
- addFrameClicked
  - GeoSams.MainApplication, 82
- alphaMort
  - GrowthFrame.Growth, 72
- alphStr
  - GrowthFrame.Growth, 72
- analDir
  - Globals, 25
- AppendResults
  - AreaManager.AreaMgrSubFrame, 52
- AppendYears
  - SortByAreaFrame.SortByArea, 118
  - SortByRegionFrame.SortByRegion, 123
- area
  - SortByRegionFrame.GeoShape, 64
- areaData
  - AreaManager.AreaManager, 50
  - SortByAreaFrame.SortByArea, 119
- areaFName
  - MainInputFrame.MainInput, 90
  - SortByAreaFrame.SortByArea, 119
  - SortByRegionFrame.SortByRegion, 125
  - SpecialAreaFrame.SpecialArea, 130
- areaFrame
  - AreaManager.AreaMgrSubFrame, 53
- areaKm2
  - ShapeTest, 36
  - ShapeTest.GeoShape, 63
  - SortByRegionFrame.SortByRegion, 125
- AreaManager, 19
- AreaManager.AreaManager, 48
  - __init__, 49
  - areaData, 50
  - areaSubFrame, 50
  - cornerRow, 50
  - numAreas, 50
  - numAreasMax, 50
  - NumAreasUpdate, 49
  - numCorners, 50
  - numCornersMax, 50
  - ReadAreaCorners, 49
  - scrollFrame, 50
  - sortAreaFrame, 50
  - UpdateWidgets, 49
- AreaManager.AreaMgrSubFrame, 51
  - __init__, 52
  - AppendResults, 52
  - areaFrame, 53
  - comment, 53
  - commentEntry, 53
  - compAreaEntry, 53
  - corners, 53
  - EnterKeyClicked, 52
  - myArea, 53
  - numCorners, 53
  - numCornersEntry, 53
  - numCornersMax, 53
  - NumCornersUpdate, 52
  - numYearsMax, 53
  - numYrCols, 53
  - results, 53
  - SaveField, 52
  - startincCol, 53
  - yearStart, 53
  - yearStop, 53
- AreaManager.Corner, 55
  - __init__, 55
  - lat, 55
  - long, 55
  - numCorners, 55
- AreaManager.py, 146
- areaMgr
  - FishMortBySpecAcc.FishMortBySpecAcc, 62
  - SpecialAreaFrame.SpecialArea, 130
- areas

SortByAreaFrame.SortByArea, 119
areaSubFrame
AreaManager.AreaManager, 50
as_dict
shapefile._Record, 47
ShapeTest, 36
SortIntoColumns, 40
autoBalance
shapefile.Writer, 145
b
shapefile, 31
balance
shapefile.Writer, 141
bbox
shapefile.Reader, 101
shapefile.Writer, 142
bbox_contains
shapefile, 31
bbox_overlap
shapefile, 31
BIOM
Globals, 25
bmsVar
MainInputFrame.MainInput, 90
browseExportButton
SortByAreaFrame.SortByArea, 119
SortByRegionFrame.SortByRegion, 125
BrowseExportFile
SortByAreaFrame.SortByArea, 118
SortByRegionFrame.SortByRegion, 123
canvas
Widgets.ScrollFrame, 105
canvas_window
Widgets.ScrollFrame, 105
CBSelectedOutput
MainInputFrame.MainInput, 88
CbUpdateUnits
SortByAreaFrame.SortByArea, 118, 119
CheckStartDay
MainInputFrame.MainInput, 88, 90
CheckStopDay
MainInputFrame.MainInput, 88, 90
close
shapefile.Reader, 98
shapefile.Writer, 142
columns
SortIntoColumns, 40
comboParameter
SortByAreaFrame.SortByArea, 119
SortByRegionFrame.SortByRegion, 125
comboTFStr
Globals, 25
comment
AreaManager.AreaMgrSubFrame, 53
commentEntry
AreaManager.AreaMgrSubFrame, 53
compAreaEntry
AreaManager.AreaMgrSubFrame, 53
ComputeResiduals
GeoSams, 22
ComputeSelectOuputValue
MainInputFrame.MainInput, 88
configDir
Globals, 25
ConvertDayOfYrToMonthDay
GeoSams.MainApplication, 79
ConvertMonthDayToDayOfYr
GeoSams.MainApplication, 79
cornerFrame
Widgets.SubFrameXY, 136
cornerLabelArr
Globals, 25
cornerRow
AreaManager.AreaManager, 50
corners
AreaManager.AreaMgrSubFrame, 53
dataDir
Globals, 25
dataFile
SortIntoColumns, 40
dataSortFileEntry
SortByAreaFrame.SortByArea, 119
dataSortFileLabel
SortByAreaFrame.SortByArea, 119
dataSortUnitsEntry
SortByAreaFrame.SortByArea, 119
dataSortUnitsLabel
SortByAreaFrame.SortByArea, 119
daysInYear
GeoSams.MainApplication, 82
dbf
shapefile.Reader, 101
shapefile.Writer, 145
deletionFlag
shapefile.Writer, 145
desiredOutput
MainInputFrame.MainInput, 90
DetermineMgmtAreaIndex
SortByRegionFrame.SortByRegion, 123
DetermineUnitsScale
Globals, 23
dimVal
Widgets.SubFrameInterpFunction, 134
domain
SortIntoColumns, 40
domainName
GeoSams.MainApplication, 82
SortByAreaFrame.SortByArea, 119
SortByRegionFrame.SortByRegion, 125
domainNameCombo
MainInputFrame.MainInput, 90
domainNameLabel

MainInputFrame.MainInput, 90
dredgeDataFile
MainInputFrame.MainInput, 90
dredgeWdStr
GrowthFrame.Growth, 72
dredgeWth
GrowthFrame.Growth, 72
EBMS
Globals, 25
ebmsVar
MainInputFrame.MainInput, 90
editMathFrame
EditMathSetupFrame.EditMathSetup, 58
EditMathSetupFrame, 20
EditMathSetupFrame.EditMathSetup, 56
__init__, 57
editMathFrame, 58
editText, 58
editTextButton, 58
isMatlab, 58
LoadStartupFile, 57
matlabFName, 58
octaveFName, 58
on_visibility, 57, 58
pop_up, 57
ReadFile, 57
useMatlabRB, 58
useOctaveRB, 58
usingMatlab, 58
WriteStartupFile, 57
EditMathSetupFrame.py, 147
editText
EditMathSetupFrame.EditMathSetup, 58
editTextButton
EditMathSetupFrame.EditMathSetup, 58
encoding
shapefile.Reader, 101
shapefile.Writer, 145
encodingErrors
shapefile.Reader, 101
shapefile.Writer, 145
EnterKeyClicked
AreaManager.AreaMgrSubFrame, 52
FishMortBySpecAcc.FishMortBySpecAcc, 61, 62
MainInputFrame.MainInput, 88
SortByAreaFrame.SortByArea, 118, 119
SpecialAreaFrame.SpecialArea, 129, 130
ExportAll
SortByAreaFrame.SortByArea, 118
SortByRegionFrame.SortByRegion, 123
exportAllSortButton
SortByAreaFrame.SortByArea, 119
SortByRegionFrame.SortByRegion, 125
exportFileEntry
SortByAreaFrame.SortByArea, 119
SortByRegionFrame.SortByRegion, 125
exportFileLabel
SortByAreaFrame.SortByArea, 119
SortByRegionFrame.SortByRegion, 125
exportFileName
SortByAreaFrame.SortByArea, 119
SortByRegionFrame.SortByRegion, 125
ExportThis
SortByAreaFrame.SortByArea, 118
SortByRegionFrame.SortByRegion, 124
exportThisSortButton
SortByAreaFrame.SortByArea, 119
SortByRegionFrame.SortByRegion, 125
failure_count
shapefile, 33
FEFF
Globals, 25
feffVar
MainInputFrame.MainInput, 90
field
shapefile.Writer, 142
fields
shapefile.Reader, 101
shapefile.Writer, 145
fileName
SortIntoColumns, 40
FIRST_RING
shapefile, 33
firstYrCol
SortByRegionFrame.SortByRegion, 125
fishMort
GrowthFrame.Growth, 72
FishMortBySpecAcc, 21
FishMortBySpecAcc.FishMortBySpecAcc, 59
__init__, 60
areaMgr, 62
EnterKeyClicked, 61, 62
fishMortFile, 62
fishMortFileLabel, 62
fmFName, 62
GetFMFile, 61
numAreas, 62
numDefined, 62
numDefinedEntry, 62
numDefinedLabel, 62
numDefinedMax, 62
NumDefinedUpdate, 61
numFieldsMax, 62
numFieldss, 62
on_visibility, 61, 62
openFMFileButton, 62
pop_up, 61
ReadFields, 61
root, 62
SaveFMFile, 61
saveFMFileButton, 62

startDir, 62
UpdateWidgets, 61
yearEntry, 62
FishMortBySpecAcc.py, 148
fishMortFile
FishMortBySpecAcc.FishMortBySpecAcc, 62
fishMortFileLabel
FishMortBySpecAcc.FishMortBySpecAcc, 62
floatCallback
Widgets, 43
fmFName
FishMortBySpecAcc.FishMortBySpecAcc, 62
FMOR
Globals, 25
fmortFileName
GrowthFrame.Growth, 72
fmortStr
GrowthFrame.Growth, 72
fmortVar
MainInputFrame.MainInput, 90
frame1
GeoSams.MainApplication, 82
frame2
GeoSams.MainApplication, 82
frame3
GeoSams.MainApplication, 82
frame5
GeoSams.MainApplication, 82
frame6
GeoSams.MainApplication, 82
frame7
GeoSams.MainApplication, 82
frame8
GeoSams.MainApplication, 82
frameHeight
Globals, 25
frameWidth
Globals, 25
friend
GrowthFrame.Growth, 72
MainInputFrame.MainInput, 90
SortByAreaFrame.SortByArea, 119
SortByRegionFrame.SortByRegion, 125
SpecialAreaFrame.SpecialArea, 130
funcFrame
Widgets.SubFrameInterpFunction, 134
gbAdultMort
GrowthFrame.Growth, 72
gbAdultMortStr
GrowthFrame.Growth, 72
gbClFSelAStr
GrowthFrame.Growth, 72
gbClFSelBStr
GrowthFrame.Growth, 72
gbClosedFSelectA
GrowthFrame.Growth, 72
gbClosedFSelectB
GrowthFrame.Growth, 72
gbCullSize
GrowthFrame.Growth, 72
gbCullStr
GrowthFrame.Growth, 72
gbDiscard
GrowthFrame.Growth, 72
gbDiscStr
GrowthFrame.Growth, 72
gbIncident
GrowthFrame.Growth, 72
gbIncidStr
GrowthFrame.Growth, 72
gbLen0Str
GrowthFrame.Growth, 72
gbLength0
GrowthFrame.Growth, 72
gbOpenFSelectA
GrowthFrame.Growth, 72
gbOpenFSelectB
GrowthFrame.Growth, 73
gbOpFSelAStr
GrowthFrame.Growth, 73
gbOpFSelBStr
GrowthFrame.Growth, 73
gbShapeBufferFileEntry
MainInputFrame.MainInput, 90
gbShapeFileEntry
MainInputFrame.MainInput, 90
geometryStr
Globals, 25
GeoSams, 22
ComputeResiduals, 22
main, 22
GeoSAMS GUI, 2
GeoSams.MainApplication, 75
__init__, 78
addFrameClicked, 82
ConvertDayOfYrToMonthDay, 79
ConvertMonthDayToDayOfYr, 79
daysInYear, 82
domainName, 82
frame1, 82
frame2, 82
frame3, 82
frame5, 82
frame6, 82
frame7, 82
frame8, 82
gmConfigFile, 82
InterpAndPlotResults, 79
isSkip, 82
maxAreas, 82
maxCorners, 82
maxYears, 82

monDict, 82
notebook, 82
paramStr, 82
paramVal, 82
pop_up, 79
ReadConfigFile, 79
ReadGridMgrConfigFile, 80
ReadRecruitConfigFile, 80
ReadSimConfigFile, 80
recrConfigFile, 82
recruitYrStop, 82
recruitYrStrt, 82
root, 82
Run_Sim, 80
SaveConfigFiles, 80
ShowArgs, 80
simConfigFile, 83
skipStatusMsgs, 83
skipStatusMsgsRB, 83
specAccFileStr, 83
style, 83
ToggleSkipStatusMsgs, 80
tsPerYear, 83
useHabCamData, 83
WriteGridMgrConfig, 80
WriteGrowthConfig, 80
WriteRecruitmentConfig, 80
WriteScallopConfig, 80
WriteSpatialFncsConfig, 81
yearStart, 83
yearStop, 83
GeoSams.py, 149
GetAreaFile
SpecialAreaFrame.SpecialArea, 129
GetDataSortFile
SortByAreaFrame.SortByArea, 118
GetFMFile
FishMortBySpecAcc.FishMortBySpecAcc, 61
GetGMgrConfigFName
SpecialAreaFrame.SpecialArea, 129
GetGrowthConfigFName
GrowthFrame.Growth, 71
GetRecrConfigFName
MainInputFrame.MainInput, 88
GetSelectedOutputs
MainInputFrame.MainInput, 88
GetSimConfigFName
MainInputFrame.MainInput, 88
GetZoneData
SortByRegionFrame.SortByRegion, 124
Globals, 23
ABUN, 25
analDir, 25
BIOM, 25
comboTFStr, 25
configDir, 25
cornerLabelArr, 25
dataDir, 25
DetermineUnitsScale, 23
EBMS, 25
FEFF, 25
FMOR, 25
frameHeight, 25
frameWidth, 25
geometryStr, 25
grid_area_sqm, 25
gridDir, 25
helpXoffset, 25
helpYoffset, 25
interCfgDir, 25
LAND, 25
LNDW, 25
LPUE, 25
meters_per_naut_mile, 25
RECR, 25
resultsDir, 26
scrollFrameHeight, 26
scrollFrameWidth, 26
shapeFileDir, 26
ShowMessage, 23
simCfgDir, 26
specAccCfgDir, 26
surveyDataDir, 26
UpdateEntry, 24
Globals.py, 150
gmCfgFile
SpecialAreaFrame.SpecialArea, 130
gmConfigFile
GeoSams.MainApplication, 82
grid_area_sqm
Globals, 25
gridDir
Globals, 25
Growth Frame, 6
growthCfgFile
GrowthFrame.Growth, 73
GrowthFrame, 27
GrowthFrame.Growth, 66
__init__, 71
alphaMort, 72
alphStr, 72
dredgeWdStr, 72
dredgeWth, 72
fishMort, 72
fmortFileName, 72
fmortStr, 72
friend, 72
gbAdultMort, 72
gbAdultMortStr, 72
gbClFSelAStr, 72
gbClFSelBStr, 72
gbClosedFSelectA, 72

gbClosedFSelectB, 72
gbCullSize, 72
gbCullStr, 72
gbDiscard, 72
gbDiscStr, 72
gbIncident, 72
gbIncidStr, 72
gbLen0Str, 72
gbLength0, 72
gbOpenFSelectA, 72
gbOpenFSelectB, 73
gbOpFSelAStr, 73
gbOpFSelBStr, 73
GetGrowthConfigFName, 71
growthCfgFile, 73
growthStartDir, 73
loadGrowthConfigButton, 73
LoadGrowthData, 71
lpueIntcept, 73
lpueIntcStr, 73
lpueSl2Str, 73
lpueSlope, 73
lpueSlope2, 73
lpueSlStr, 73
maAdultMort, 73
maAdultMortStr, 73
maCullSize, 73
maCullStr, 73
maDiscard, 73
maDiscStr, 73
maFSelAStr, 73
maFSelBStr, 73
maFSelectA, 73
maFSelectB, 73
maIncident, 73
maIncidStr, 73
maLen0Str, 73
maLength0, 74
maxPerDay, 74
maxPerDayStr, 74
maxTime, 74
maxTimeStr, 74
on_visibility, 71, 74
pop_up, 71
root, 74
saveGrowthConfigButton, 74
towSpdStr, 74
towSpeed, 74
UpdateValues, 71
UpdateWidgets, 71
GrowthFrame.py, 151
growthStartDir
GrowthFrame.Growth, 73
habCamDataFile
MainInputFrame.MainInput, 90
helpXoffset
Globals, 25
helpYoffset
Globals, 25
inBox
SortIntoColumns.Column, 54
index
SortIntoColumns, 40
INNER_RING
shapefile, 33
inputFile
SortIntoColumns, 40
interCfgDir
Globals, 25
InterpAndPlotResults
GeoSams.MainApplication, 79
interpStartDir
MainInputFrame.MainInput, 90
is_cw
shapefile, 31
is_string
shapefile, 31
isMatlab
EditMathSetupFrame.EditMathSetup, 58
isSkip
GeoSams.MainApplication, 82
iterRecords
shapefile.Reader, 98
iterShapeRecords
shapefile.Reader, 98
iterShapes
shapefile.Reader, 99
izip
shapefile, 33
l
SortIntoColumns, 40
LAND
Globals, 25
landVar
MainInputFrame.MainInput, 90
lat
AreaManager.Corner, 55
ShapeTest, 36
ShapeTest.GeoShape, 63
SortByRegionFrame.GeoShape, 64
SortIntoColumns.GeoShape, 65
latitude
Widgets.SubFrameXY, 136
line
shapefile.Writer, 142
linem
shapefile.Writer, 142
linez
shapefile.Writer, 142
LNDW
Globals, 25
lndwVar

MainInputFrame.MainInput, 90
load
shapefile.Reader, 99
load_dbf
shapefile.Reader, 99
load_shp
shapefile.Reader, 99
load_shx
shapefile.Reader, 99
loadGrowthConfigButton
GrowthFrame.Growth, 73
LoadGrowthData
GrowthFrame.Growth, 71
LoadStartupFile
EditMathSetupFrame.EditMathSetup, 57
logger
shapefile, 33
lon
ShapeTest, 36
ShapeTest.GeoShape, 63
SortByRegionFrame.GeoShape, 64
SortIntoColumns.GeoShape, 65
long
AreaManager.Corner, 55
longitude
Widgets.SubFrameXY, 136
LPUE
Globals, 25
lpueIntcept
GrowthFrame.Growth, 73
lpueIntcStr
GrowthFrame.Growth, 73
lpueSl2Str
GrowthFrame.Growth, 73
lpueSlope
GrowthFrame.Growth, 73
lpueSlope2
GrowthFrame.Growth, 73
lpueSlStr
GrowthFrame.Growth, 73
lpueVar
MainInputFrame.MainInput, 90
M
SortIntoColumns, 40
maAdultMort
GrowthFrame.Growth, 73
maAdultMortStr
GrowthFrame.Growth, 73
maCullSize
GrowthFrame.Growth, 73
maCullStr
GrowthFrame.Growth, 73
maDiscard
GrowthFrame.Growth, 73
maDiscStr
GrowthFrame.Growth, 73
maFSelAStr
GrowthFrame.Growth, 73
maFSelBStr
GrowthFrame.Growth, 73
maFSelectA
GrowthFrame.Growth, 73
maFSelectB
GrowthFrame.Growth, 73
main
GeoSams, 22
Main, 9
maIncident
GrowthFrame.Growth, 73
maIncidStr
GrowthFrame.Growth, 73
MainInputFrame, 28
MainInputFrame.MainInput, 84
__init__, 88
abunVar, 90
areaFName, 90
bmsVar, 90
CBSelectedOutput, 88
CheckStartDay, 88, 90
CheckStopDay, 88, 90
ComputeSelectOuputValue, 88
desiredOutput, 90
domainNameCombo, 90
domainNameLabel, 90
dredgeDataFile, 90
ebmsVar, 90
EnterKeyClicked, 88
feffVar, 90
fmortVar, 90
friend, 90
gbShapeBufferFileEntry, 90
gbShapeFileEntry, 90
GetRecrConfigFName, 88
GetSelectedOutputs, 88
GetSimConfigFName, 88
habCamDataFile, 90
interpStartDir, 90
landVar, 90
lndwVar, 90
lpueVar, 90
maShapeBufferFileEntry, 90
maShapeFileEntry, 90
maxYears, 90
monthsArr, 91
numYrsAvg, 91
OpenPDF, 89
openPDFButton, 91
openRecrConfigButton, 91
openSimConfigButton, 91
pop_up, 89
recrCfgFile, 91
recrVar, 91

recrYrStop, 91
recrYrStrt, 91
root, 91
setDredgeDataButton, 91
SetDredgeFileEnvVar, 89
SetDredgeFileName, 89
SetGbShapeBufferFile, 89
setGbShapeBufferFileButton, 91
SetGBShapeBufferFileEnvVar, 89
SetGbShapeFile, 89
setGbShapeFileButton, 91
SetGBShapeFileEnvVar, 89
setHabCamDataButton, 91
SetHabCamFileEnvVar, 89
SetHabCamFileName, 89
SetMaShapeBufferFile, 89
setMaShapeBufferFileButton, 91
SetMaShapeBufferFileEnvVar, 89
SetMaShapeFile, 89
setMaShapeFileButton, 91
SetMaShapeFileEnvVar, 89
shapeFileDir, 91
simCfgFile, 91
simStartDir, 91
startDayComboDay, 91
startDayComboMonth, 91
startDayLabel, 91
startYr, 91
stopDayComboDay, 91
stopDayComboMonth, 91
stopDayLabel, 92
stopYr, 92
surveyStartDir, 92
tsPerYear, 92
MainInputFrame.py, 152
maLen0Str
GrowthFrame.Growth, 73
maLength0
GrowthFrame.Growth, 74
maShapeBufferFileEntry
MainInputFrame.MainInput, 90
maShapeFileEntry
MainInputFrame.MainInput, 90
Math Setup Frame, 4
matlabFName
EditMathSetupFrame.EditMathSetup, 58
maxAreas
GeoSams.MainApplication, 82
SortByRegionFrame.SortByRegion, 125
maxCorners
GeoSams.MainApplication, 82
maxPerDay
GrowthFrame.Growth, 74
maxPerDayStr
GrowthFrame.Growth, 74
maxTime
GrowthFrame.Growth, 74
maxTimeStr
GrowthFrame.Growth, 74
maxYears
GeoSams.MainApplication, 82
MainInputFrame.MainInput, 90
SortByAreaFrame.SortByArea, 119
SortByRegionFrame.SortByRegion, 125
mbox
shapefile.Reader, 101
shapefile.Writer, 142
meters_per_naut_mile
Globals, 25
MISSING
shapefile, 33
monDict
GeoSams.MainApplication, 82
monthsArr
MainInputFrame.MainInput, 91
multipatch
shapefile.Writer, 142
MULTIPATCH
shapefile, 33
multipoint
shapefile.Writer, 143
MULTIPOINT
shapefile, 33
multipointm
shapefile.Writer, 143
MULTIPOINTM
shapefile, 33
multipointz
shapefile.Writer, 143
MULTIPOINTZ
shapefile, 33
myArea
AreaManager.AreaMgrSubFrame, 53
myDimRBx
Widgets.SubFrameInterpFunction, 134
myDimRBy
Widgets.SubFrameInterpFunction, 134
myDimRBz
Widgets.SubFrameInterpFunction, 134
myEntry
Widgets.SubFrameElement, 132
myLabel
Widgets.SubFrameElement, 132
myShapeC
Widgets.SubFrameInterpFunction, 134
myShapeG
Widgets.SubFrameInterpFunction, 134
myShapeL
Widgets.SubFrameInterpFunction, 134
myShapeS
Widgets.SubFrameInterpFunction, 134
na_rep

SortIntoColumns, 40
name
SortIntoColumns, 40
SortIntoColumns.Column, 54
NewSAMS
ShapeTest, 36
ShapeTest.GeoShape, 63
NODATA
shapefile, 33
nodes
SortIntoColumns, 40
notebook
GeoSams.MainApplication, 82
null
shapefile.Writer, 143
NULL
shapefile, 33
numAreas
AreaManager.AreaManager, 50
FishMortBySpecAcc.FishMortBySpecAcc, 62
SortByAreaFrame.SortByArea, 119
SortByRegionFrame.SortByRegion, 125
SpecialAreaFrame.SpecialArea, 130
numAreasEntry
SortByAreaFrame.SortByArea, 120
SpecialAreaFrame.SpecialArea, 130
numAreasLabel
SortByAreaFrame.SortByArea, 120
SpecialAreaFrame.SpecialArea, 130
numAreasMax
AreaManager.AreaManager, 50
SortByAreaFrame.SortByArea, 120
SpecialAreaFrame.SpecialArea, 130
NumAreasUpdate
AreaManager.AreaManager, 49
SortByAreaFrame.SortByArea, 118
SpecialAreaFrame.SpecialArea, 129
numbersCallback
Widgets, 43
numCorners
AreaManager.AreaManager, 50
AreaManager.AreaMgrSubFrame, 53
AreaManager.Corner, 55
SortByAreaFrame.SortByArea, 120
SortByRegionFrame.SortByRegion, 125
SpecialAreaFrame.SpecialArea, 130
numCornersEntry
AreaManager.AreaMgrSubFrame, 53
numCornersMax
AreaManager.AreaManager, 50
AreaManager.AreaMgrSubFrame, 53
SortByAreaFrame.SortByArea, 120
SpecialAreaFrame.SpecialArea, 130
NumCornersUpdate
AreaManager.AreaMgrSubFrame, 52
numDefined
FishMortBySpecAcc.FishMortBySpecAcc, 62
numDefinedEntry
FishMortBySpecAcc.FishMortBySpecAcc, 62
numDefinedLabel
FishMortBySpecAcc.FishMortBySpecAcc, 62
numDefinedMax
FishMortBySpecAcc.FishMortBySpecAcc, 62
NumDefinedUpdate
FishMortBySpecAcc.FishMortBySpecAcc, 61
numFieldsMax
FishMortBySpecAcc.FishMortBySpecAcc, 62
numFieldss
FishMortBySpecAcc.FishMortBySpecAcc, 62
numRecords
shapefile.Reader, 101
numShapes
shapefile.Reader, 101
numYears
SortByAreaFrame.SortByArea, 120
SortByRegionFrame.SortByRegion, 125
numYearsMax
AreaManager.AreaMgrSubFrame, 53
numYrCols
AreaManager.AreaMgrSubFrame, 53
numYrsAvg
MainInputFrame.MainInput, 91
octaveFName
EditMathSetupFrame.EditMathSetup, 58
oid
shapefile._Record, 47
shapefile.Shape, 107
on_visibility
EditMathSetupFrame.EditMathSetup, 57, 58
FishMortBySpecAcc.FishMortBySpecAcc, 61, 62
GrowthFrame.Growth, 71, 74
SortByAreaFrame.SortByArea, 118, 120
SortByRegionFrame.SortByRegion, 124, 125
SpecialAreaFrame.SpecialArea, 129, 130
onEnter
Widgets.ScrollFrame, 104, 105
onFrameConfigure
Widgets.ScrollFrame, 104, 105
onLeave
Widgets.ScrollFrame, 104, 105
onMouseWheel
Widgets.ScrollFrame, 104, 105
openAreaFileButton
SpecialAreaFrame.SpecialArea, 130
openDataSortButton
SortByAreaFrame.SortByArea, 120
openFMFileButton
FishMortBySpecAcc.FishMortBySpecAcc, 62
openGmgrConfigButton
SpecialAreaFrame.SpecialArea, 130
OpenPDF

MainInputFrame.MainInput, 89
openPDFButton
MainInputFrame.MainInput, 91
openRecrConfigButton
MainInputFrame.MainInput, 91
openSimConfigButton
MainInputFrame.MainInput, 91
organize_polygon_rings
shapefile, 31
OUTER_RING
shapefile, 33
outfile
SortIntoColumns, 40
outputParmLabel
SortByAreaFrame.SortByArea, 120
SortByRegionFrame.SortByRegion, 125
paramStr
GeoSams.MainApplication, 82
SortByAreaFrame.SortByArea, 120
SortByRegionFrame.SortByRegion, 125
paramVal
GeoSams.MainApplication, 82
parts
shapefile.Shape, 108
PARTTYPE_LOOKUP
shapefile, 33
partTypes
shapefile.Shape, 108
pathlike_obj
shapefile, 32
point
shapefile.Writer, 143
POINT
shapefile, 34
PointInPolygon, 29
PointInPolygon, 29
PointInPolygon.py, 153
pointLen
ShapeTest, 36
SortIntoColumns, 40
pointm
shapefile.Writer, 143
POINTM
shapefile, 34
points
shapefile.Shape, 108
pointz
shapefile.Writer, 143
POINTZ
shapefile, 34
poly
shapefile.Writer, 143
POLYGON
shapefile, 34
POLYGONM
shapefile, 34
POLYGONZ
shapefile, 34
POLYLINE
shapefile, 34
POLYLINEM
shapefile, 34
POLYLINEZ
shapefile, 34
polym
shapefile.Writer, 144
polyz
shapefile.Writer, 144
pop_up
EditMathSetupFrame.EditMathSetup, 57
FishMortBySpecAcc.FishMortBySpecAcc, 61
GeoSams.MainApplication, 79
GrowthFrame.Growth, 71
MainInputFrame.MainInput, 89
SortByAreaFrame.SortByArea, 118
SortByRegionFrame.SortByRegion, 124
SpecialAreaFrame.SpecialArea, 129
preconEntry
Widgets.SubFrameInterpFunction, 134
preconLabel
Widgets.SubFrameInterpFunction, 134
PyshpMaster/shapefile.py, 154
PYTHON3
shapefile, 34
ReadAreaCorners
AreaManager.AreaManager, 49
ReadConfigFile
GeoSams.MainApplication, 79
ReadFields
FishMortBySpecAcc.FishMortBySpecAcc, 61
ReadFile
EditMathSetupFrame.EditMathSetup, 57
ReadGridMgrConfigFile
GeoSams.MainApplication, 80
ReadRecruitConfigFile
GeoSams.MainApplication, 80
ReadSimConfigFile
GeoSams.MainApplication, 80
recNum
shapefile.Writer, 145
record
shapefile.Reader, 99
shapefile.ShapeRecord, 111
shapefile.Writer, 144
ShapeTest, 36
SortIntoColumns, 40
records
shapefile.Reader, 99
RECR
Globals, 25
recrCfgFile
MainInputFrame.MainInput, 91

recrConfigFile
  GeoSams.MainApplication, 82
recruitYrStop
  GeoSams.MainApplication, 82
recruitYrStrt
  GeoSams.MainApplication, 82
recrVar
  MainInputFrame.MainInput, 91
recrYrStop
  MainInputFrame.MainInput, 91
recrYrStrt
  MainInputFrame.MainInput, 91
Region
  SortIntoColumns, 40
  SortIntoColumns.GeoShape, 65
results
  AreaManager.AreaMgrSubFrame, 53
resultsDir
  Globals, 26
  SortByRegionFrame.SortByRegion, 125
rewind
  shapefile, 32
RING
  shapefile, 34
ring_bbox
  shapefile, 32
ring_contains_point
  shapefile, 32
ring_contains_ring
  shapefile, 32
ring_sample
  shapefile, 32
root
  FishMortBySpecAcc.FishMortBySpecAcc, 62
  GeoSams.MainApplication, 82
  GrowthFrame.Growth, 74
  MainInputFrame.MainInput, 91
  SortByAreaFrame.SortByArea, 120
  SortByRegionFrame.SortByRegion, 125
  SpecialAreaFrame.SpecialArea, 130
rows
  SortIntoColumns, 40
Run_Sim
  GeoSams.MainApplication, 80
RunSort
  SortByAreaFrame.SortByArea, 118
  SortByRegionFrame.SortByRegion, 124
runSortButton
  SortByAreaFrame.SortByArea, 120
  SortByRegionFrame.SortByRegion, 125
SAMS
  ShapeTest, 36
  ShapeTest.GeoShape, 63
SaveAreaFile
  SpecialAreaFrame.SpecialArea, 129
saveAreaFileButton
  SpecialAreaFrame.SpecialArea, 130
SaveConfigFiles
  GeoSams.MainApplication, 80
saveDataSortButton
  SortByAreaFrame.SortByArea, 120
SaveDataSortFile
  SortByAreaFrame.SortByArea, 118
SaveField
  AreaManager.AreaMgrSubFrame, 52
SaveFMFile
  FishMortBySpecAcc.FishMortBySpecAcc, 61
saveFMFileButton
  FishMortBySpecAcc.FishMortBySpecAcc, 62
saveGrowthConfigButton
  GrowthFrame.Growth, 74
SaveSpecialAreaData
  SpecialAreaFrame.SpecialArea, 129
scrollFrame
  AreaManager.AreaManager, 50
  SortByAreaFrame.SortByArea, 120
  SortByRegionFrame.SortByRegion, 126
scrollFrameHeight
  Globals, 26
scrollFrameWidth
  Globals, 26
sep
  SortIntoColumns, 40
Set Fishing Mortality in Special Access Areas, 5
setDredgeDataButton
  MainInputFrame.MainInput, 91
SetDredgeFileEnvVar
  MainInputFrame.MainInput, 89
SetDredgeFileName
  MainInputFrame.MainInput, 89
SetGbShapeBufferFile
  MainInputFrame.MainInput, 89
setGbShapeBufferFileButton
  MainInputFrame.MainInput, 91
SetGBShapeBufferFileEnvVar
  MainInputFrame.MainInput, 89
SetGbShapeFile
  MainInputFrame.MainInput, 89
setGbShapeFileButton
  MainInputFrame.MainInput, 91
SetGBShapeFileEnvVar
  MainInputFrame.MainInput, 89
setHabCamDataButton
  MainInputFrame.MainInput, 91
SetHabCamFileEnvVar
  MainInputFrame.MainInput, 89
SetHabCamFileName
  MainInputFrame.MainInput, 89
SetMaShapeBufferFile
  MainInputFrame.MainInput, 89
setMaShapeBufferFileButton
  MainInputFrame.MainInput, 91

SetMaShapeBufferFileEnvVar
  MainInputFrame.MainInput, 89
SetMaShapeFile
  MainInputFrame.MainInput, 89
setMaShapeFileButton
  MainInputFrame.MainInput, 91
SetMaShapeFileEnvVar
  MainInputFrame.MainInput, 89
sf
  ShapeTest, 36
  SortIntoColumns, 40
shape
  shapefile.Reader, 100
  shapefile.ShapeRecord, 111
  shapefile.Writer, 144
  SortIntoColumns, 40
shapefile, 30
  __version__, 33
  b, 31
  bbox_contains, 31
  bbox_overlap, 31
  failure_count, 33
  FIRST_RING, 33
  INNER_RING, 33
  is_cw, 31
  is_string, 31
  izip, 33
  logger, 33
  MISSING, 33
  MULTIPATCH, 33
  MULTIPOINT, 33
  MULTIPOINTM, 33
  MULTIPOINTZ, 33
  NODATA, 33
  NULL, 33
  organize_polygon_rings, 31
  OUTER_RING, 33
  PARTTYPE_LOOKUP, 33
  pathlike_obj, 32
  POINT, 34
  POINTM, 34
  POINTZ, 34
  POLYGON, 34
  POLYGONM, 34
  POLYGONZ, 34
  POLYLINE, 34
  POLYLINEM, 34
  POLYLINEZ, 34
  PYTHON3, 34
  rewind, 32
  RING, 34
  ring_bbox, 32
  ring_contains_point, 32
  ring_contains_ring, 32
  ring_sample, 32
  SHAPETYPE_LOOKUP, 34
  signed_area, 32
  test, 33
  TRIANGLE_FAN, 34
  TRIANGLE_STRIP, 34
  u, 33
  VERBOSE, 34
  xrange, 34
shapeFile
  SortIntoColumns, 40
shapefile._Array, 44
  __repr__, 44
shapefile._Record, 45
  __dir__, 46
  __field_positions, 47
  __getattr__, 46
  __getitem__, 46
  __init__, 46
  __oid, 47
  __repr__, 47
  __setattr__, 47
  __setitem__, 47
  as_dict, 47
  oid, 47
shapefile.Reader, 93
  __dbfHdrLength, 101
  __dbfHeader, 96
  __del__, 96
  __enter__, 96
  __exit__, 97
  __fieldLookup, 101
  __fullRecLookup, 101
  __fullRecStruct, 101
  __geo_interface__, 97
  __getFileObj, 97
  __init__, 96
  __iter__, 97
  __len__, 97
  __record, 97
  __recordFields, 97
  __recordFmt, 97
  __recordLength, 101
  __restrictIndex, 98
  __shape, 98
  __shapeIndex, 98
  __shpHeader, 98
  __shxHeader, 98
  __shxOffsets, 98
  __str__, 98
  _files_to_close, 101
  _offsets, 101
  bbox, 101
  close, 98
  dbf, 101
  encoding, 101
  encodingErrors, 101
  fields, 101

iterRecords, 98
iterShapeRecords, 98
iterShapes, 99
load, 99
load_dbf, 99
load_shp, 99
load_shx, 99
mbox, 101
numRecords, 101
numShapes, 101
record, 99
records, 99
shape, 100
shapeName, 101
shapeRecord, 100
shapeRecords, 100
shapes, 100
shapeType, 101
shapeTypeName, 100
shp, 101
shpLength, 101
shx, 101
zbox, 101
shapefile.Shape, 106
__geo_interface__, 107
__init__, 107
__oid, 108
__repr__, 107
_errors, 108
_from_geojson, 107
oid, 107
parts, 108
partTypes, 108
points, 108
shapeType, 108
shapeTypeName, 107, 108
shapefile.ShapefileException, 109
shapefile.ShapeRecord, 110
__geo_interface__, 110
__init__, 110
record, 111
shape, 111
shapefile.ShapeRecords, 112
__geo_interface__, 112
__repr__, 112
shapefile.Shapes, 113
__geo_interface__, 113
__repr__, 113
shapefile.Writer, 137
__bbox, 140
__dbfHeader, 140
__dbfRecord, 140
__del__, 140
__enter__, 140
__exit__, 141
__getFileObj, 141
__init__, 140
__len__, 141
__mbox, 141
__shapefileHeader, 141
__shpFileLength, 141
__shpRecord, 141
__shxRecord, 141
__zbox, 141
_bbox, 145
_files_to_close, 145
_mbox, 145
_shapeparts, 141
_zbox, 145
autoBalance, 145
balance, 141
bbox, 142
close, 142
dbf, 145
deletionFlag, 145
encoding, 145
encodingErrors, 145
field, 142
fields, 145
line, 142
linem, 142
linez, 142
mbox, 142
multipatch, 142
multipoint, 143
multipointm, 143
multipointz, 143
null, 143
point, 143
pointm, 143
pointz, 143
poly, 143
polym, 144
polyz, 144
recNum, 145
record, 144
shape, 144
shapeType, 145
shapeTypeName, 144
shp, 145
shpNum, 145
shx, 145
target, 145
zbox, 144
shapeFileDir
Globals, 26
MainInputFrame.MainInput, 91
shapeGB
ShapeTest, 36
shapeLen
ShapeTest, 36
SortIntoColumns, 40

shapeMA
  ShapeTest, 36
shapeName
  shapefile.Reader, 101
shapeRecord
  shapefile.Reader, 100
shapeRecords
  shapefile.Reader, 100
shapes
  shapefile.Reader, 100
  ShapeTest, 36
  SortIntoColumns, 40
ShapeTest, 35
  areaKm2, 36
  as_dict, 36
  lat, 36
  lon, 36
  NewSAMS, 36
  pointLen, 36
  record, 36
  SAMS, 36
  sf, 36
  shapeGB, 36
  shapeLen, 36
  shapeMA, 36
  shapes, 36
  X, 36
  Y, 36
ShapeTest.GeoShape, 63
  __init__, 63
  areaKm2, 63
  lat, 63
  lon, 63
  NewSAMS, 63
  SAMS, 63
  X, 63
  Y, 63
ShapeTest.py, 156
shapeType
  shapefile.Reader, 101
  shapefile.Shape, 108
  shapefile.Writer, 145
SHAPETYPE_LOOKUP
  shapefile, 34
shapeTypeName
  shapefile.Reader, 100
  shapefile.Shape, 107, 108
  shapefile.Writer, 144
shapeVal
  Widgets.SubFrameInterpFunction, 134
ShowArgs
  GeoSams.MainApplication, 80
ShowMessage
  Globals, 23
shp
  shapefile.Reader, 101
  shapefile.Writer, 145
shpLength
  shapefile.Reader, 101
shpNum
  shapefile.Writer, 145
shx
  shapefile.Reader, 101
  shapefile.Writer, 145
signed_area
  shapefile, 32
simCfgDir
  Globals, 26
simCfgFile
  MainInputFrame.MainInput, 91
simConfigFile
  GeoSams.MainApplication, 83
simStartDir
  MainInputFrame.MainInput, 91
  SpecialAreaFrame.SpecialArea, 130
skipStatusMsgs
  GeoSams.MainApplication, 83
skipStatusMsgsRB
  GeoSams.MainApplication, 83
Sort By Area Frame, 10, 12
sortAreaFrame
  AreaManager.AreaManager, 50
  SortByRegionFrame.SortByRegion, 126
SortByAreaFrame, 37
SortByAreaFrame.py, 157
SortByAreaFrame.SortByArea, 114
  __init__, 117
  AppendYears, 118
  areaData, 119
  areaFName, 119
  areas, 119
  browseExportButton, 119
  BrowseExportFile, 118
  CbUpdateUnits, 118, 119
  comboParameter, 119
  dataSortFileEntry, 119
  dataSortFileLabel, 119
  dataSortUnitsEntry, 119
  dataSortUnitsLabel, 119
  domainName, 119
  EnterKeyClicked, 118, 119
  ExportAll, 118
  exportAllSortButton, 119
  exportFileEntry, 119
  exportFileLabel, 119
  exportFileName, 119
  ExportThis, 118
  exportThisSortButton, 119
  friend, 119
  GetDataSortFile, 118
  maxYears, 119
  numAreas, 119

  numAreasEntry, 120
  numAreasLabel, 120
  numAreasMax, 120
  NumAreasUpdate, 118
  numCorners, 120
  numCornersMax, 120
  numYears, 120
  on_visibility, 118, 120
  openDataSortButton, 120
  outputParmLabel, 120
  paramStr, 120
  pop_up, 118
  root, 120
  RunSort, 118
  runSortButton, 120
  saveDataSortButton, 120
  SaveDataSortFile, 118
  scrollFrame, 120
  startDir, 120
  UpdateUnits, 118
  UpdateWidgets, 118
  yearStart, 120
  yearStop, 120
SortByRegionFrame, 38
SortByRegionFrame.GeoShape, 64
  __init__, 64
  area, 64
  lat, 64
  lon, 64
  X, 64
  Y, 64
  Zone, 64
SortByRegionFrame.py, 158
SortByRegionFrame.SortByRegion, 121
  __init__, 123
  AppendYears, 123
  areaFName, 125
  areaKm2, 125
  browseExportButton, 125
  BrowseExportFile, 123
  comboParameter, 125
  DetermineMgmtAreaIndex, 123
  domainName, 125
  ExportAll, 123
  exportAllSortButton, 125
  exportFileEntry, 125
  exportFileLabel, 125
  exportFileName, 125
  ExportThis, 124
  exportThisSortButton, 125
  firstYrCol, 125
  friend, 125
  GetZoneData, 124
  maxAreas, 125
  maxYears, 125
  numAreas, 125
  numCorners, 125
  numYears, 125
  on_visibility, 124, 125
  outputParmLabel, 125
  paramStr, 125
  pop_up, 124
  resultsDir, 125
  root, 125
  RunSort, 124
  runSortButton, 125
  scrollFrame, 126
  sortAreaFrame, 126
  startDir, 126
  table, 126
  tableCols, 126
  tableRows, 126
  UpdateWidgets, 124
  yearStart, 126
  yearStop, 126
  zones, 126
SortIntoColumns, 39
  as_dict, 40
  columns, 40
  dataFile, 40
  domain, 40
  fileName, 40
  index, 40
  inputFile, 40
  l, 40
  M, 40
  na_rep, 40
  name, 40
  nodes, 40
  outfile, 40
  pointLen, 40
  record, 40
  Region, 40
  rows, 40
  sep, 40
  sf, 40
  shape, 40
  shapeFile, 40
  shapeLen, 40
  shapes, 40
  subDir, 41
  X, 41
  X_t, 41
  Y, 41
  Y_t, 41
SortIntoColumns.Column, 54
  __init__, 54
  inBox, 54
  name, 54
SortIntoColumns.GeoShape, 65
  __init__, 65
  lat, 65

lon, 65
Region, 65
X, 65
Y, 65
SortIntoColumns.py, 159
specAccCfgDir
Globals, 26
specAccFile
SpecialAreaFrame.SpecialArea, 130
specAccFileLabel
SpecialAreaFrame.SpecialArea, 130
specAccFileStr
GeoSams.MainApplication, 83
Special Access Area, 13
SpecialAreaFrame, 42
SpecialAreaFrame.py, 160
SpecialAreaFrame.SpecialArea, 127
__init__, 128
areaFName, 130
areaMgr, 130
EnterKeyClicked, 129, 130
friend, 130
GetAreaFile, 129
GetGMgrConfigFName, 129
gmCfgFile, 130
numAreas, 130
numAreasEntry, 130
numAreasLabel, 130
numAreasMax, 130
NumAreasUpdate, 129
numCorners, 130
numCornersMax, 130
on_visibility, 129, 130
openAreaFileButton, 130
openGmgrConfigButton, 130
pop_up, 129
root, 130
SaveAreaFile, 129
saveAreaFileButton, 130
SaveSpecialAreaData, 129
simStartDir, 130
specAccFile, 130
specAccFileLabel, 130
startDir, 130
UpdateWidgets, 129
startDayComboDay
MainInputFrame.MainInput, 91
startDayComboMonth
MainInputFrame.MainInput, 91
startDayLabel
MainInputFrame.MainInput, 91
startDir
FishMortBySpecAcc.FishMortBySpecAcc, 62
SortByAreaFrame.SortByArea, 120
SortByRegionFrame.SortByRegion, 126
SpecialAreaFrame.SpecialArea, 130
startincCol
AreaManager.AreaMgrSubFrame, 53
startYr
MainInputFrame.MainInput, 91
stopDayComboDay
MainInputFrame.MainInput, 91
stopDayComboMonth
MainInputFrame.MainInput, 91
stopDayLabel
MainInputFrame.MainInput, 92
stopYr
MainInputFrame.MainInput, 92
style
GeoSams.MainApplication, 83
subDir
SortIntoColumns, 41
surveyDataDir
Globals, 26
surveyStartDir
MainInputFrame.MainInput, 92
table
SortByRegionFrame.SortByRegion, 126
tableCols
SortByRegionFrame.SortByRegion, 126
tableRows
SortByRegionFrame.SortByRegion, 126
target
shapefile.Writer, 145
test
shapefile, 33
ToggleSkipStatusMsgs
GeoSams.MainApplication, 80
towSpdStr
GrowthFrame.Growth, 74
towSpeed
GrowthFrame.Growth, 74
TRIANGLE_FAN
shapefile, 34
TRIANGLE_STRIP
shapefile, 34
tsPerYear
GeoSams.MainApplication, 83
MainInputFrame.MainInput, 92
u
shapefile, 33
UpdateEntry
Globals, 24
UpdateUnits
SortByAreaFrame.SortByArea, 118
UpdateValues
GrowthFrame.Growth, 71
UpdateWidgets
AreaManager.AreaManager, 49
FishMortBySpecAcc.FishMortBySpecAcc, 61
GrowthFrame.Growth, 71
SortByAreaFrame.SortByArea, 118

SortByRegionFrame.SortByRegion, 124
SpecialAreaFrame.SpecialArea, 129
useHabCamData
GeoSams.MainApplication, 83
useMatlabRB
EditMathSetupFrame.EditMathSetup, 58
useOctaveRB
EditMathSetupFrame.EditMathSetup, 58
usingMatlab
EditMathSetupFrame.EditMathSetup, 58
VERBOSE
shapefile, 34
viewPort
Widgets.ScrollFrame, 105
Widgets, 43
floatCallback, 43
numbersCallback, 43
Widgets.py, 161
Widgets.ScrollFrame, 103
__init__, 104
canvas, 105
canvas_window, 105
onEnter, 104, 105
onFrameConfigure, 104, 105
onLeave, 104, 105
onMouseWheel, 104, 105
viewPort, 105
Widgets.SubFrameElement, 131
__init__, 131
myEntry, 132
myLabel, 132
Widgets.SubFrameInterpFunction, 133
__init__, 134
dimVal, 134
funcFrame, 134
myDimRBx, 134
myDimRBy, 134
myDimRBz, 134
myShapeC, 134
myShapeG, 134
myShapeL, 134
myShapeS, 134
preconEntry, 134
preconLabel, 134
shapeVal, 134
Widgets.SubFrameXY, 135
__init__, 135
cornerFrame, 136
latitude, 136
longitude, 136
WriteGridMgrConfig
GeoSams.MainApplication, 80
WriteGrowthConfig
GeoSams.MainApplication, 80
WriteRecruitmentConfig
GeoSams.MainApplication, 80
WriteScallopConfig
GeoSams.MainApplication, 80
WriteSpatialFncsConfig
GeoSams.MainApplication, 81
WriteStartupFile
EditMathSetupFrame.EditMathSetup, 57
X
ShapeTest, 36
ShapeTest.GeoShape, 63
SortByRegionFrame.GeoShape, 64
SortIntoColumns, 41
SortIntoColumns.GeoShape, 65
X_t
SortIntoColumns, 41
xrange
shapefile, 34
Y
ShapeTest, 36
ShapeTest.GeoShape, 63
SortByRegionFrame.GeoShape, 64
SortIntoColumns, 41
SortIntoColumns.GeoShape, 65
Y_t
SortIntoColumns, 41
yearEntry
FishMortBySpecAcc.FishMortBySpecAcc, 62
yearStart
AreaManager.AreaMgrSubFrame, 53
GeoSams.MainApplication, 83
SortByAreaFrame.SortByArea, 120
SortByRegionFrame.SortByRegion, 126
yearStop
AreaManager.AreaMgrSubFrame, 53
GeoSams.MainApplication, 83
SortByAreaFrame.SortByArea, 120
SortByRegionFrame.SortByRegion, 126
zbox
shapefile.Reader, 101
shapefile.Writer, 144
Zone
SortByRegionFrame.GeoShape, 64
zones
SortByRegionFrame.SortByRegion, 126