Data Buffer - User Guide

Release 1.0.0

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ONE

PREFACE

The most up to date version of this documentation can be found in **HTML** and **PDF** form on ReadTheDocs[1].

1.1 Recommended User Knowledge

1.1.1 Users

This user guide assumes that users of the Data Buffer tool have:

- General IT experience including the use of Microsoft Windows.
- Experience in the use of a relevant GIS application supported by the tool (currently MapInfo and ArcGIS), including selecting and querying features and attributes.
- An understanding of the datasets that are used by the Data Buffer tool.

1.1.2 Administrators

It is recommended that a person within each organisation is designated as the tool and database administrator. This person should:

- Have an understanding and experience of IT systems management.
- Have certified training or equivalent experience in advanced features of the relevant GIS software.
- Become familiar with how the Data Buffer tool has been configured within the organisation.
- Have a good understanding of XML.

[1] https://readthedocs.org/projects/databuffer-userguide/

1.2 Reading Guide

This Preface explains a little about the Data Buffer tool, the community of people who develop and use it, and the licensing conditions for using and distributing it. It also explains how to read this user guide.

Introduction (page 7) explains why the Data Buffer tool is needed, what it does and where it comes from.

Setting up the tool (page 11) describes how to install and set up the Data Buffer tool.

Running the tool (page 37) describes how to run the Data Buffer tool.

FAQs (page 47) has a list of commonly asked questions and their answers.

Appendix (page 49) contains examples of the XML configuration file for MapInfo, lists known issues with the tool and contains a copy of the GNU Free Documentation License v1.3 covering this guide.

1.3 Licensing

The code for the Data Buffer tool is 'open source' and is released under the GNU General Public License (GPL) v3[2]. Users are free to install it on as many computers as they like, and to redistribute it according to the GPLv3 license.

This guide is released under the GNU Free Documentation License (FDL) v1.3[3]. Permission is granted to copy, distribute and/or modify this document under the terms of the license.

Please remember, however, that the tool cost a lot of money to develop and still requires further development and ongoing support. Hence any contributions towards costs would be gratefully received. Enquiries can be made via email to either Hester[4] or Andy[5].

1.4 Useful links

Related community links:

- Administrators: (MapInfo Installation[6]) - Release notes and installers for MapInfo.
- Developers (MapInfo Source Code[7]) - Source code for the Data Buffer tool.
- Issues (Known issues[8]) - Details of known issues and existing change requests.

[2] http://www.gnu.org/licenses/gpl.html
[3] http://www.gnu.org/licenses/fdl.html
[4] Hester@HesterLyonsConsulting.co.uk
[5] Andy@AndyFoyConsulting.co.uk
[6] https://github.com/LERCAutomation/DataBuffer-MapInfo/releases/
[7] https://github.com/LERCAutomation/DataBuffer-MapInfo
[8] https://github.com/LERCAutomation/DataBuffer-MapInfo/issues

1.5 Acknowledgements

Many thanks to Thames Valley Environmental Records Centre (TVERC) who have funded the development of the Data Buffer tool.

1.6 Conventions used in this user guide

The following typographical conventions are used in this manual:

`Ctrl-A`
Indicates a key, or combination of keys, to press.

Commit
Indicates a label, button or anything that appears in user interfaces.

Tools... –> About
Indicates a menu choice, or a combination of menu choices, tab selections or GUI buttons.

`C:\Program Files (x86)\MapInfo\Professional`
Indicates a filename or directory name.

Tip: Tips can help save time or provide shortcuts.

Note: Notes explain things in more detail or highlight important points.

Caution: Warnings where users should pay attention.

CHAPTER

TWO

INTRODUCTION

2.1 Background

Many LERCs will generate GIS layers containing details of records they hold of protected, notable and/or invasive non-native species. These GIS layers can be useful for many partner organisations such as local planning authorities, nature conservation bodies and utility companies. However, sometimes the overwhelming quantity of records means there may be too many records to identify 'hotspots' or areas where species may be impacted by upcoming development pressure or ground works.

Supplying partner organisations with information relating to a smaller set of species will reduce the number of records, which may help to identify where any given species has been recorded. However, even with just a handful of species it can be hard to determine potential species disturbance when species have different levels of mobility and ranges. One approach is to provide species 'alert' layers by buffering each record's location with an area related to their mobility or according to planning guidance. Unfortunately, making the spatial range of the records larger can only make analysis even worse as neighbouring records may overlap one another and records at the same location will be stacked on top of each other.

A simple idea is to reduce the number of multiple 'stacked' records by **combining** records for the same species at the same location into a single record. Similarly, **clustering** records for the same species within a given distance of each other will reduce the number of overlapping buffer areas by replacing them with a single but larger contiguous area. Whilst these processes can be done manually in a GIS application it can be tedious, repetitive and prone to user error. The ideal solution therefore is a tool that performs these tasks in an automated way.

The Data Buffer tool was originally developed for Thames Valley Environmental Records Centre (TVERC) and implemented in MapInfo, and subsequently a version in ArcGIS was developed. It is available for use by other LERCs and, if required, a version could be developed for QGIS.

2.2 Tool overview

The Data Buffer tool is configurable in a flexible way according to the requirements of the LERC or individual user through a configuration document. Once set up, the tool is integrated into the user interface of the GIS application and presented there as menu item. The tool itself has a simple interface (Fig. 2.1), requiring a minimum of input (the user is requested to select which layers to buffer and where to create the output layer).

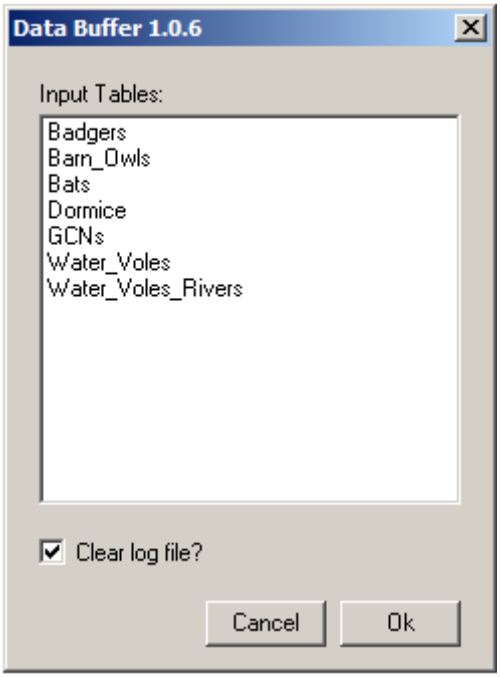

Fig. 2.1: The Data Buffer tool interface

GIS layers available for use by the tool must be loaded in the GIS application and must also be defined in the configuration document. Once the process is complete the combined output layer is saved in the selected location and a log file is generated which records the steps performed. The process is discussed in this document in more detail in the section on *running the tool* (page 37).

The details of how to process each GIS layer included is done via a configuration document written in XML. Using this document the user can configure all the parts of the process, for example:

- The name of each input layer when loaded in the GIS workspace.
- The columns to include from each input layer in the combined output layer.
- The default location of the output folder.
- The criteria to use and the sort order to apply when selecting records from each input layer.
- The buffer size and dissolve size to apply when combining and dissolving records.
- The symbology to apply to the new output layer.

Using this configuration file, each individual LERC can tailor the Data Buffer tool to its individual requirements. Examples of the XML file are included in the *Appendix* (page 49), and the process of setting up this file is discussed in the section on *setting up the tool* (page 11).

2.3 Benefits

There are a number of clear benefits to using the Data Buffer tool for generating buffered species alert layers.

1. The tool, by encapsulating and automating the process, saves considerable time over carrying out this process manually.
2. Both the process and the output are standardised, therefore minimising the risk of user error that is present in a manual process.
3. By specifying the process and output of the tool centrally through the configuration file, the output for each execution is consistent regardless of the individual executing the tool. This leads to comparability of results and a predictable experience for the users.
4. The process is repeatable and, through the inclusion of the log file, automatically documented.

CHAPTER

THREE

SETTING UP THE TOOL

Before the Data Buffer tool will function, it needs to be installed and configured. It is recommended that the configuration is carried out first.

3.1 Configuring the tool

The configuration is stored in an XML file called 'DataBuffer.xml', examples of which can be found in the *Appendix* (page 49). Attributes and settings are presented as nodes (beginning with a start node, e.g. `<example>`, and finishing with an end note, e.g. `<\example>`), with the value for the setting held between the `<value>` and `<\value>` tag.

Caution: The name of the configuration file must be 'DataBuffer.xml'. The tool will not load if a different name is used.

Note: The configuration file is slightly different between MapInfo and ArcGIS version. Make sure you are using the correct version.

The XML file can be edited in a text editor such as Notepad or Wordpad, or using a more feature rich XML editor such as as Sublime Text[9]. The configuration file is split into three sections:

General attributes
: General and default attributes for the tool.

Input Tables
: Deals with how each input GIS layer should be handled.

Output Table
: Deals with how the new output GIS layer should be created.

Caution: It is important that the structure of the file is maintained as it is presented in the *Appendix* (page 49). Any changes to the structure may result in the Data Buffer tool not loading, or not working as expected.

[9] https://www.sublimetext.com/3

Once editing has been completed and the edits have been saved, it is recommended that the configuration file is opened using an internet browser such as Internet Explorer which will help highlight any editing errors – only if the structure of the file is valid will the whole file be displayed in the internet browser.

Note: It is recommended that the configuration file is kept in a central (network) location, so that all users use the same configuration. Additionally, it is essential that the configuration file is kept in the same folder as the compiled version of the tool.

3.1.1 Special characters in XML

The characters &, < and > are not valid within values and, so in order to be used, must be **escaped** with XML entities as follows:

<
: This must be escaped with `<` entity, since it is assumed to be the beginning of a tag. For example, `RecYear < 2010`

>
: This should be escaped with `>` entity. It is not mandatory – it depends on the context – but it is strongly advised to escape it. For example, `RecYear > 1980`

&
: This must be escaped with `&` entity, since it is assumed to be the beginning of a entity reference. For example, `TaxonGroup = 'Invertebrates - Dragonflies & Damselflies'`

3.1.2 Setup for MapInfo

General attributes for MapInfo

The first section of the configuration file deals with a series of general attributes for the Data Buffer tool. Each node specifies where files will be saved, where the log file will be saved as well as other overall settings. Details on these attributes (and their typical values where known) are outlined below. The list follows the order within which the attributes are found in the configuration file. This version of the configuration details is valid for the MapInfo version 1.0.7 of the Data Buffer tool.

ToolTitle
: The title to use for the program in the MapInfo Tools menu.

LogFilePath
: The folder to be used for storing log files. This folder must already exist.

DefaultPath
: The default folder where output GIS layers will be stored. This can be overridden by the user when executing the tool.

Input table attributes for MapInfo

The details of all the input layers that can be included in the process are found within the `<InTables>` node. For each GIS layer to be included in the process a new child node must be created. The node name (e.g. `<Badgers>`) is a user-defined name used to identify an individual layer - it must be unique. This name is name of the layer as it will be shown in the tool interface, and can be different from the layer name as it is known in the active MapInfo workspace (which will be set in a subsequent child node). A simple example of a map layer definition with limited attributes is shown in Fig. 3.1.

Tip: If you wish to display spaces in any layer names in the tool menu use an underscore (_) for each space in the node name for the layer. XML does not allow spaces in node names, but the tool will translate these underscores into spaces when the form is opened.

The attributes that are required for each input table are as follows:

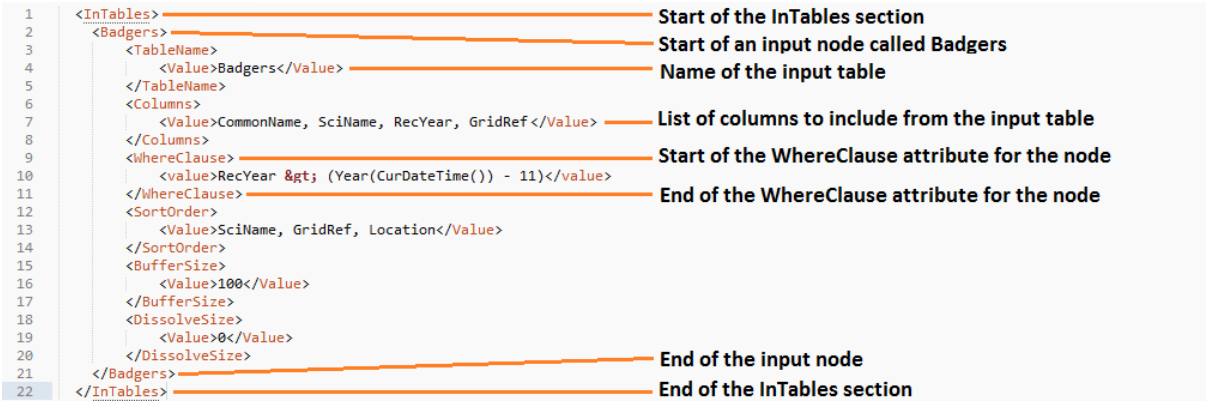

Fig. 3.1: Simplified example of input layer attributes configuration (MapInfo)

TableName
The name of the layer as it is known in the active workspace.

Columns
A comma-separated list of columns that should be included in the data selected from this layer during the process. The column names (not case sensitive) should match the column names in the source table.

WhereClause
Selection criteria that should be used to select records from this layer. This clause could, for example, ensure records are only included that have been entered after a certain date, are verified, are presence (not absence) records, or are a subset for a particular species. Leave this entry blank to select all records from the input layer.

Note: Any clause specified here must adhere to MapInfo SQL syntax as the clause will be run within MapInfo.

SortOrder
A comma-separated list of columns indicating the order the data should be selected from this layer. The column names (not case sensitive) should match the column names in the source table.

Note: The order of the records may be important when it comes to identifying records with the same **key** attributes (e.g. species name(s), grid reference, location name). Hence it is recommended that the key attribute columns are specified in the sort order.

BufferSize
The size of the buffer (in metres) to apply to records before being added to the output layer. A value of 0 (zero) indicates that the records will not be buffered for this input layer.

DissolveSize
The proximity (in metres) of records that are to be dissolved together. Records within this distance of each other will be dissolved together when output to form a single contiguous area. A value of 0 (zero) indicates that the records should not be dissolved.

Note: Even if records are not dissolved (either because they are not within the specified distance of each other or because the value is 0) they may be combined together if their **key** attributes are

the same.

Output table attributes for MapInfo

The details of the output layer to be created are found within the `<OutTable>` node and are specified as follows:

ColumnDefs
A comma-delimited list of the column headings, and their data types/lengths, that the output GIS layer should have.

CoordinateSystem
The coordinate system for the output GIS layer.

Columns
This section defines how the input layer records are treated when buffering, combining and dissolving them for the output layer. It should consist of a set of child nodes, one for each column listed in the *ColumnDefs* (page 15) node. The node names are not important but must be unique. Each child node has the following entries:

> **Caution:** The order of the columns in the input layers must match the order of the columns specified here as well as the order of the columns listed in the *ColumnDefs* (page 15) node.

ColumnName
The name of the input column in **all** of the input layers.

ColumnType
The type of column (and how it should be processed) for the output layer. The options are:

Key
Indicates that the column is a **Key** column. Only records with the same values for **all** key columns will be combined or dissolved. Values in the column will be written 'as is' to the output layer.

Cluster
If records are to be clustered for the input layer (i.e. `DissolveSize > 0`) then the most common value in this column will written to the output layer. Otherwise values in the column will be written 'as is' to the output layer.

First
The **first** value in this column, for records with the same key columns, will be written to the output layer. This is typically used when **all** values with the same key columns are the same (e.g. the common name when the scientific name is used as a key column).

Common
The most common value in this column, for records with the same key columns, will be written to the output layer. This is useful when values may vary for the same key column values (e.g. the location name when the grid reference is used as a key column).

Min
The minimum value in this column, for records with the same key columns,

will be written to the output layer separated by " - ". This is useful for numeric columns such as abundance counts or recorded years.

Max
The maximum value in this column, for records with the same key columns, will be written to the output layer separated by " - ". This is useful for numeric columns such as abundance counts or recorded years.

Range
The range of values in this column, for records with the same key columns, are written to the output layer separated by " - ". This is useful for numeric columns such as abundance counts or recorded years (e.g. `1986 - 1988`).

Symbology
The symbology definition for the output layer. Multiple symbols can be specified for use in the symbology using clauses. Each symbol is specified between `<Symbol>` and `</Symbol>` tags and is defined by the following child nodes:

Clause
The clause that defines the records which will be assigned this symbol. This can be left blank to apply the symbology to all records with the same `<Object>` type specified below.

Object
The object type that is symbolised using this symbol (e.g. `Region`). All buffered objects will be 'Region' whereas non-buffered objects could be 'Point', 'Line' or 'Region'.

Symbol
The style to be used for the symbol. This attribute only applies to `Point` objects.

Pen
The style to be used for the symbol border (outline). This attribute applies to `Region` objects.

Brush
The style to be used for the symbol infill. This attribute applies to `Region` objects.

Tip: In order to find the syntax for the Pen and Brush attribute, set the desired symbol for a polygon (region) layer through **Options => Region style**, then write `Print CurrentBorderPen()` in the MapBasic window and hit enter. The printed pen definition (e.g. `2,2,10526880`) can be used in the `Pen` attribute. Repeat with `Print CurrentBrush()`.

3.1.3 Setup for ArcGIS

General attributes for ArcGIS

The first section of the configuration file deals with a series of general attributes for the Data Buffer tool. Each node specifies where files will be saved, where the log file will be saved as well as other overall settings. Details on these attributes (and their typical values where known) are outlined below. The list follows the order within which the attributes are found in the configuration file. This version of the configuration details is valid for the ArcGIS version 1.1 of the Data Buffer tool.

LogFilePath
: The folder to be used for storing log files. This folder must already exist.

DefaultClearLogFile
: A Yes/No attribute specifying whether the 'clear log file' check box on the menu should be checked (Yes) or unchecked (No) when the menu opens.

DefaultPath
: The default folder where output GIS layers will be stored. This can be overridden by the user when executing the tool.

TempFilePath
: The folder where temporary files can be stored by the tool. This folder must already exist.

LayerPath
: The folder where layer files (symbology files) are stored that can be accessed by the tool.

Note: In contrast to the MapInfo version of the tool, the ArcGIS version uses the coordinate system of the first input layer to define the coordinate system of the output layer.

Input layer attributes for ArcGIS

The details of all the input layers that can be included in the process are found within the `<InLayers>` node. For each GIS layer to be included in the process a new child node must be created. The node name (e.g. `<Badgers>`) is a user-defined name used to identify an individual layer - it must be unique. This name is name of the layer as it will be shown in the tool interface, and can be different from the layer name as it is known in the ArcGIS Table of Contents (which will be set in a subsequent child node). A simple example of a map layer definition with limited attributes is shown in Fig. 3.2.

Tip: If you wish to display spaces in any layer names in the tool menu use an underscore (_) for each space in the node name for the layer. XML does not allow spaces in node names, but the tool will translate these underscores into spaces when the form is opened.

The attributes that are required for each input layer are as follows:

LayerName
: The name of the layer as it is known in the table of contents.

Columns
: A comma-separated list of columns that should be included in the data selected from this layer during the process. The column names (not case sensitive) should match the column names in the

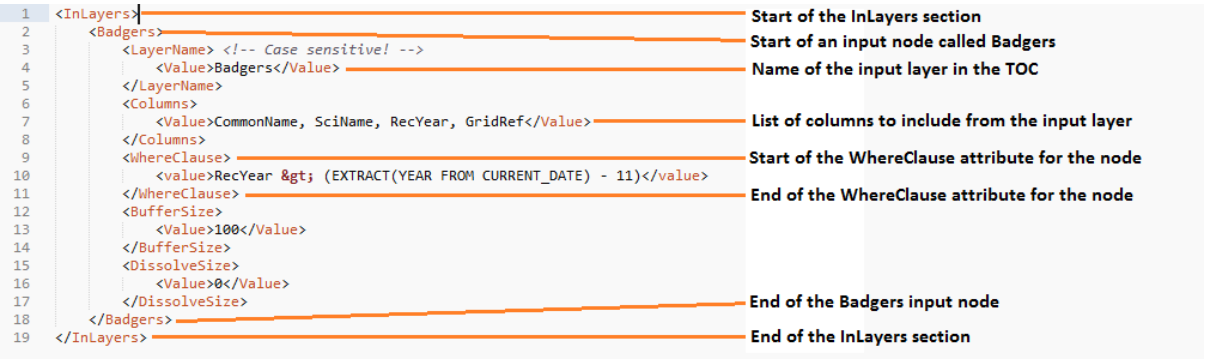

Fig. 3.2: Simplified example of input layer attributes configuration (ArcGIS)

source table, but does not have to match the name of the output column. If the name of the column differs to the name that will be used in the output, the output column name should be added as a second element before the comma, and in quotation marks (e.g. ComName "CommonName", YearNum "RecYear"). If you wish to include fixed text that is not currently contained in the layer data (e.g. a copyright or source statement), this can be included in quotation marks, followed by the name of the new column in quotation marks (e.g. "TVERC" "Source").

WhereClause

Selection criteria that should be used to select records from this layer. This clause could, for example, ensure records are only included that have been entered after a certain date, are verified, are presence (not absence) records, or are a subset for a particular species. Leave this entry blank to select all records from the input layer.

Note: Any clause specified here must adhere to ArcGIS SQL syntax as the clause will be run within ArcGIS.

Tip: A subset of records entered after a given date can be created using the following SQL (in this example the RecYear column holds the year the observation was recorded, and the subset is for 10 years before the current date): `RecYear > (EXTRACT(YEAR FROM CURRENT_DATE) - 11)`

BufferSize

The size of the buffer (in metres) to apply to records before being added to the output layer. A value of 0 (zero) indicates that the records will not be buffered for this input layer.

DissolveSize

The proximity (in metres) of records that are to be dissolved together. Records within this distance of each other will be dissolved together when output to form a single contiguous area. A value of 0 (zero) indicates that the records should not be dissolved.

Note: Even if records are not dissolved (either because they are not within the specified distance of each other or because the value is 0) they may be combined together if their **key** attributes are the same.

Note: If the DissolveSize is the same as the BufferSize, the DissolveSize will be reduced by

1 metre during processing in order to avoid combining polygons that are touching rather than overlapping.

Output layer attributes for ArcGIS

The details of the output layer to be created are found within the <OutLayer> node and are specified as follows:

OutputFormat
The format (Shape or GDB) that the output layer will be saved as.

LayerFile
the name of the layer file that will be used for the symbology of the output layer. This file should be located in the *LayerPath* (page 17) folder.

Columns
This section defines how the input layer records are treated when buffering, combining and dissolving them for the output layer. It should consist of a set of child nodes, one for each column that should be written in the output. The node names are not important but must be unique, and can be as simple as Col1, Col2, etc. Each child node has the following entries:

ColumnName
The name of the output column.

ColumnType
The type of column (and how it should be processed) for the output layer. The options are:

Key
Indicates that the column is a **Key** column. Only records with the same values for **all** key columns will be combined or dissolved. Values in the column will be written 'as is' to the output layer.

Cluster
If records are to be clustered for the input layer (i.e. `DissolveSize > 0`) then the most common value in this column will written to the output layer. Otherwise values in the column will be written 'as is' to the output layer.

First
The **first** value in this column, for records with the same key columns, will be written to the output layer. This is typically used when **all** values with the same key columns are the same (e.g. the common name when the scientific name is used as a key column).

Common
The most common value in this column, for records with the same key columns, will be written to the output layer. This is useful when values may vary for the same key column values (e.g. the location name when the grid reference is used as a key column).

Min
The minimum value in this column, for records with the same key columns, will be written to the output layer separated by " - ". This is useful for numeric columns such as abundance counts or recorded years.

Max
: The maximum value in this column, for records with the same key columns, will be written to the output layer separated by " - ". This is useful for numeric columns such as abundance counts or recorded years.

Range
: The range of values in this column, for records with the same key columns, are written to the output layer separated by " - ". This is useful for numeric columns such as abundance counts or recorded years (e.g. `1986 - 1988`).

FieldType
: The type of data contained in the column. Options are `TEXT`, `FLOAT` (a single-precision floating point number), `DOUBLE` (a double-precision floating point number), `SHORT` (a short integer), `LONG` (a long integer) and `DATE`.

ColumnLength
: The length of the output column. Please note the ESRI restrictions on field lengths for your chosen FieldType.

3.2 Installing the tool

Installation of the tool is different between MapInfo and ArcGIS. Please follow the relevant instructions.

3.2.1 Installation for MapInfo

To install the tool, make sure that the configuration of the XML file as described above is complete, that the XML file is in the same directory as the tool MapBasic application (.MBX) and that all required GIS layers are loaded in the current workspace. Then, open *Tool Manager* in MapInfo by selecting `Tools --> Tool Manager...` in the menu bar (Fig. 3.3).

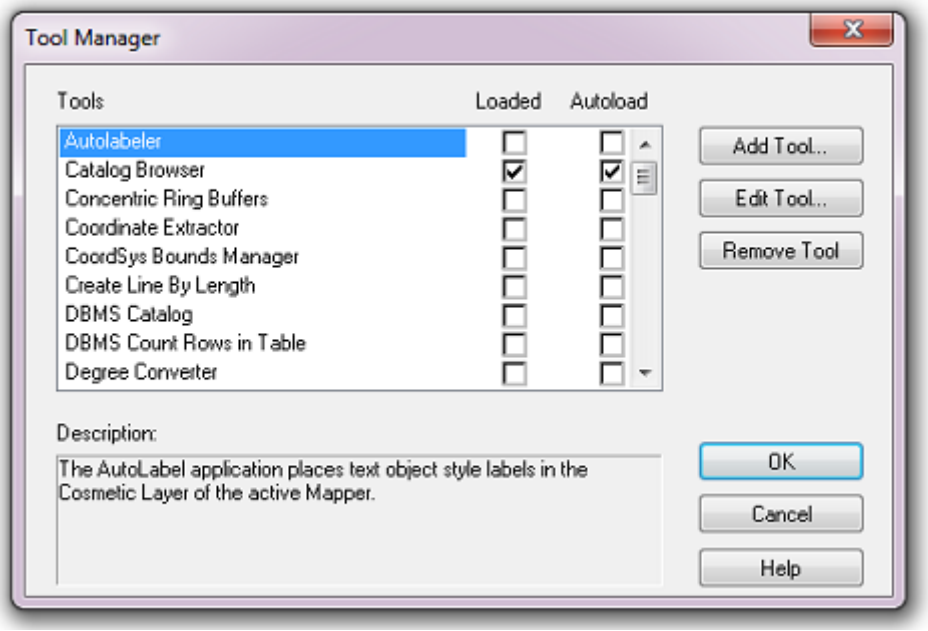

Fig. 3.3: The Tool Manager in MapInfo 12 or earlier

In the *Tool Manager* dialog, click **Add Tool...**, then locate the tool using the browse button **...** on the *Add Tool* dialog (Fig. 3.4). Enter a name in the **Title** box (e.g. 'DataBuffer'), and a description if desired. Then click **Ok** to close the *Add Tool* dialog.

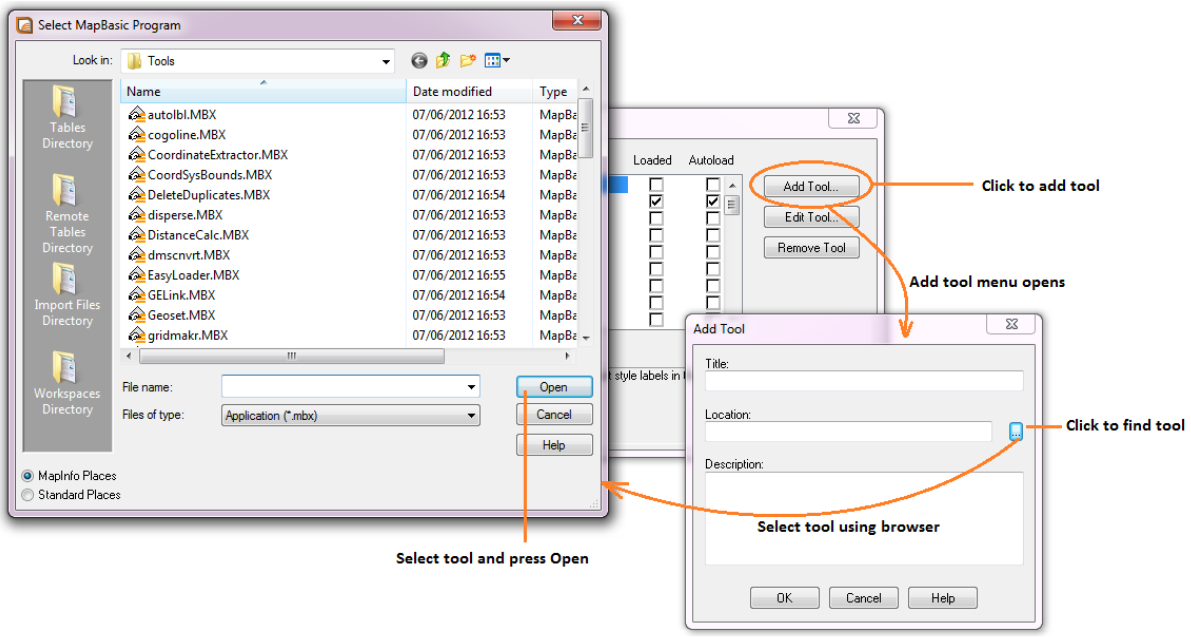

Fig. 3.4: Adding a tool in Tool Manager

The tool will now show in the *Tool Manager* dialog (Fig. 3.5) and the **Loaded** box will be checked. To load the tool automatically whenever MapInfo is started check the **AutoLoad** box. Then click **Ok** to close the *Tool Manager* dialog.

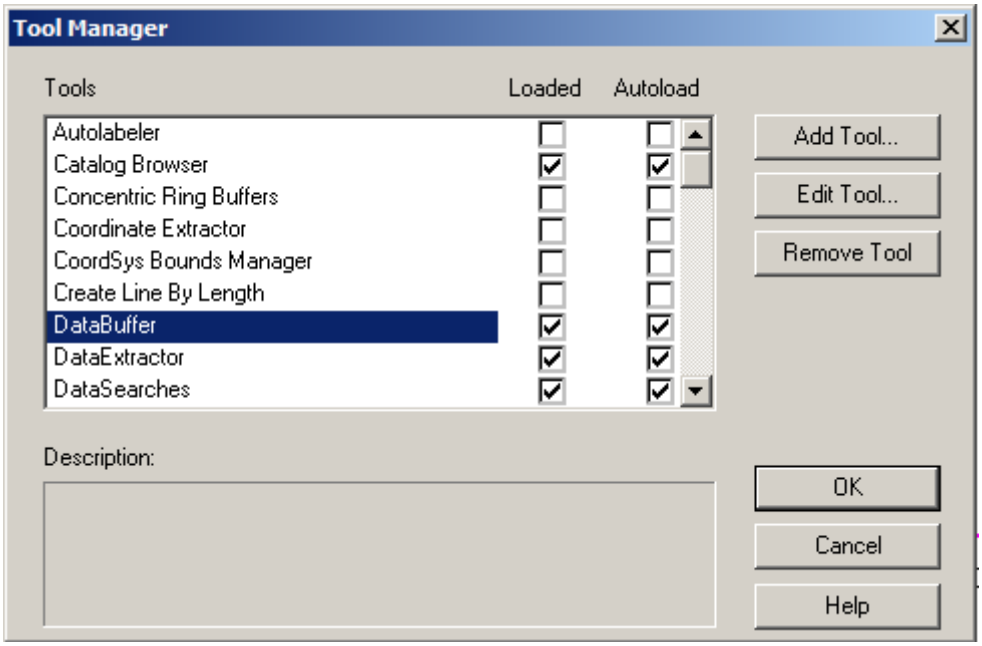

Fig. 3.5: The Data Buffer tool is loaded

The tool will now appear as a new entry in the *Tools* menu (Fig. 3.6).

Note: The name that will appear in the *Tools* menu is dependent on the *ToolTitle* (page 13) value in the configuration file, **not** the name given when adding the tool using the Tool Manager.

Tip: It is recommended that a MapInfo Workspace is created that contains all the required GIS layers to run the tool. Once this workspace has been set up and the tool has been configured and installed, running the Data Buffer tool becomes a simple process.

3.2.2 Installation for ArcGIS

Installing the tool in ArcGIS is straightforward. There are a few different ways it can be installed:

Installation through Windows Explorer

Open Windows Explorer and double-click on the ESRI Add-in file for the data buffer tool (Fig. 3.7).

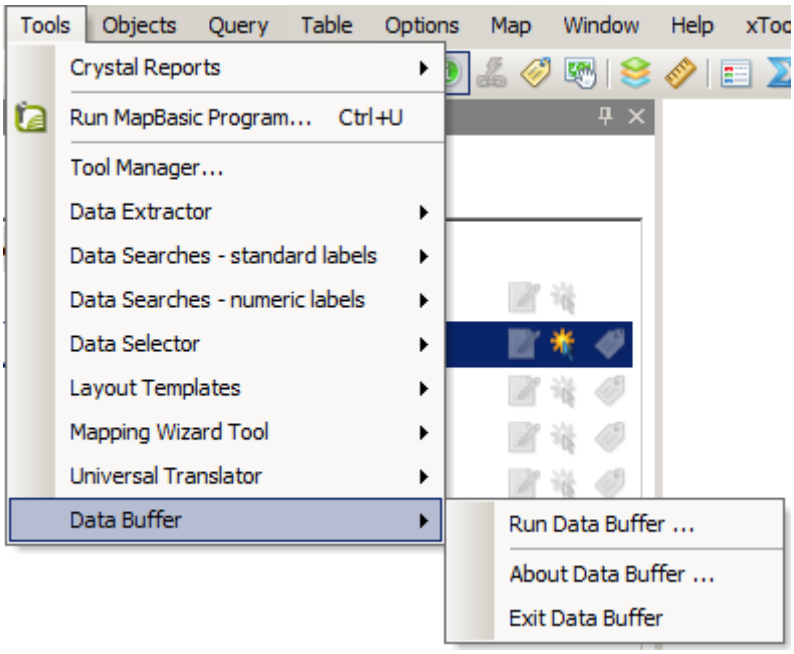

Fig. 3.6: The Data Buffer tool menu

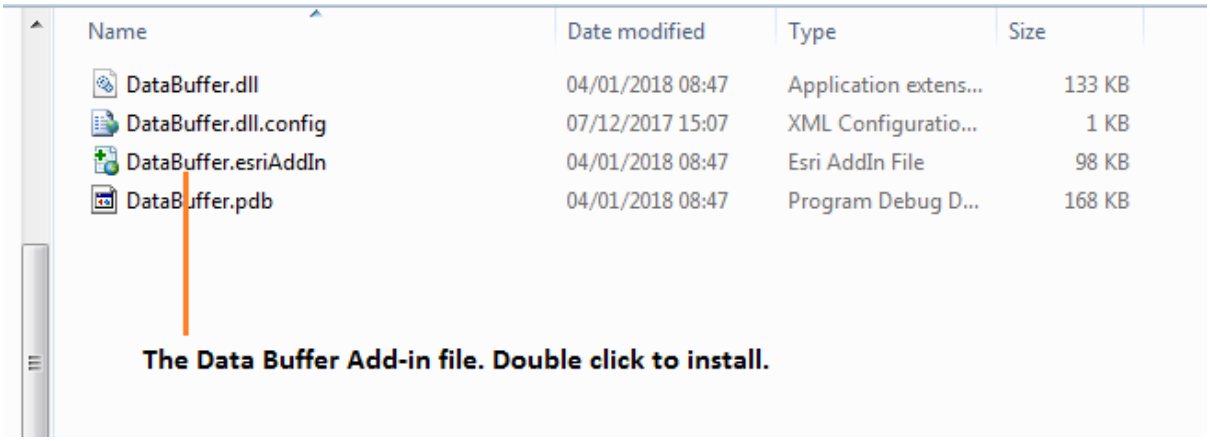

Fig. 3.7: Installing the Data Buffer tool from Windows Explorer

Installation will begin after confirming you wish to install the tool on the dialog that appears (Fig. 3.8).

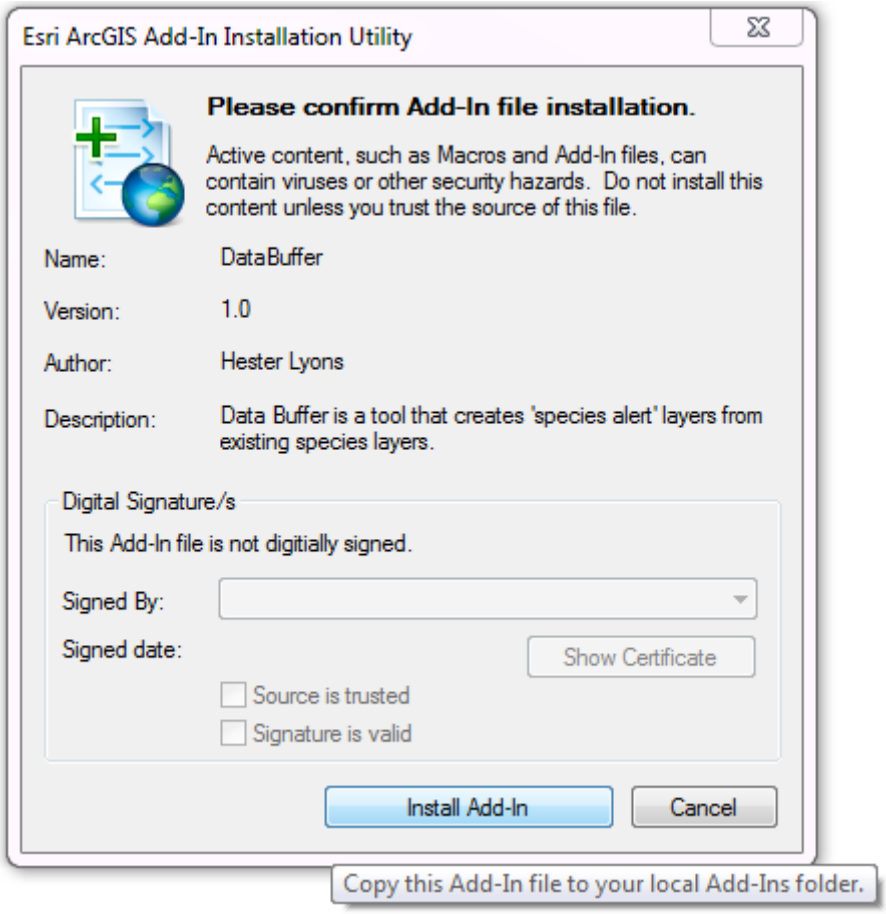

Fig. 3.8: Installation begins after clicking 'Install Add-in'

Once it is installed, it will become available to add to the ArcGIS interface as a button (see *Customising toolbars* (page 29)).

Note: In order for this process to work all running ArcMap sessions must be closed. The tool will not install or install incorrectly if there are copies of ArcMap running.

Installation from within ArcMap

Firstly, open the Add-In Manager through the Customize menu (Fig. 3.9).

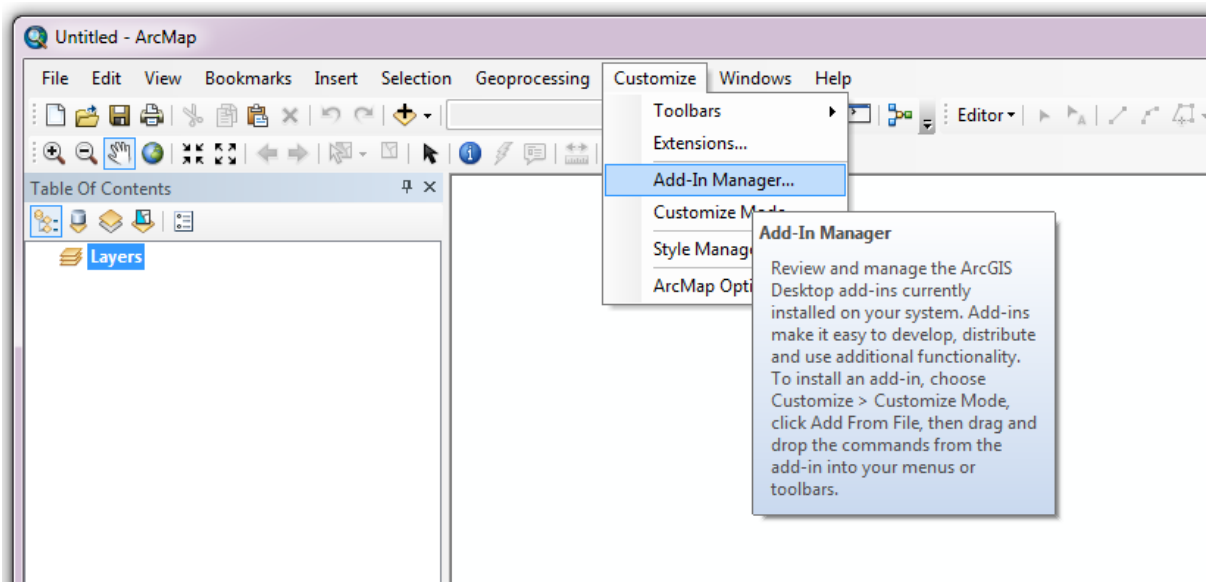

Fig. 3.9: Starting the ArcGIS Add-In Manager

If the Data Buffer tool is not shown, use the **Options** tab to add the folder where the tool is kept (Fig. 3.10). The security options should be set to the lowest setting as the tool is not digitally signed.

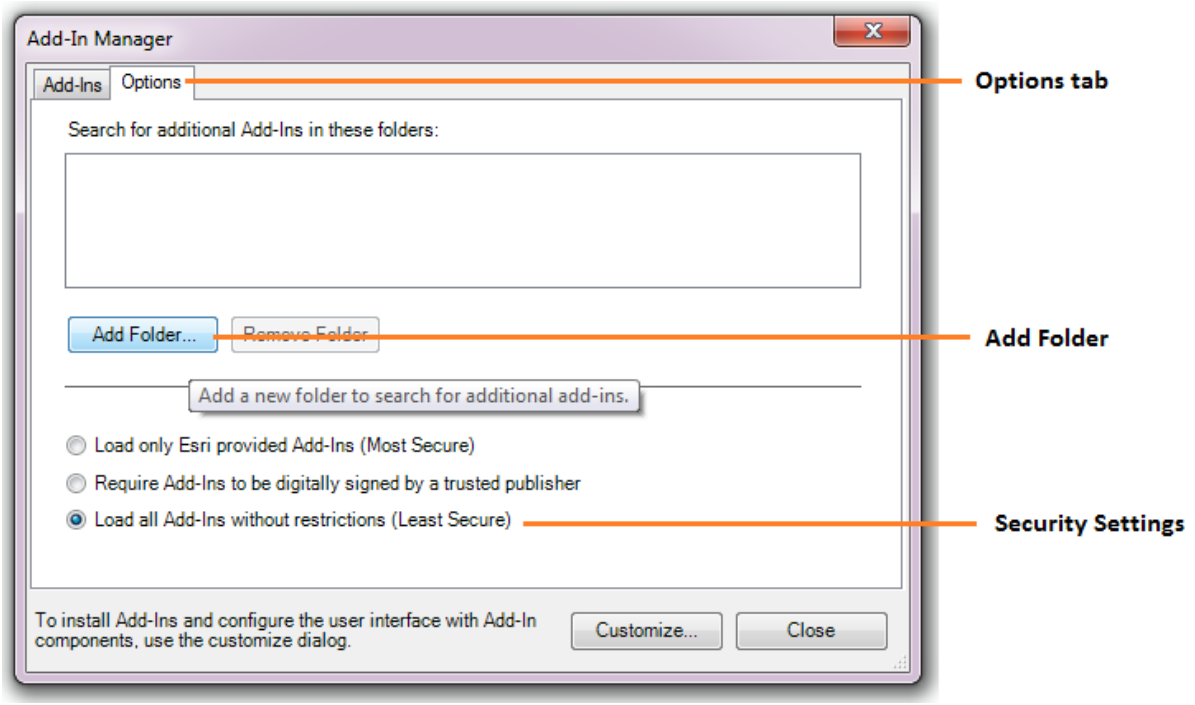

Fig. 3.10: The 'Options' tab in the ArcGIS Add-In Manager

Once the tool shows in the Add-In Manager (Fig. 3.11), it is available to add to the ArcGIS interface as a button (see *Customising toolbars* (page 29)).

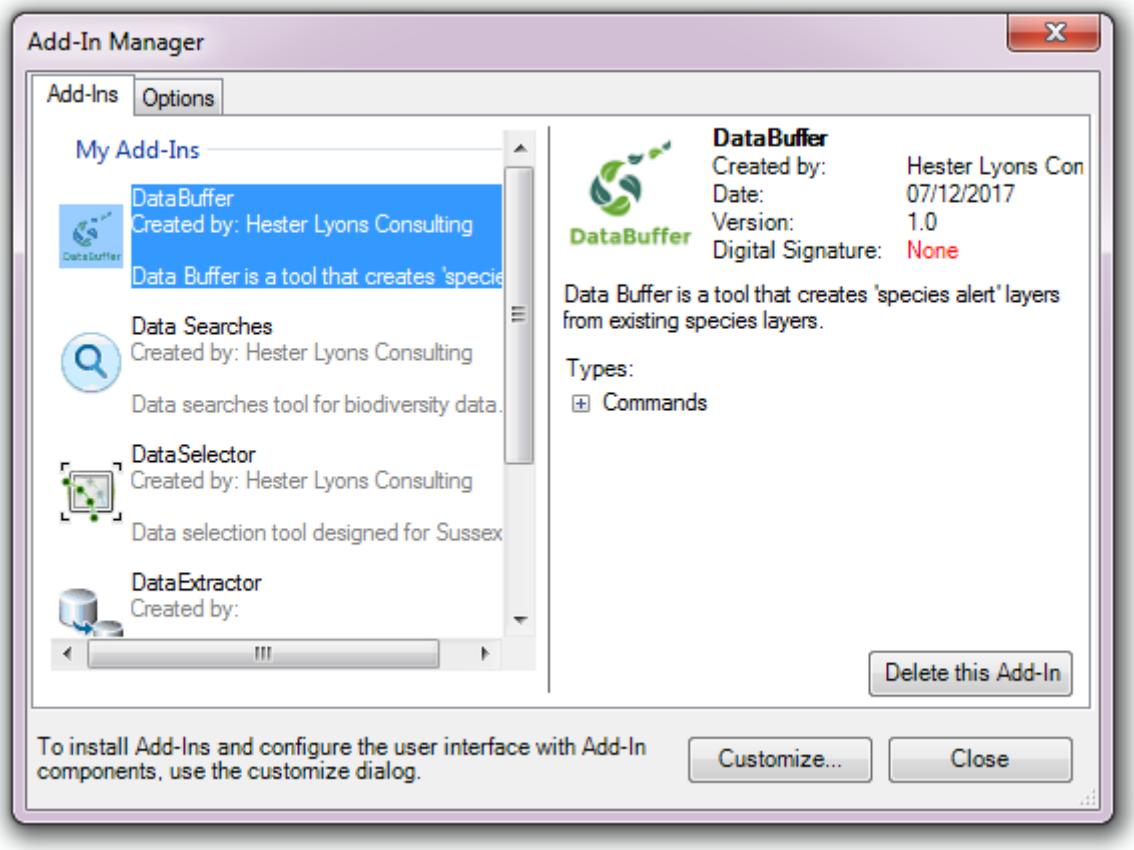

Fig. 3.11: The ArcGIS Add-In Manager showing the Data Buffer tool

Customising toolbars

In order to add the Data Buffer tool to the user interface, it needs to be added to a toolbar. It is recommended that this is done inside a document that has already been loaded with all the data layers that are required for the tool to run. The tool should then be saved with this document (see Fundamentals of Saving your Customizations[10] for an explanation of how customisations are stored within ArcGIS).

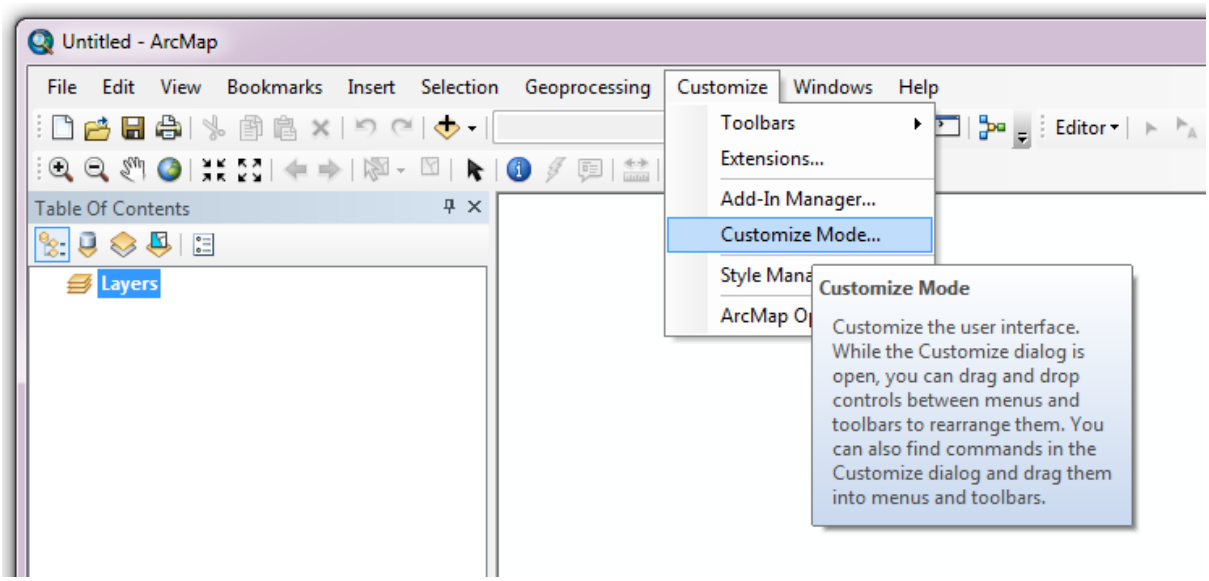

Fig. 3.12: Starting Customize Mode in ArcGIS

Customising toolbars is done through the Customize dialog, which can be started either through the Add-In Manager (by clicking **Customize**, see Fig. 3.11), or through choosing the 'Customize Mode…' option in the Customize Menu (Fig. 3.12).

[10] http://desktop.arcgis.com/en/arcmap/10.3/guide-books/customizing-the-ui/fundamentals-of-saving-your-customizations.htm

Once this dialog is open, ensure that the check box 'Create new toolbars and menus in the document' is checked in the **Options** tab (Fig. 3.13).

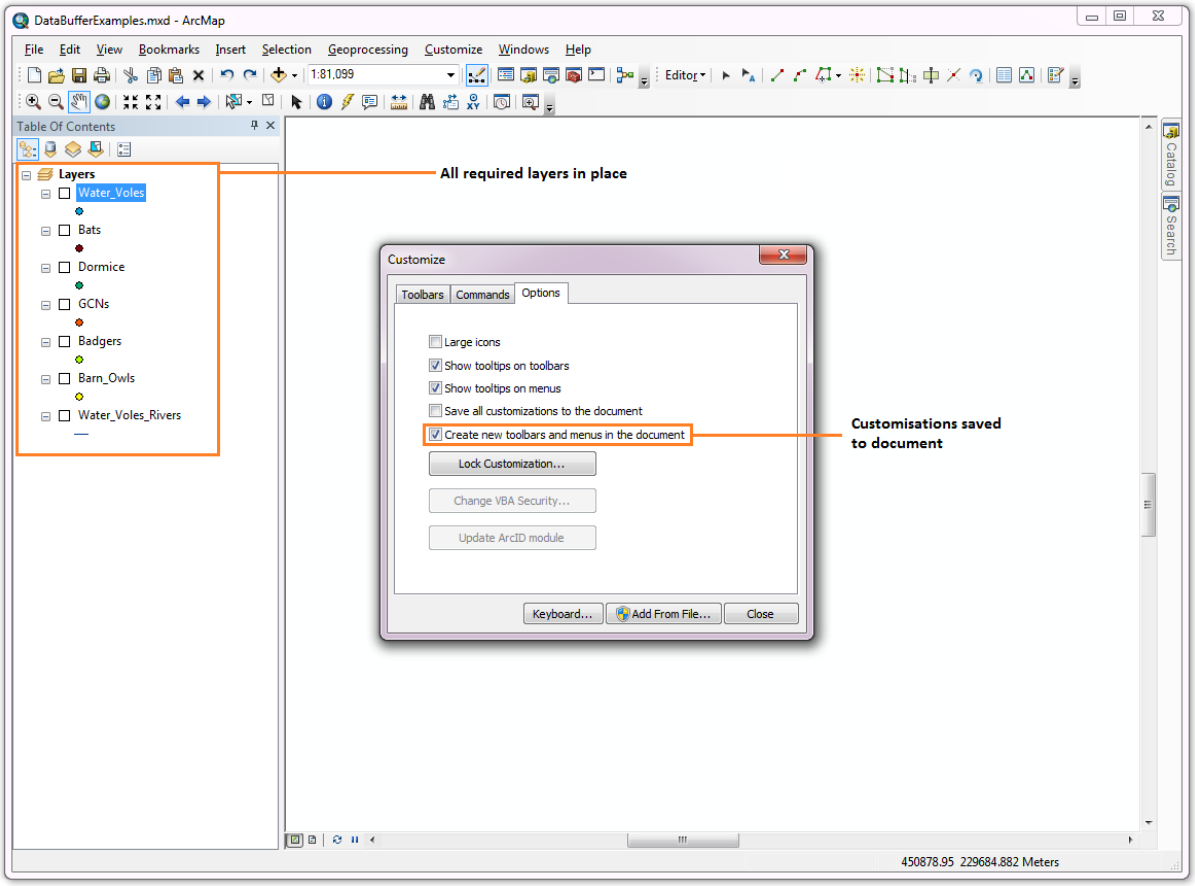

Fig. 3.13: Customising the document in ArcGIS

It is recommended that the button for the Data Buffer tool is added to a new toolbar. Toolbars are created through the **Toolbars** tab in the Customize dialog, as shown in figures Fig. 3.14 and Fig. 3.15.

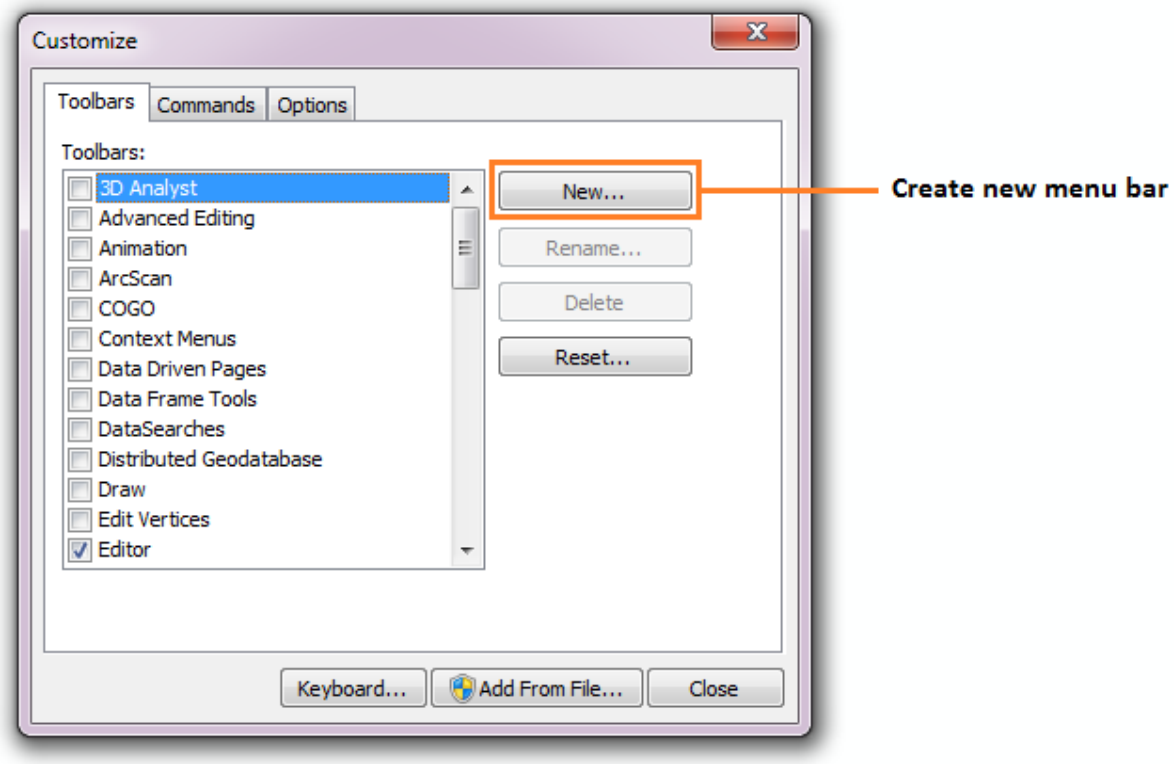

Fig. 3.14: Adding a new toolbar in ArcGIS

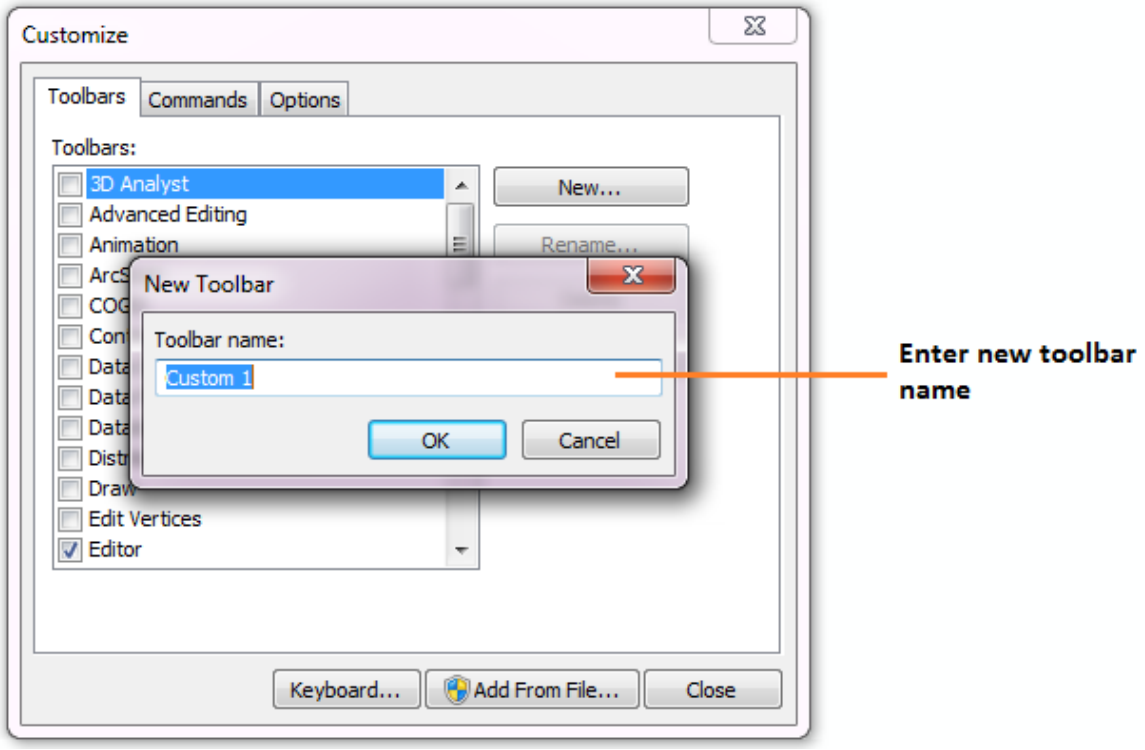

Fig. 3.15: Naming the new toolbar in ArcGIS

Once a new toolbar is created and named, it is automatically added to the ArcMap interface as well as to the Customize dialog (Fig. 3.16. In this case the toolbar was named 'TestToolbar').

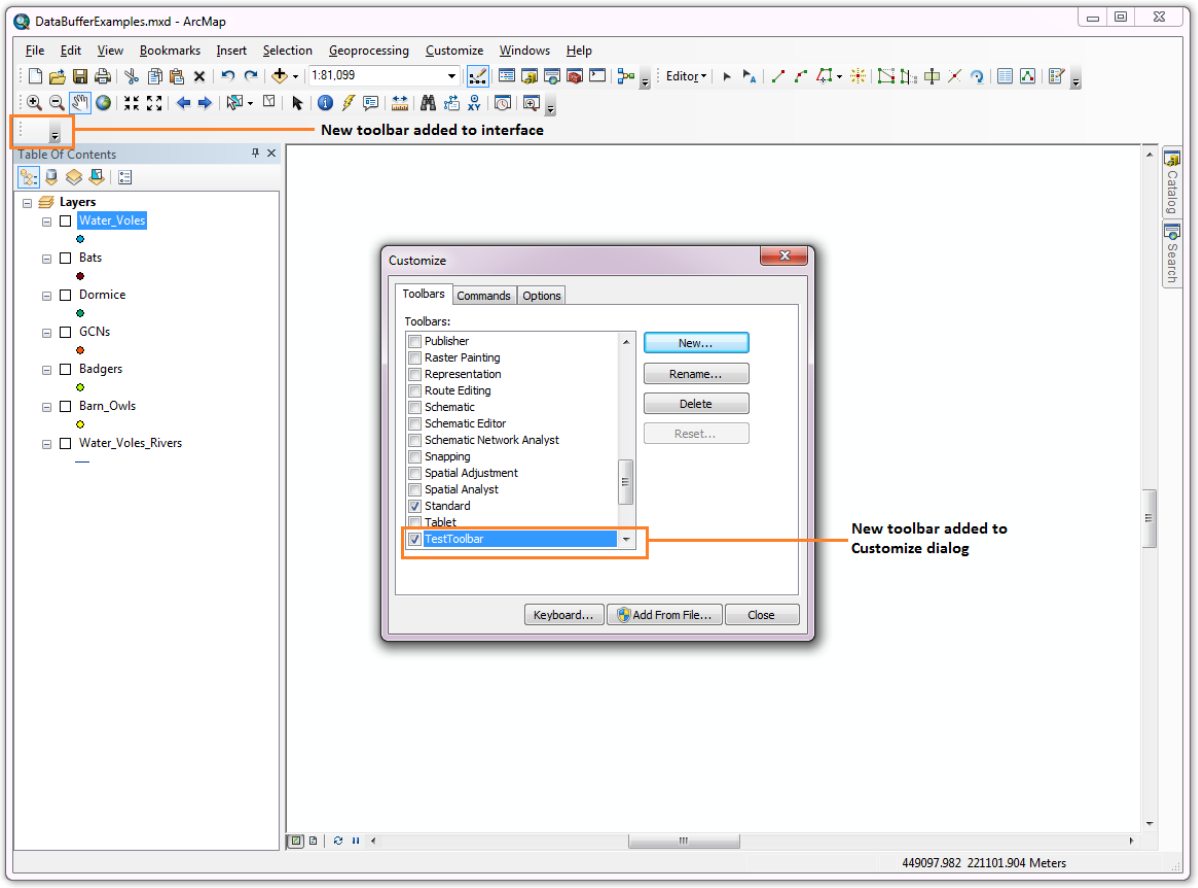

Fig. 3.16: New toolbar added to the ArcGIS Interface

As a final step the Data Buffer tool is added to the toolbar. This is done from the **Command** tab in the Customize dialog (Fig. 3.17). Click on **Add-In Controls** and the Data Buffer tool will be shown in the right-hand panel.

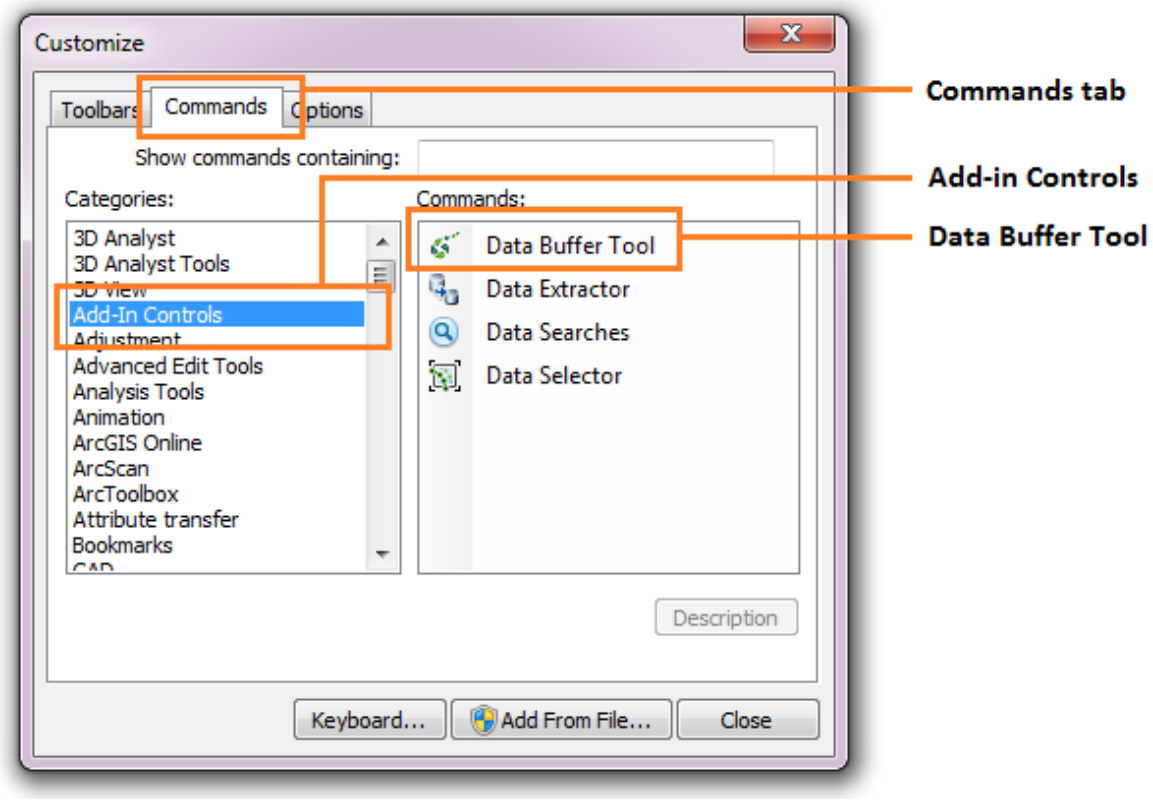

Fig. 3.17: Finding the Data Buffer tool in the add-in commands

To add the tool to the toolbar, simply drag and drop it onto it (Fig. 3.18). Close the Customize dialog and **save the document**. The Data Buffer tool is now ready for its final configuration and first use.

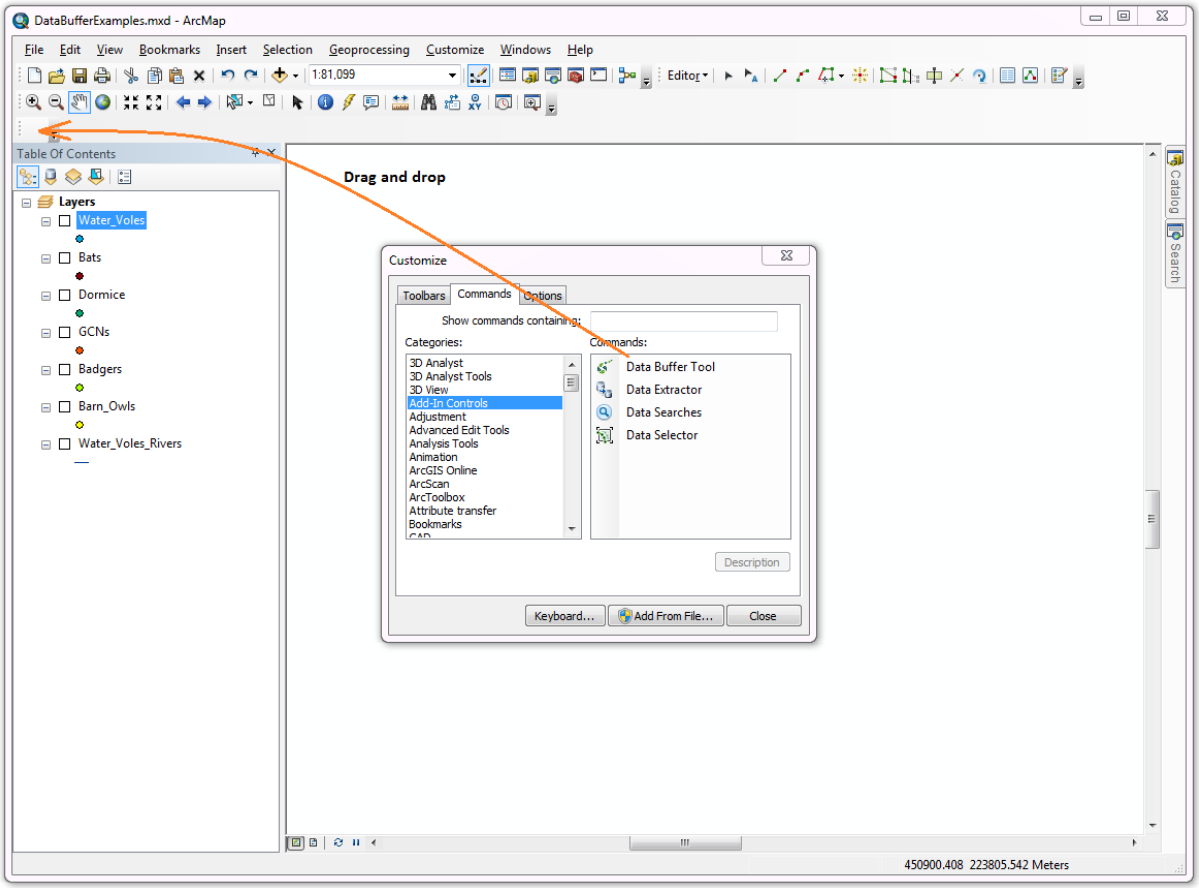

Fig. 3.18: Adding the Data Buffer tool to the new toolbar

In order to function, the tool needs to know the location of the XML configuration file. The first time the tool is run, or whenever the configuration file is moved, a dialog will appear asking for the folder containing the XML file (Fig. 3.19). Navigate to the folder where the XML file is kept and click **OK**. If the XML file is present and its structure is correct, the Data Searches form will be shown. Even if the tool is not run at this time, the location of the configuration file will be stored for future use.

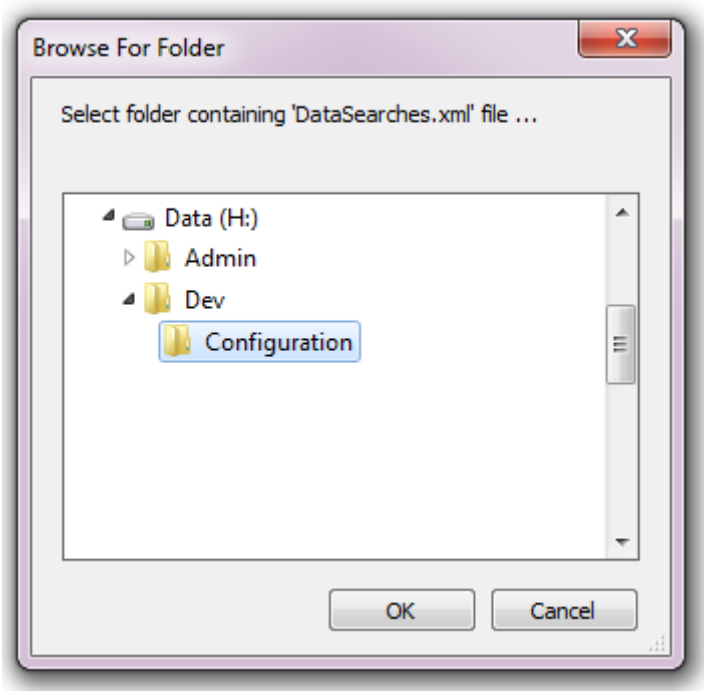

Fig. 3.19: Locating the configuration file folder

CHAPTER

FOUR

RUNNING THE TOOL

As discussed in the *Setting up the tool* (page 11) section, the Data Buffer tool is operated from a MapInfo workspace or ArcGIS document within which the GIS layers required to run the tool are already loaded. It also relies on the configuration document for setting up the tool. Therefore, before running the tool, ensure the following conditions are met:

- A MapInfo or ArcGIS document has been created which contains any GIS layers that may be included in the process.
- The XML configuration document has been set up correctly, both for general settings and for each individual layer that can be used for input. It is also named correctly. If the tool is run from MapInfo the XML file must be in the same directory as the tool MapBasic application (.MBX).
- The Data Buffer tool has been installed and is loaded in the GIS software.

See also:

Please refer to the *setup* (page 11) section for further information about any of these requirements.

4.1 Opening the form

To open the Data Buffer tool inn MapInfo, open the tool in the *Tools* menu (**Tools… -> Data Buffer**), as shown in Fig. 4.1. In ArcMap, open the Data Buffer tool by clicking on the tool button (Fig. 4.2).

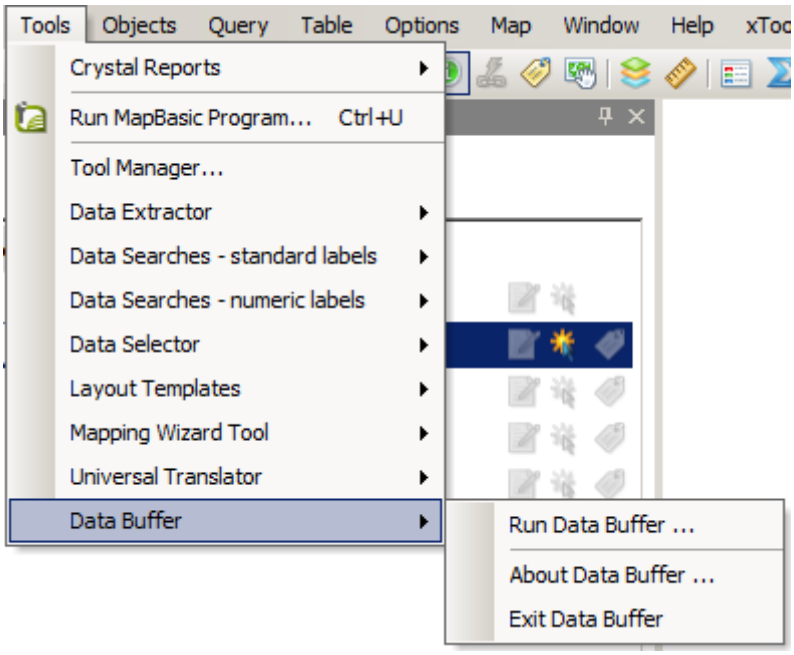

Fig. 4.1: Launching the Data Buffer tool (MapInfo)

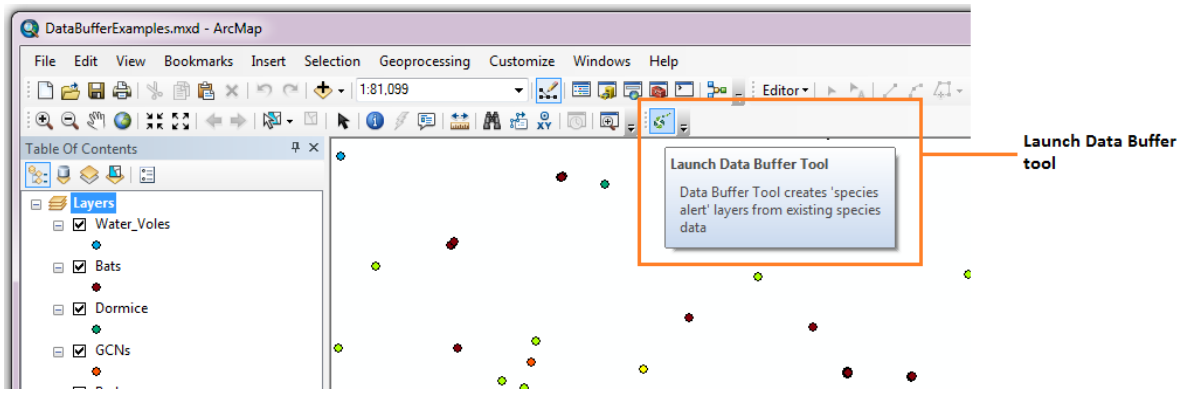

Fig. 4.2: Launching the Data Buffer tool (ArcGIS)

If there are any structural issues with the XML document, the tool will display a message that it has encountered an error, and not load any further. If any of the input layers that are listed in the configuration document are not present in the active workspace a warning will be shown (Fig. 4.3). The layers that are missing will not be loaded into the form and so cannot be included in the process.

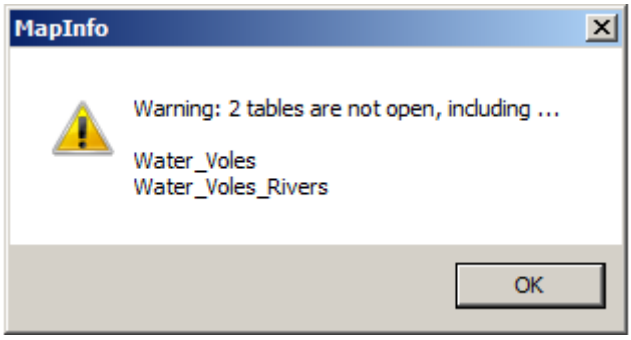

Fig. 4.3: Example warning message when any GIS layers are not found

Provided that the XML document is otherwise correct, the form will display (Fig. 4.4).

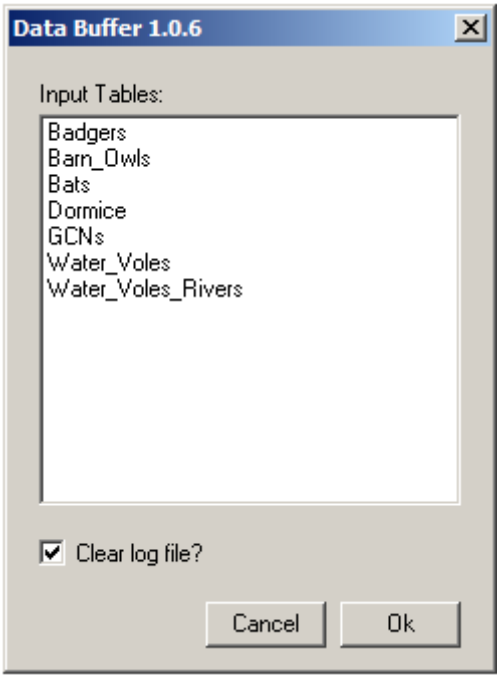

Fig. 4.4: The form displaying the available input layers

4.2 Using the form

The form can be used to process as many input layers as required into a single output layer. Select the input tables that you would like to include and press **OK**.

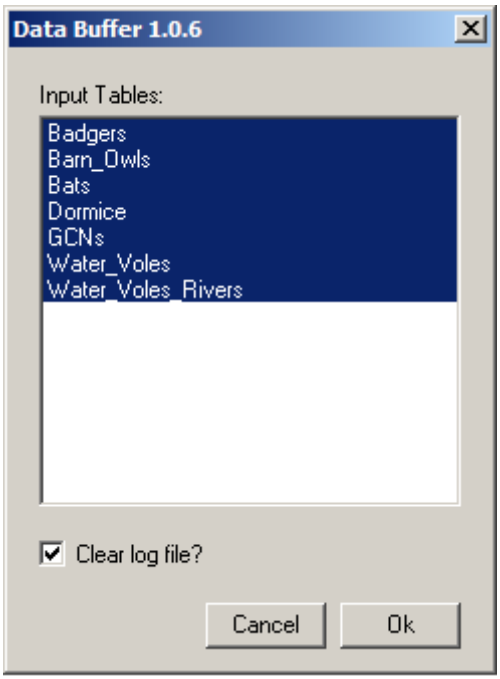

Fig. 4.5: Select the required input layers on the form

Caution: The tool can run for a considerable amount of time dependent on the number of input layers and records that are being processed.

Progress is shown in a progress window in MapInfo (Fig. 4.6), and as a series of status messages in ArcMap (Fig. 4.7).

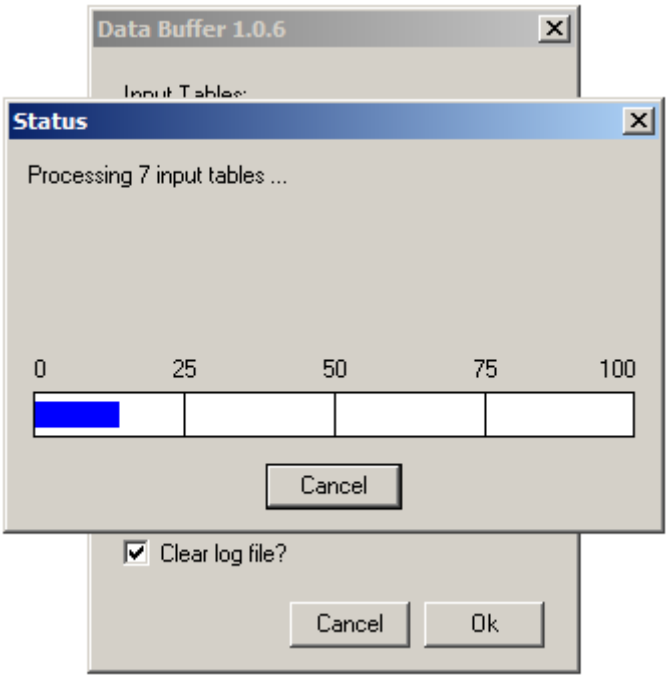

Fig. 4.6: Progress window during the process (MapInfo)

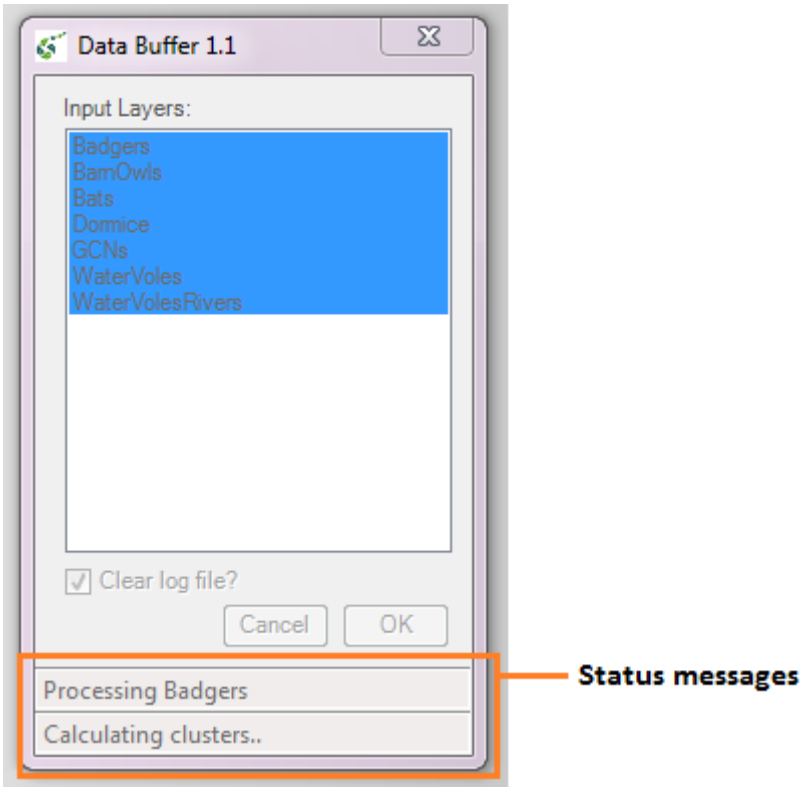

Fig. 4.7: Progress window during the process (ArcGIS)

When the process finishes it asks the user whether to close the form or keep it open for subsequent use (Fig. 4.8).

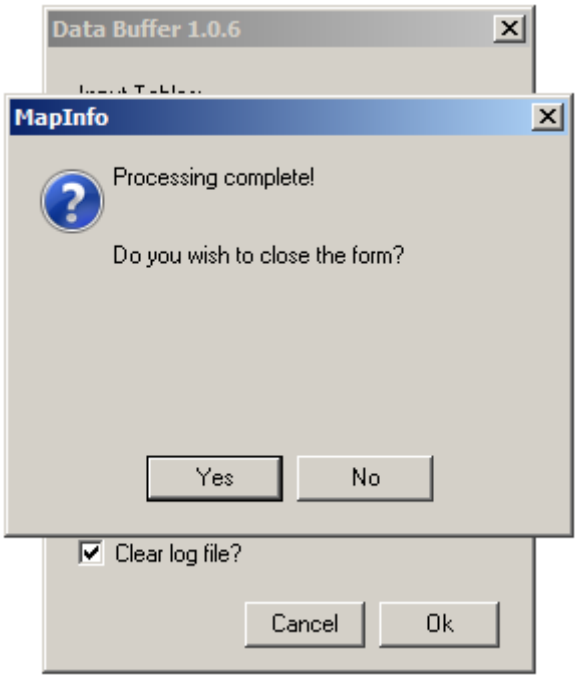

Fig. 4.8: Prompt to close form when process completes

Once the user makes a choice the log file is shown (Fig. 4.9). This should be checked thoroughly to ensure that all expected input tables have been processed and the number of output records is as expected.

You can now repeat the process for different input files if required.

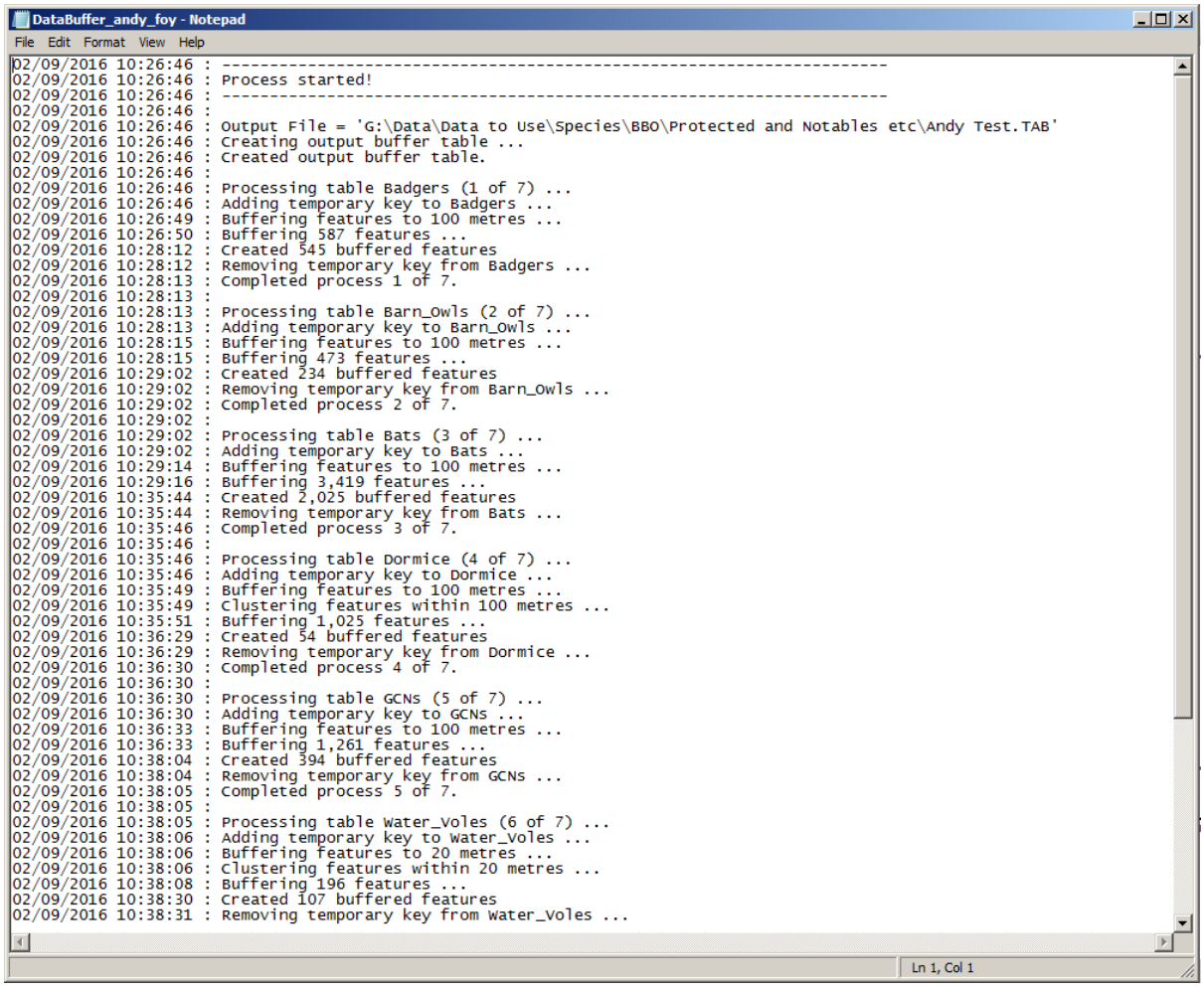

Fig. 4.9: Example log file shown for review

4.3 Output results

The output records are saved in the GIS layer specified by the user when the tool was run. Fig. 4.10 shows an example of an output layer with some records **clustered** because they are from the same input layer, have the same key column values and are within the specified distance of each other.

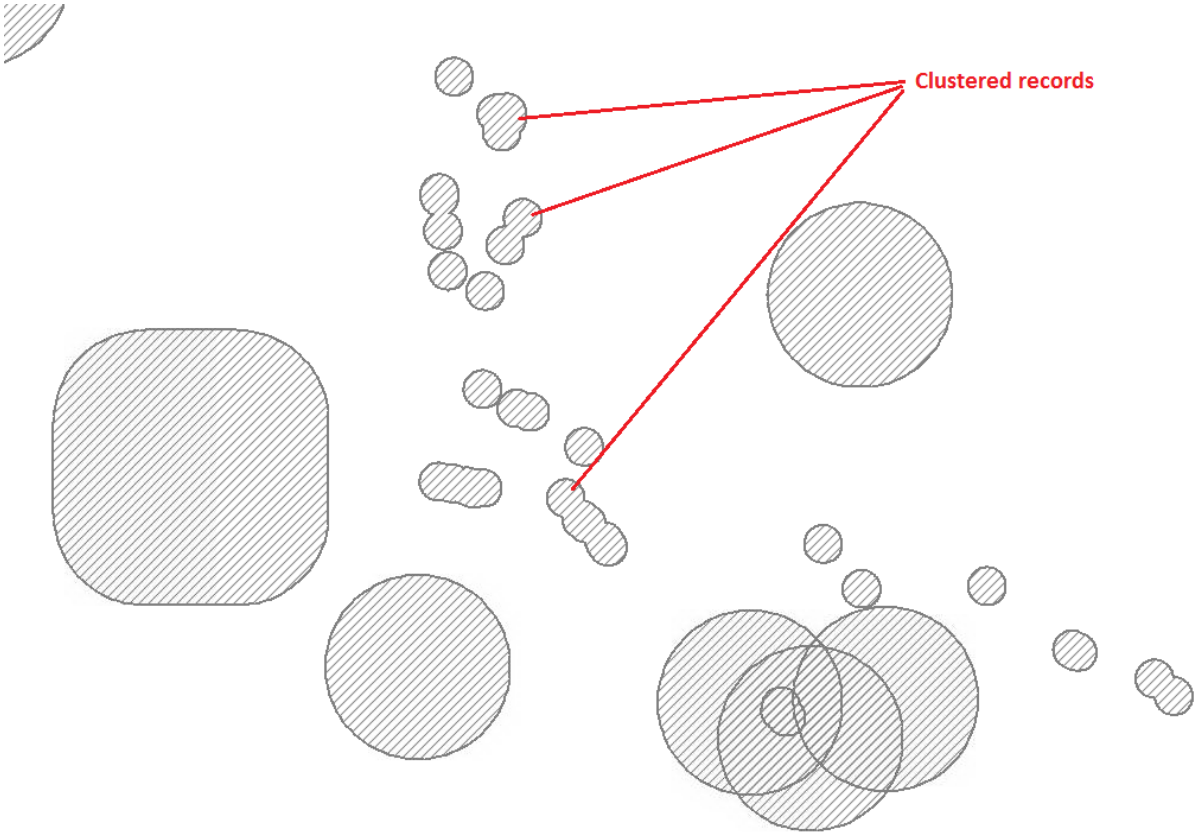

Fig. 4.10: Example output layer

The log file results of the process is saved in the logfilepath folder as specified in the XML configuration document.

CHAPTER

FIVE

FREQUENTLY ASKED QUESTIONS

This is a list of Frequently Asked Questions about the Data Buffer tool. Feel free to suggest new entries!

5.1 General questions

How do I get a copy of the tool?

The latest version of the tool can be downloaded from GitHub (MapInfo version[11] or ArcGIS version[12]). Please ensure that you use the correct configuration file, an example copy of which is also included with the release.

Can several people use the tool at the same time?

Any number of users can use the tool simultaneously if they have a copy of it loaded in their own copy of MapInfo or ArcGIS. The tool uses the data layers that are loaded in GIS in a read-only fashion, so there is no limit to the number of users of the tool. However, where results are written to a central (network) location, and the output is written to the same output files, conflicts may occur.

Does the tool work with QGIS?

Currently only MapInfo and ArcGIS implementations of the tool exist. However, if funding was available the tool could be adapted to also support QGIS.

5.2 Operating the tool

One of the data tables I want to use isn't showing in the form. How do I get it to show up?

This issue can arise in several ways:

- The table / GIS layer isn't loaded in the active workspace. In this case, a *message will pop up* (page 39) before the form is shown telling you the layer isn't loaded. Add the layer to the workspace and the problem should be resolved.
- The table / GIS layer isn't listed in the XML configuration document. Please refer to the *setup* (page 11) section and add it as a input layer.
- The table / GIS layer is listed in the XML configuration document, but the *TableName* (page 13) (MapInfo) or *LayerName* (page 17) is spelled incorrectly. Note that the name must follow the exact format of the name of the layer in the active workspace.

[11] https://github.com/LERCAutomation/DataBuffer-MapInfo/releases
[12] https://github.com/LERCAutomation/DataBuffer---ArcObjects/releases

5.3 Tool issues

How do I report a new bug or propose a change in the tool?

Please check the existing known issues and change requests on the LERCAutomation pages on GitHub (MapInfo[13] or ArcGIS[14]) before reporting/proposing new issues or changes. If you have a new issue or request you can submit it there and it will be picked up by the developers. Alternatively, you can email suggestions to Hester[15] or Andy[16].

[13] https://github.com/LERCAutomation/DataBuffer-MapInfo
[14] https://github.com/LERCAutomation/DataBuffer---ArcObjects
[15] Hester@HesterLyonsConsulting.co.uk
[16] Andy@AndyFoyConsulting.co.uk

CHAPTER

SIX

APPENDIX

6.1 Example XML file for MapInfo

Below is an example of XML that might be used to set up the Data Buffer tool for MapInfo. Note, many of the settings have been included for illustration only and it is up to each user or LERC to ensure the system is configured to their requirements.

```
<?xml version="1.0" encoding="utf-8"?>

<!--
WARNING: This file should be changed carefully and a backup should be
taken before any changes so that they can be backed out.  Changed lines
can also be commented out as below.
-->

<!--
This config file contains all the variables used by the DataBuffer
MapBasic tool.

The 'configuration' node is the 'root' node and signifies the start of the
contents of the configuration file.

The 'DataBuffer' node contains all of the entries relating to the
MapBasic tool variables.

Each entry relates to a file, folder, table name, column name or variable
used by the MapBasic tool to buffer and combine data for the buffered
species layers.
-->

<configuration>
<DataBuffer>

  <!-- The title to use for the program in the Tool menu -->
  <ToolTitle>
  <value>Data Buffer</value>
  </ToolTitle>

  <!-- The existing file location where log files will be saved with output
```

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```
     messages -->
<LogFilePath>
<value>D:\Andy\TVERC\Data Buffer\Logs</value>
</LogFilePath>

<!-- The existing file location where the new GIS layer will be created -->
<DefaultPath>
<value>D:\Andy\TVERC\Data Buffer</value>
</DefaultPath>

<!-- The names and local names of the tables to be processed -->
<InTables>
<Badgers>
  <TableName>
    <Value>Badgers</Value>
  </TableName>
  <Columns>
    <Value>CommonName, SciName, RecYear, GridRef, Location, Design,
           RecYear "FirstYear", RecYear "LastYear", RecYear "RecCount"
           </Value>
  </Columns>
  <WhereClause>
    <value>RecYear &gt; (Year(CurDateTime()) - 11)</value>
  </WhereClause>
  <SortOrder>
    <Value>SciName, GridRef, Location</Value>
  </SortOrder>
  <BufferSize>
    <Value>100</Value>
  </BufferSize>
  <DissolveSize>
    <Value>0</Value>
  </DissolveSize>
</Badgers>
<BarnOwls>
  <TableName>
    <Value>Barn_Owls</Value>
  </TableName>
  <Columns>
    <Value>CommonName, SciName, RecYear, GridRef, Location, Design, RecYear
           "FirstYear", RecYear "LastYear", RecYear "RecCount"</Value>
  </Columns>
  <WhereClause>
    <value>RecYear &gt; (Year(CurDateTime()) - 11)</value>
  </WhereClause>
  <SortOrder>
    <Value>SciName, GridRef, Location</Value>
  </SortOrder>
  <BufferSize>
```

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```
    <Value>100</Value>
  </BufferSize>
  <DissolveSize>
    <Value>0</Value>
  </DissolveSize>
</BarnOwls>
<Bats>
  <TableName>
    <Value>Bats</Value>
  </TableName>
  <Columns>
    <Value>CommonName, SciName, RecYear, GridRef, Location, Design, RecYear
           "FirstYear", RecYear "LastYear", RecYear "RecCount"</Value>
  </Columns>
  <WhereClause>
    <value>RecYear &gt; (Year(CurDateTime()) - 11)</value>
  </WhereClause>
  <SortOrder>
    <Value>SciName, GridRef, Location</Value>
  </SortOrder>
  <BufferSize>
    <Value>100</Value>
  </BufferSize>
  <DissolveSize>
    <Value>0</Value>
  </DissolveSize>
</Bats>
<Dormice>
  <TableName>
    <Value>Dormice</Value>
  </TableName>
  <Columns>
    <Value>CommonName, SciName, RecYear, GridRef, Location, Design, RecYear
           "FirstYear", RecYear "LastYear", RecYear "RecCount"</Value>
  </Columns>
  <WhereClause>
    <value>RecYear &gt; (Year(CurDateTime()) - 11)</value>
  </WhereClause>
  <SortOrder>
    <Value>SciName, GridRef, Location</Value>
  </SortOrder>
  <BufferSize>
    <Value>100</Value>
  </BufferSize>
  <DissolveSize>
    <Value>100</Value>
  </DissolveSize>
</Dormice>
<GCNs>
```

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```
  <TableName>
    <Value>GCNs</Value>
  </TableName>
  <Columns>
    <Value>CommonName, SciName, RecYear, GridRef, Location, Design, RecYear
           "FirstYear", RecYear "LastYear", RecYear "RecCount"</Value>
  </Columns>
  <WhereClause>
    <value>RecYear &gt; (Year(CurDateTime()) - 11)</value>
  </WhereClause>
  <SortOrder>
    <Value>SciName, GridRef, Location</Value>
  </SortOrder>
  <BufferSize>
    <Value>100</Value>
  </BufferSize>
  <DissolveSize>
    <Value>0</Value>
  </DissolveSize>
</GCNs>
<WaterVoles>
  <TableName>
    <Value>Water_Voles</Value>
  </TableName>
  <Columns>
    <Value>CommonName, SciName, RecYear, GridRef, Location, Design, RecYear
           "FirstYear", RecYear "LastYear", RecYear "RecCount"</Value>
  </Columns>
  <WhereClause>
    <value>RecYear &gt; (Year(CurDateTime()) - 11)</value>
  </WhereClause>
  <SortOrder>
    <Value>SciName, GridRef, Location</Value>
  </SortOrder>
  <BufferSize>
    <Value>20</Value>
  </BufferSize>
  <DissolveSize>
    <Value>20</Value>
  </DissolveSize>
</WaterVoles>
</InTables>

<!-- The details of the new GIS layer to be created -->
<OutTable>

<!-- A comma-delimited list of the column headings, and their data
     types/lengths, that the output GIS layer should have -->
<ColumnDefs>
```

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```
  <Value>CommonName Char(100), SciName Char(100), RecYear Char(11), GridRef
         Char(12), Location Char(100), Status Char(100), FirstYear Char(4),
         LastYear Char(4), RecCount Integer</Value>
</ColumnDefs>

<!-- The coordinate system for the output GIS layer -->
<CoordinateSystem>
  <value>Earth Projection 8, 79, "m", -2, 49, 0.9996012717, 400000,
         -100000</value>
</CoordinateSystem>

<!-- The columns in the new GIS layer and how they will be created -->
<Columns>
  <Col1>
    <ColumnName>
      <value>CommonName</value>
    </ColumnName>
    <ColumnType>
      <value>Key</value>
    </ColumnType>
  </Col1>
  <Col2>
    <ColumnName>
      <value>SciName</value>
    </ColumnName>
    <ColumnType>
      <value>Key</value>
    </ColumnType>
  </Col2>
  <Col3>
    <ColumnName>
      <value>Date</value>
    </ColumnName>
    <ColumnType>
      <value>Range</value>
    </ColumnType>
  </Col3>
  <Col4>
    <ColumnName>
      <value>GridRef</value>
    </ColumnName>
    <ColumnType>
      <value>Cluster</value>
    </ColumnType>
  </Col4>
  <Col5>
    <ColumnName>
      <value>Location</value>
    </ColumnName>
```

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```
    <ColumnType>
      <value>Common</value>
    </ColumnType>
  </Col5>
  <Col6>
    <ColumnName>
      <value>Status</value>
    </ColumnName>
    <ColumnType>
      <value>First</value>
    </ColumnType>
  </Col6>
  <Col7>
    <ColumnName>
      <value>FirstYear</value>
    </ColumnName>
    <ColumnType>
      <value>Min</value>
    </ColumnType>
  </Col7>
  <Col8>
    <ColumnName>
      <value>LastYear</value>
    </ColumnName>
    <ColumnType>
      <value>Max</value>
    </ColumnType>
  </Col8>
  <Col9>
    <ColumnName>
      <value>RecCount</value>
    </ColumnName>
    <ColumnType>
      <value>Count</value>
    </ColumnType>
  </Col9>
</Columns>

<!-- The symbology to apply to the new GIS layer -->
<Symbology>
  <Points>
    <Clause>
      <Value></Value>
    </Clause>
    <Object>
      <Value>Point</Value>
    </Object>
    <Symbol>
      <Value>137,255,12, "MapInfo Miscellaneous",256,0</Value>
```

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```
      </Symbol>
    </Points>
    <Lines>
      <Clause>
        <Value></Value>
      </Clause>
      <Object>
        <Value>Line</Value>
      </Object>
      <Pen>
        <Value>2,2,10526880</Value>
      </Pen>
    </Lines>
    <Regions>
      <Clause>
        <Value></Value>
      </Clause>
      <Object>
        <Value>Region</Value>
      </Object>
      <Pen>
        <Value>2,2,10526880</Value>
      </Pen>
      <Brush>
        <Value>5,10526880</Value>
      </Brush>
    </Regions>
  </Symbology>
  </OutTable>

</DataBuffer>
</configuration>
```

6.2 Example XML file for ArcGIS

Below is an example of XML that might be used to set up the Data Buffer tool for ArcGIS. Note, many of the settings have been included for illustration only and it is up to each user or LERC to ensure the system is configured to their requirements.

```
<?xml version="1.0" encoding="utf-8"?>

<!--
WARNING: This file should be changed carefully and a backup should be
taken before any changes so that they can be backed out.  Changed lines
can also be commented out as below.
-->

<!--
This config file contains all the variables used by the DataBuffer
ArcGIS tool.

The 'configuration' node is the 'root' node and signifies the start of the
contents of the configuration file.

The 'DataBuffer' node contains all of the entries relating to the
MapBasic tool variables.

Each entry relates to a file, folder, table name, column name or variable
used by the MapBasic tool to buffer and combine data for the buffered species
layers.
-->

<configuration>
<DataBuffer>

  <!-- The existing file location where log files will be saved with output␣
↪messages -->
  <LogFilePath>
  <value>H:\Dev\LERCAutomation\DataBuffer---ArcObjects\Logs</value>
  </LogFilePath>

  <!-- Shall we clear the log file by default? Yes/No -->
  <DefaultClearLogFile>
    <value>Yes</value>
  </DefaultClearLogFile>

  <!-- The existing file location where the new GIS layer will be created -->
  <DefaultPath>
  <value>H:\Dev\LERCAutomation\DataBuffer---ArcObjects\Data</value>
  </DefaultPath>

  <TempFilePath>
    <value>C:\Temp</value>
```

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```
  </TempFilePath>

  <LayerPath>
    <value>H:\Dev\LERCAutomation\DataBuffer---ArcObjects\LayerFiles</value>
  </LayerPath>


  <!-- The names and local names of the GIS layers to be processed -->
  <InLayers>
  <Badgers>
    <LayerName> <!-- Case sensitive! -->
      <Value>Badgers</Value>
    </LayerName>
    <Columns>
      <Value>CommonName, SciName, RecYear, GridRef, Location, Design, Version,
↪ Origin, Provider, "Provided by TVERC - for internal use only. No part of␣
↪this information can be distributed or published without permission.␣
↪Contains copyrighted and sensitive information" "Copyright"</Value>
    </Columns>
    <WhereClause>
      <value>RecYear &gt; (EXTRACT(YEAR FROM CURRENT_DATE) - 11)</value> <!--␣
↪for e.g. years: RecYear >= (EXTRACT(YEAR FROM CURRENT_DATE) - 11) -->
    </WhereClause>
    <BufferSize>
      <Value>100</Value>
    </BufferSize>
    <DissolveSize>
      <Value>100</Value>
    </DissolveSize>
  </Badgers>
  <BarnOwls>
    <LayerName>
      <Value>Barn_Owls</Value>
    </LayerName>
    <Columns>
      <Value>CommonName, SciName, RecYear, GridRef, Location, Design, Version,
↪ Origin, Provider, "Provided by TVERC - for internal use only. No part of␣
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↪Contains copyrighted and sensitive information" "Copyright"</Value>
    </Columns>
    <WhereClause>
      <value>RecYear &gt; (EXTRACT(YEAR FROM CURRENT_DATE) - 11)</value>
    </WhereClause>
    <BufferSize>
      <Value>100</Value>
    </BufferSize>
    <DissolveSize>
      <Value>0</Value>
    </DissolveSize>
```

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```
  </BarnOwls>
  <Bats>
    <LayerName>
      <Value>Bats</Value>
    </LayerName>
    <Columns>
      <Value>CommonName, SciName, RecYear, GridRef, Location, Design, Version,
↪ Origin, Provider, "Provided by TVERC - for internal use only. No part of␣
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↪Contains copyrighted and sensitive information" "Copyright"</Value>
    </Columns>
    <WhereClause>
      <value>RecYear &gt; (EXTRACT(YEAR FROM CURRENT_DATE) - 11)</value>
    </WhereClause>
    <BufferSize>
      <Value>100</Value>
    </BufferSize>
    <DissolveSize>
      <Value>0</Value>
    </DissolveSize>
  </Bats>
  <Dormice>
    <LayerName>
      <Value>Dormice</Value>
    </LayerName>
    <Columns>
      <Value>CommonName, SciName, RecYear, GridRef, Location, Design, Version,
↪ Origin, Provider, "Provided by TVERC - for internal use only. No part of␣
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↪Contains copyrighted and sensitive information" "Copyright"</Value>
    </Columns>
    <WhereClause>
      <value>RecYear &gt; (EXTRACT(YEAR FROM CURRENT_DATE) - 11)</value>
    </WhereClause>
    <BufferSize>
      <Value>100</Value>
    </BufferSize>
    <DissolveSize>
      <Value>100</Value>
    </DissolveSize>
  </Dormice>
  <GCNs>
    <LayerName>
      <Value>GCNs</Value>
    </LayerName>
    <Columns>
      <Value>CommonName, SciName, RecYear, GridRef, Location, Design, Version,
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```

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```
↪Contains copyrighted and sensitive information" "Copyright"</Value>
    </Columns>
    <WhereClause>
      <value>RecYear &gt; (EXTRACT(YEAR FROM CURRENT_DATE) - 11)</value>
    </WhereClause>
    <BufferSize>
      <Value>100</Value>
    </BufferSize>
    <DissolveSize>
      <Value>0</Value>
    </DissolveSize>
  </GCNs>
  <WaterVoles>
    <LayerName>
      <Value>Water_Voles</Value>
    </LayerName>
    <Columns>
      <Value>CommonName, SciName, RecYear, GridRef, Location, Design, Version,
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↪Contains copyrighted and sensitive information" "Copyright"</Value>
    </Columns>
    <WhereClause>
      <value>RecYear &gt; (EXTRACT(YEAR FROM CURRENT_DATE) - 11)</value>
    </WhereClause>
    <BufferSize>
      <Value>20</Value>
    </BufferSize>
    <DissolveSize>
      <Value>20</Value>
    </DissolveSize>
  </WaterVoles>
  <WaterVolesRivers>
    <LayerName>
      <Value>Water_Voles_Rivers</Value>
    </LayerName>
    <Columns> <!-- Please do not use commas in your strings -->
      <Value>Common_Nam "CommonName", Scientific "SciName", YearNum "RecYear",
↪ GridRef, Location, "UK_Legislation; Priority_NERC_S41" "Design", Version_
↪Da "Version", Data_Origi "Origin", "TVERC" "Provider", "Provided by TVERC -␣
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↪" "Copyright"</Value>
    </Columns>
    <WhereClause>
      <value>YearNum &gt; (EXTRACT(YEAR FROM CURRENT_DATE) - 11)</value>
    </WhereClause>
    <BufferSize>
      <Value>10</Value>
```

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```
    </BufferSize>
    <DissolveSize>
      <Value>10</Value>
    </DissolveSize>
  </WaterVolesRivers>
  </InLayers>

  <!-- The details of the new GIS layer to be created -->
  <OutLayer>
    <!-- The output format for the buffer layer -->
    <!-- Use Shape (Shapefile) or GDB (file Geodatabase) -->
    <OutputFormat>
      <value>Shape</value>
    </OutputFormat>
    <!-- The symbology to apply to the new GIS layer -->
  <LayerFile>
    <value>test.lyr</value>
  </LayerFile>
  <!-- The columns in the new GIS layer and how they will be created -->
  <!-- Valid column types are  "key", "cluster", "first", "common", "min",
↪"max", "range" -->
  <Columns>
    <Col1>
      <ColumnName>
        <value>CommonName</value>
      </ColumnName>
      <ColumnType>
        <value>Key</value>
      </ColumnType>
      <FieldType>
        <value>TEXT</value>
      </FieldType> <!-- "TEXT", "FLOAT", "DOUBLE", "SHORT", "LONG", "DATE" -->
      <ColumnLength>
        <value>100</value>
      </ColumnLength>
    </Col1>
    <Col2>
      <ColumnName>
        <value>SciName</value>
      </ColumnName>
      <ColumnType>
        <value>Key</value>
      </ColumnType>
      <FieldType>
        <value>TEXT</value>
      </FieldType> <!-- "TEXT", "FLOAT", "DOUBLE", "SHORT", "LONG", "DATE" -->
      <ColumnLength>
        <value>100</value>
      </ColumnLength>
```

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```
    </Col2>
    <Col3>
      <ColumnName>
        <value>RecYear</value>
      </ColumnName>
      <ColumnType>
        <value>Range</value>
      </ColumnType>
      <FieldType>
        <value>TEXT</value>
      </FieldType>
      <ColumnLength>
        <value>11</value>
      </ColumnLength>
    </Col3>
    <Col4>
      <ColumnName>
        <value>GridRef</value>
      </ColumnName>
      <ColumnType>
        <value>Cluster</value>
      </ColumnType>
      <FieldType>
        <value>TEXT</value>
      </FieldType>
      <ColumnLength>
        <value>12</value>
      </ColumnLength>
    </Col4>
    <Col5>
      <ColumnName>
        <value>Location</value>
      </ColumnName>
      <ColumnType>
        <value>Common</value>
      </ColumnType>
      <FieldType>
        <value>TEXT</value>
      </FieldType>
      <ColumnLength>
        <value>100</value>
      </ColumnLength>
    </Col5>
    <Col6>
      <ColumnName>
        <value>Design</value>
      </ColumnName>
      <ColumnType>
        <value>First</value>
```

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```
      </ColumnType>
      <FieldType>
        <value>TEXT</value>
      </FieldType>
      <ColumnLength>
        <value>100</value>
      </ColumnLength>
    </Col6>
    <Col7>
      <ColumnName>
        <value>Version</value>
      </ColumnName>
      <ColumnType>
        <value>First</value>
      </ColumnType>
      <FieldType>
        <value>TEXT</value>
      </FieldType>
      <ColumnLength>
        <value>100</value>
      </ColumnLength>
    </Col7>
    <Col8>
      <ColumnName>
        <value>Origin</value>
      </ColumnName>
      <ColumnType>
        <value>Common</value>
      </ColumnType>
      <FieldType>
        <value>TEXT</value>
      </FieldType>
      <ColumnLength>
        <value>100</value>
      </ColumnLength>
    </Col8>
    <Col9>
      <ColumnName>
        <value>Provider</value>
      </ColumnName>
      <ColumnType>
        <value>First</value>
      </ColumnType>
      <FieldType>
        <value>TEXT</value>
      </FieldType>
      <ColumnLength>
        <value>100</value>
      </ColumnLength>
```

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```
    </Col9>
    <Col10>
      <ColumnName>
        <value>Copyright</value>
      </ColumnName>
      <ColumnType>
        <value>First</value>
      </ColumnType>
      <FieldType>
        <value>TEXT</value>
      </FieldType>
      <ColumnLength>
        <value>255</value>
      </ColumnLength>
    </Col10>
  </Columns>
  </OutLayer>

</DataBuffer>
</configuration>
```

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