

Recorder 6

Technical description of the designation reporting within Recorder

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Contents

1	Introduction	2
2	Designation index	3
3	Creating additional local designations (within the user interface)	4
4	Designation Sets	6
4.1	The Designation Tables in the Database	6
4.2	The Designation Sets	7
5	Creating a new designation set	8
6	Concatenating designation information	11
7	Deleting user added designations and designation sets	12
7.1	Deleting user added designations	12
7.2	Deleting user added designation sets	13
8	Technical description of how the taxon designation index is built	13

This tutorial is aimed at Intermediate to Advanced level and written for Recorder version 6.14 and above.

1 Introduction

When running reports from biodiversity data there is a strong requirement to include species 'status' as a filter. Within this context 'status' can have a wide variety of meanings (e.g. legislative, conservation listings, indicators, autecology information etc). Within this tutorial the focus is primarily around legislative and conservation listing but the approach and concepts presented can be applied much more generally to include virtually any sort of species tag.

Within the species dictionary shipped with Recorder, many important statuses have been included, often represented as separate lists (e.g. Red List of Vascular Plants). In some cases this has created problems particularly where older versions of lists are also present within the dictionary but linkage between the separate lists has not been maintained. This can result in, for example, a species having a status on an old list but not being listed on the more recent one (i.e. it is no longer considered at risk) but the status still being applied to the species when used in reports. The problem is further compounded by changes in taxonomy, including where a species concept has been lumped or split. The end result is that it is relatively difficult to automatically extract a current status picture, across a range of taxonomic groups. To address this problem a separate list was created the "JNCC collation of taxon designations" which is provided within the species dictionary. This list aims to:

- Use a single name for each species (using the currently accepted taxonomy for the group)
- List all the statuses that are associated with each species. Aspirationally this will also include the statuses that have been associated with a species in the past but the list is currently incomplete in this area at the moment.
- Maintain and update this list as taxonomy and statuses changed

Within a standard implementation of Recorder this list forms the primary source of designation reporting. However, if required the user themselves can alter this.

This tutorial provides a technical overview of how the designation reporting now works within Recorder. It specifically considers:

- The structure of the designation index (a table used to drive the designation reporting)
- How to create additional designations specific to a single Recorder instance (eg. Local statuses)
- The concept of ‘designation sets’ and how these are held within the database
- How to create additional sets of designations
- Description of a function to concatenate designation information, including examples of its use
- Deleting user added designations and designation sets
- Technical description of how the taxon designation index is built

2 Designation index

The designation index (INDEX_TAXON_DESIGNATION) is a table within the Recorder database that holds the relevant information from the species dictionary in a simplified structure to allow efficient reporting. It is worth noting that early trials exploring the use of a dynamic ‘view’ did not give the performance likely to be required. The structure of the table is as follows:

The Index_Taxon_Designation table is a physical index which holds all of the taxon designations that are associated with each taxon list item. When the index is built extensive use is made of the INDEX_TAXON_NAME and INDEX_TAXON_GROUP tables to ensure that, as far as possible, the designation information is associated with all relevant list items, regardless of the taxonomy used for the original designations or that used by the list item itself. For example, if a designation was associated with “Cetacea” the INDEX_TAXON_GROUP would be used to determine which species this included and the designation would also be associated with any list items of the actual species. The index is rebuilt using usp_Index_Taxon_Designation_Rebuild.

TAXON_LIST_ITEM_KEY	Char(16)	Foreign key to TAXON_LIST_ITEM. The table only contains TAXON_LIST_ITEMS which have a designation associated with them. However, where the name which the designation is associated with has a number of meanings (eg. Synonyms etc) these additional taxon_list_item_keys are also included in this table with the relevant designation associated with them.
TAXON_DESIGNATION_TYPE_KEY	Char(16)	Foreign key to TAXON_DESIGNATION_TYPE.

The index is built through a query which relies on at least one TAXON_LIST_VERSION_KEY which represents the source(s) of the system supplied designations to use. The value of the key(s) is picked up from the SETTINGS table (where the NAME field has value ‘TaxDesList’, figure 1). Further explanation of the query used to populate the index is described in section 8.

SETTING	
NAME	DATA
DB Seq	00000077
DBListSep	,
Dict Seq	0000000F
GatewayURL	http://www.searchnbn.net/searchengine/search.jsp?tab=1&
LevelConf	4
SiteID	
TaxDesList	NHMSYS0020424779,NHMSYS0020170854,NHMSYS0001749171
URLSep	+
Version	6.14.1.202
*	

Figure 1: An example of the Taxon_List_Version_keys highlighted in the red box as listed in the Settings table.

The following points should be noted:

- The query to build the designation index relies on the INDEX_TAXON_NAME and INDEX_TAXON_GROUP. Therefore it is important that both of these indexes are up to date **before the INDEX_TAXON_DESIGNATION is built**.
- The index table is primarily built from the lists defined with the SETTINGS table. Designation information within the dictionary, that is not included in these lists, will not be included in the index.
- Any designations which have been assigned locally (ie. those not supplied as part of a standard installation) will automatically **be included** in the designation index table
- As with any other index table, INDEX_TAXON_DESIGNATION can be used within other user defined queries and reports.

3 Creating additional local designations (within the user interface)

There are many reasons why a user might want to extend the designations that can be reported on, including:

- Certain species may be important locally but less so on a national scale
- For particular reports or uses the user may want to include species that are not of conservation note but are indicators of other conditions. For example, filtering on particular Ellenburg values for plants.

As these very specific uses cannot easily be met through a single centrally managed designation list, the system has been set up to allow an individual user to create their own designations. To do this:

- **Create a rucksack of species names** – the first step is to create a separate rucksack of the species that will be associated with the designation. This is done in the normal way (dragging the relevant names items from the taxon dictionary browser). It is not too important which list the names are derived from (figure 2). If this is a large list you can build the rucksack outside Recorder (see www.recordersoftware.org for the tutorial).

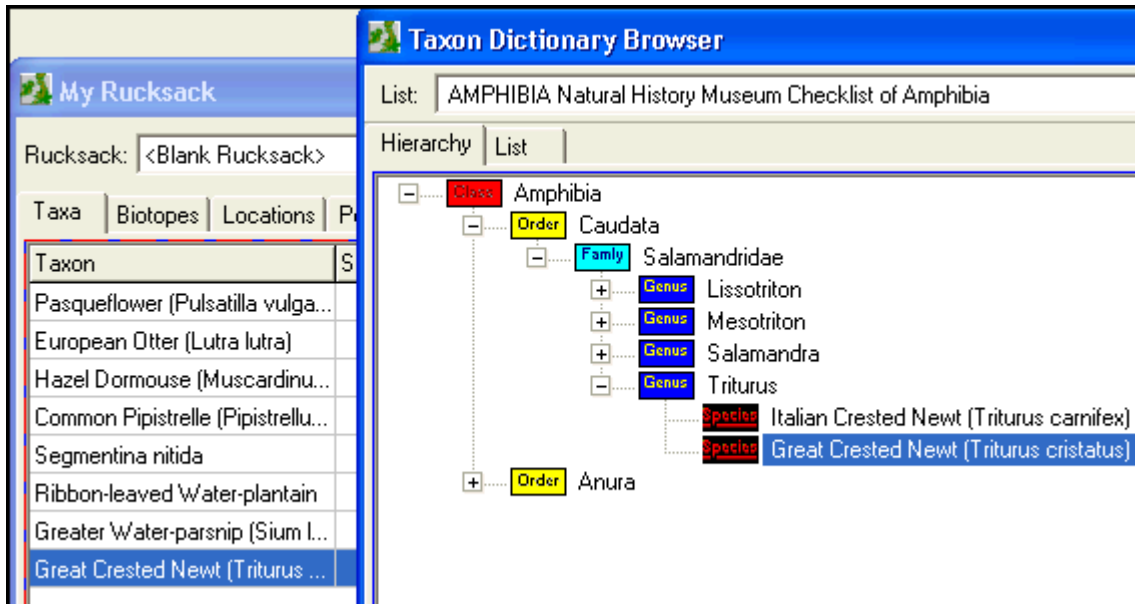


Figure 2: Drag and drop species from the taxon dictionary into the My Rucksack window

- **Create a definition for the designation** – if the designation is a new one (i.e. is not one of the system supplied definitions) then it must be defined. This is done by configuring the relevant term list (Tools -> Term lists). Choose Taxon Designation Type list from the dropdown and click Add to add a new item to this list (figure 3).

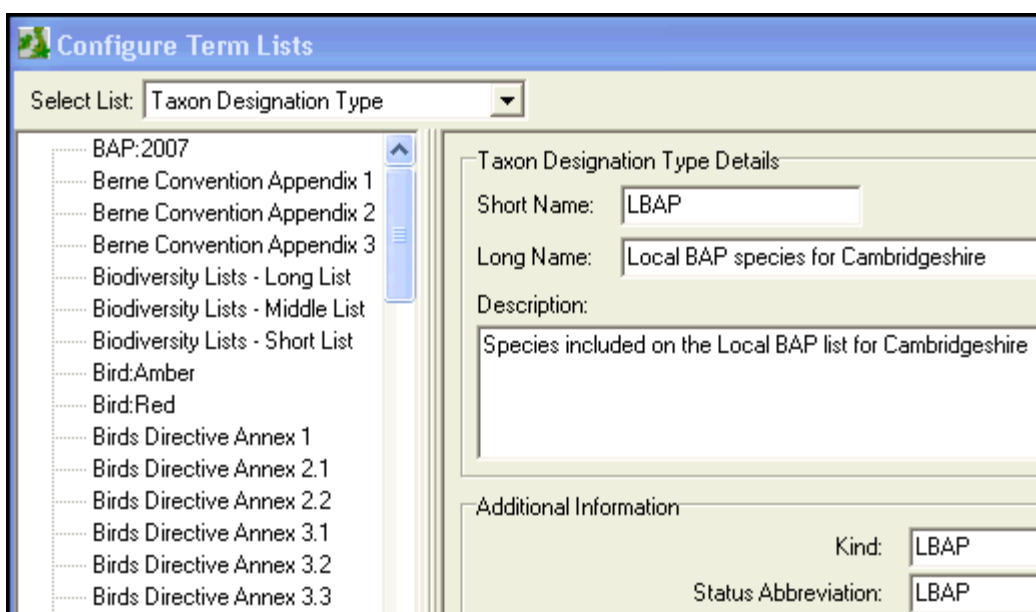


Figure 3: Add a new item to the Taxon Designation Type term list

- **Identify the key of the new taxon designation** – currently, within Recorder, the only way to identify the key of the new designation is through the system supplied query “Sy05 - Taxon Designations Available for sets”. To run this select the menu item Report -> Run. Then choose System reports -> Information -> Sy05 - Taxon Designations Available for sets. Run this report and identify the key associated with the new designation. Note that at present it is not possible to copy the key directly from the report grid – either write the key down or copy the whole report grid into a package like Excel. If your report hierarchy does not appear as described you may want to upgrade to the latest version as the new hierarchy and reports are implemented in 6.14.
- **Run batch update to assign designation to species** – finally run a batch update to assign the designation to the entries in the rucksack or csv file (**Tools/Run Batch Updates..**). Use either “Assigns Taxons to a designation (using rucksack)” or “Assigns Taxons to a designation” (this uses a csv file of Taxon_List_Item_Keys). These are filed under Designations. You can check that the batch update has worked by running the report ‘Find designations for <taxon> (filed under System Reports\Information) and entering a species that should be assigned your new designation.
- **Rebuild the taxon designation index** – the taxon designation index needs to be rebuilt for the new designation to be correctly built into Recorder (eg if you create a designation set which includes your new designation before you rebuild the taxon designation index the new designation will not appear in the set.) Go to Tools/Database Tools.../Rebuild Taxon Designation Index.

4 Designation Sets

In order to speed up reporting operations the concept of “designation sets” was established. In essence these are groupings that allow the user to select a common suite of designations without having to select each designation individually. They have been designed to allow a user to define a grouping that is appropriate to a common use (e.g. a planning enquiry) and have the capability to run this without selecting each individual designation each time the report is run.

4.1 The Designation Tables in the Database

The sets are defined in two tables within the database:

Taxon_Designation_Set

The Taxon_Designaiton_Set table holds a list of designation sets within the system.

TAXON_DESIGNATION_SET_KEY	Char(16)	Unique identifier in standard sixteen character key
TITLE	VarChar(100)	Short title describing the designation

ENTERED_BY	Char(16)	Foreign key to the NAME table indicating the user that originally entered the row in the table
ENTRY_DATE	smalldatetime	Date the row was originally added
CHANGED_BY	Char(16)	Foreign key to the NAME table indicating the user that last altered the row in the table
CHANGED_DATE	smalldatetime	Date the row was last altered
SYSTEM_SUPPLIED_DATA	Bit	Boolean value indicating whether the row is system supplied (-1) or entered by the local user (0)
CUSTODIAN	Char(8)	Eight character key indicating the custodian or owner of the record.

Taxon_Designation_Set_Item

The Taxon_Designation_set_Item table holds a list of taxon designation types that are associated with a particular set.

TAXON_DESIGNATION_SET_ITEM_KEY	Char(16)	Unique identifier in standard sixteen character key
TAXON_DESIGNATION_SET_KEY	Char(16)	Foreign key to the TAXON_DESIGNATION_SET table
TAXON_DESIGNATION_TYPE_KEY	Char(16)	Foreign key to the TAXON_DESIGNATION table. Note that the key must be one that will appear in INDEX_TAXON_DESIGNATION. Thus it must either be locally defined (i.e. not system supplied) or associated with one of the lists defined in the SETTINGS table. See Designation index (section 2) for further explanation.
ENTERED_BY	Char(16)	Foreign key to the NAME table indicating the user that originally entered the row in the table
ENTRY_DATE	smalldatetime	Date the row was originally added
CHANGED_BY	Char(16)	Foreign key to the NAME table indicating the user that last altered the row in the table
CHANGED_DATE	smalldatetime	Date the row was last altered
SYSTEM_SUPPLIED_DATA	Bit	Boolean value indicating whether the row is system supplied (-1) or entered by the local user (0)
CUSTODIAN	Char(8)	Eight character key indicating the custodian or owner of the record.

4.2 The Designation Sets

The designation sets are used within the report wizard and by the relevant xml reports. Within the report wizard you can choose whole sets or part sets to report on (figure 4). The sets currently available are:

- All Designated Species (excl Northern Ireland)
- All European Designated (Birds Dir, H&S, Berne, Bonn, EC CITES)

- All UK Legally Protected (W&C Act, Badgers and Cons Regs)
- Wildlife & Countryside Act (Sch 1, 5 & 8)
- IUCN Red Lists
- Biodiversity Action Plan species (2007)
- Country/UK Biodiversity Lists
- NI Wildlife Order
- Farmland Environment Planning
- Planning Legislation
- Statuses of Nationally: Rare, Notable, Scarce

Figure 4: Designation sets in the report wizard

The designations chosen in the designation selection screen are included in the report layout when saving a report template.

The designation reporting in the sets use the following five lists only:

- JNCC Collation of Taxon Designations (Taxon_List_Key NHMSYS0020424779)
- FEP Guidance 001: Hedgerow Woody Species (NHMSYS0001749171)
- FEP Guidance 007: Plant & Animal Species in the Farm Environment Plan (FEP). Table 2: Species to be recorded in Part 2 of the FEP (NHMSYS0001770825)
- FEP Guidance 007: Plant & Animal Species in the Farm Environment Plan (FEP). Table 3: High Value Arable Margin Indicator Species (NHMSYS0001770462)
- Rare marine benthic flora and fauna in Great Britain: the development of criteria for assessment (NBNSYS0000000112)

5 Creating a new designation set

As the definition of the designation sets is held in the database it is possible for the user to create new sets to meet their own requirements by simply inserting additional rows in the

relevant tables. To assist with this a batch update query has been provided “Des1 Create Taxon Designation Set”. To create a new set using this:

- Ensure that you have rebuilt the Taxon Designation Index since the last dictionary upgrade or after adding a new designation before proceeding with this stage – particularly if you wish to incorporate a new designation (go to **Tools/Database Tools/Rebuild Taxon Designation Index**, Note: that if you have not rebuilt the index since the last dictionary upgrade you must build the indexes in order starting with Taxon Group Index).
- **Create a CSV file with the list of available designations** – the first step is to create a CSV file containing a list of designation keys. The XML report “Sy05 - Taxon Designations Available for sets” produces a useful template for building this. To run this, select the menu item Report -> Run. Then choose System reports -> Information -> Sy05 - Taxon Designations Available for sets. Run this report and export the output (click the “Report Output” button and select “Export to Excel”).
- **Refine the list of designations to those to be included within the new set** – open the file created above in a text editor such as Notepad and delete the designations that will not be included in the set. Save the file. **Note – if you edit the file in Excel you need to ensure that you do NOT save it in Excels native format.** The batch update report cannot interpret this format.
- **Run the batch update** – to actually create the new set, run the batch update. Select Tools -> Run Batch Updates and then select “Des1 Create Taxon Designation Set” from the “Designations” folder (figures 5 and 6). You will be prompted for a file (the CSV created above) and a name for the designation. Once you have selected both of these click “OK” to build the new set.



Figure 5: Select the Batch update called Des1 Taxon Designation Set

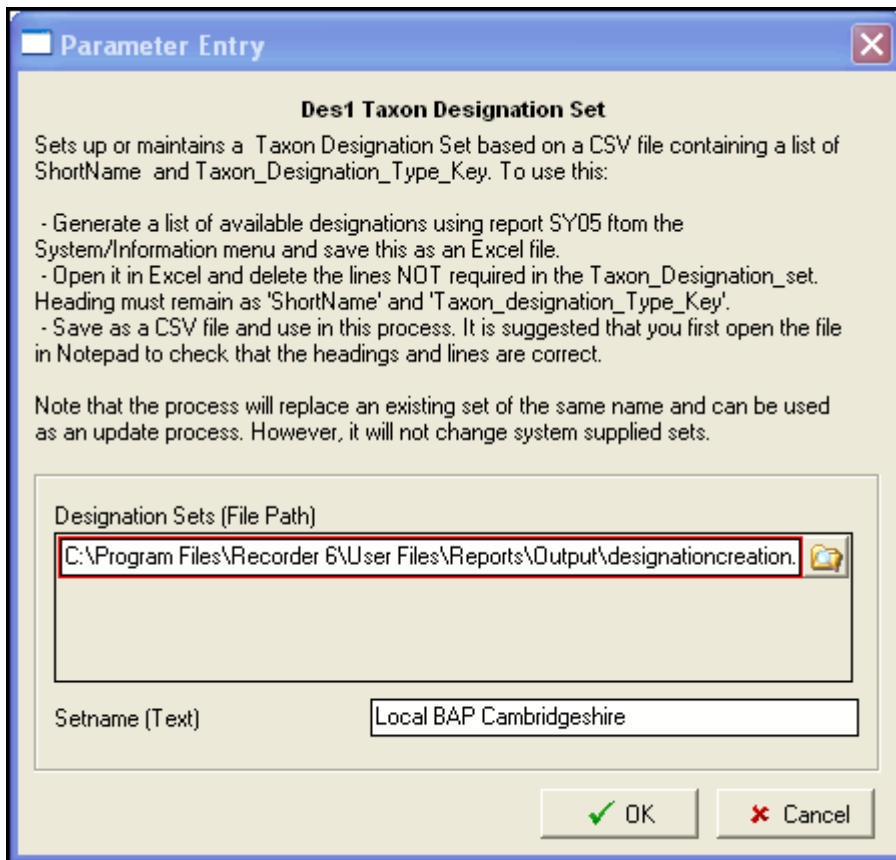


Figure 6: Browse to the csv file and type in a setname

Some points to note:

- Re-running the procedure above with the same ‘set name’ will completely replace the set originally in the database.
- The set name must be less than 100 characters and cannot be the same as any of the system supplied ones (otherwise it will replace a system supplied set and will itself be replaced on upgrade to the next version).

6 Concatenating designation information

When reporting, a common requirement is to include a summary of the designation information relating to a particular species or record. In order to assist with this a user defined function has been added to the database which uses the INDEX_TAXON_DESIGNATION and allows output of the information in a variety of formats.

The function is described as follows:

ufn_GetDesignations

This function returns a concatenated string of the taxon designation information for a particular Taxon_List_Item_Key. The designation information returned can be either the short name or long name of the designation type, the kind, the status abbreviation or simply a Boolean flag indicating whether the taxon list item has a designation at all. The output can be filtered to a particular taxon designation set or alternatively a list of designation kinds. Note that the function makes use of the INDEX_TAXON_DESIGNATION table and therefore there is no need to worry about synonymy when the function is used. All taxon list items will have all relevant designations against them regardless of the name against which the designation is made.

Parameters	A	@Taxon_List_Item_Key	The Taxon_List_Item_Key of interest.
	B	@Output_Format	The field to output: 1. Short_Name 2. Long Name 3. Kind 4. Status_Abbreviation 5. Is designated: Yes/No
	C	@Taxon_Designation_Set_Key	The primary key of the Taxon_Designation_Set to look in.
	D		The primary keys of the

		@Taxon_Designation_Type_Keys	Taxon_Designation_Types being searched for.
--	--	------------------------------	--

Retrieve the Taxon_List_Item_Key for the species in question and construct a select statement in the SQL query screen of the NBNDData database as follows: Select
 dbo.ufn_GetDesignations ('A', B, 'C', 'D') where A, B, C and D are the required parameters as explained in the table above. See for the following examples for more information.

Examples of use

```
select dbo.ufn_GetDesignations('NHMSYS0000332667',1 , null, null)
```

Returns the following text string listing all the designations for Phocoena phocoena (Common porpoise):

```
"BAP:2007, Berne Convention Appendix 2, Bonn Convention Appendix 2, Habitats and species directive Annex 2np, Habitats and species directive Annex 4, RedList_Global_post94:VU, W&CA Sch 5 Sec 9.1 (killing/injuring), W&CA Sch 5 Sec 9.1 (taking), Wildlife & Countryside Act Sch 5 Sec 9.2, Wildlife & Countryside Act Sch5 Sec 9.4a, Wildlife & Countryside Act Sch5 Sec 9.4b, Wildlife & Countryside Act Sch5 Sec 9.5a, Wildlife & Countryside Act Sch5 Sec 9.5b, Wildlife (N Ireland) Order Sch 5"
```

```
select dbo.ufn_GetDesignations('NHMSYS0000332667',1 , 'SYSTEM0100000003', null)
```

Returns the following text string listing all the designations within the "Wildlife and Countryside Act" Set for Phocoena phocoena (Common porpoise):

```
"W&CA Sch 5 Sec 9.1 (killing/injuring), W&CA Sch 5 Sec 9.1 (taking), Wildlife & Countryside Act Sch 5 Sec 9.2, Wildlife & Countryside Act Sch5 Sec 9.4a, Wildlife & Countryside Act Sch5 Sec 9.4b, Wildlife & Countryside Act Sch5 Sec 9.5a, Wildlife & Countryside Act Sch5 Sec 9.5b"
```

```
select dbo.ufn_GetDesignations('NHMSYS0000332667',5 , null, 'NHMSYS0020443050')
```

Returns the value "Yes" indicating that the Common Porpoise is listed on the 2007 BAP list.

7 Deleting user added designations and designation sets

It is likely that you will want to delete user added designations and designations sets at some point, the following two sections indicate how this is possible.

7.1 Deleting user added designations

- **Remove designation from designation sets** - First you need to ensure that you delete any designation sets that include the designation that you wish to delete (see section 7.2).
- **Identify the key relating to the taxon designation that you wish to delete** - use the xml report 'Sy05 - Taxon Designations Available for sets' (note that you will have to write the key down as currently you cannot copy and paste from this window).
- **Run the batch update** - 'Des5 Delete Taxon Designation' in the Designation folder. It is a good idea to backup your database before running a batch update and you will be prompted to do this

7.2 Deleting user added designation sets

To delete a user added set run the batch update 'Des4 Delete Taxon Designation Set' which sits in the Designations folder (**Tools/Run batch updates**) and type in the name of the set you wish to delete (figure 7). It is a good idea to backup your database before running a batch update and you will be prompted to do this.

Figure 7: Parameter prompt for Des4 Delete Taxon Designation Set

8 Technical description of how the taxon designation index is built

INDEX_TAXON_DESIGNATION is built using the following query:

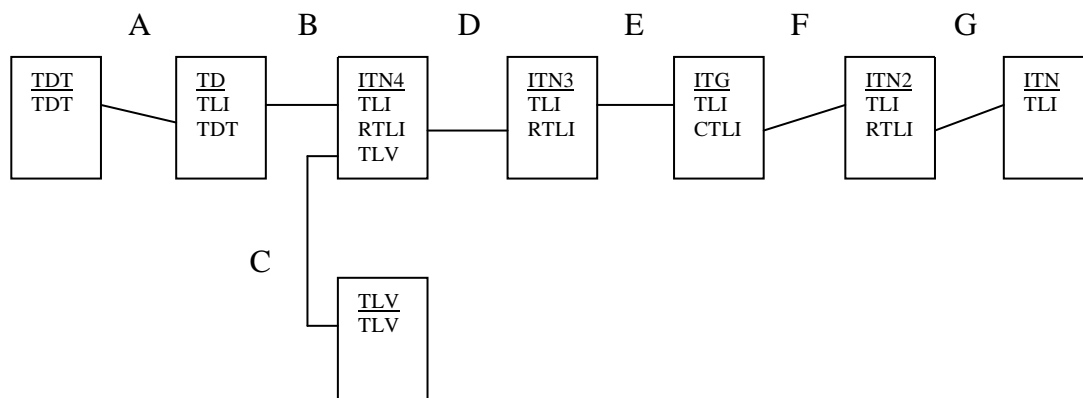
```

SELECT ITN.TAXON_LIST_ITEM_KEY, TDES.TAXON_DESIGNATION_TYPE_KEY
FROM      Index_Taxon_Name ITN
INNER JOIN Index_Taxon_Name ITN2
ON      ITN.Recommended_Taxon_List_Item_Key = ITN2.Recommended_Taxon_List_Item_Key
INNER JOIN Index_Taxon_Group ITG
ON      ITG.Contained_List_Item_Key = ITN2.Taxon_List_Item_Key
INNER JOIN Index_Taxon_Name ITN3
ON      ITN3.Taxon_List_Item_Key = ITG.Taxon_List_Item_Key
INNER JOIN Index_Taxon_Name ITN4
ON      ITN4.Recommended_Taxon_List_Item_Key = ITN3.Recommended_Taxon_List_Item_Key
INNER JOIN Taxon_designation TDES
ON      TDES.Taxon_List_Item_Key = ITN4.Taxon_List_Item_Key
INNER JOIN Taxon_List_Version TLV
ON      TLV.Taxon_List_Version_Key = ITN4.Taxon_List_Version_Key

WHERE      (@Keylist LIKE '%' + TLV.Taxon_List_Key + '%'
            OR      @Keylist = ''
            OR      TDES.System_Supplied_Data = 0)
AND      TDES.Date_To IS NULL
GROUP BY  ITN.TAXON_LIST_ITEM_KEY, TDES.TAXON_DESIGNATION_TYPE_KEY

```

Schematic overview:



- A. Join TAXON_DESIGNATION_TYPE to TAXON_DESIGNATION. The former contains the basic definitions of the designations which are needed in the final index.
- B. Join TAXON_DESIGNATION to INDEX_TAXON_NAME. Taxon designation contains the individual designations that are associated with individual list items. The list items are filtered (through join C) to just use the JNCC designation list or those which exist that have not been system supplied.
- C. Just a constraint to limit the lists that are used as sources for designation information.
- D. Joins INDEX_TAXON_NAME to itself through recommended taxon list item. The purpose of this is to firstly ensure that regardless of the state of the taxonomy associated with the designations (bearing in mind some may be user entered) the items are translated to their preferred list item and then any other list items which also have that preferred list item are identified through this join.
- E. This expands the list items to include any items that are contained within them (eg. Sub species etc).
- F. The output needs to be joined back through INDEX_TAXON_NAME to ensure that anything that comes out of INDEX_TAXON_GROUP is itself a preferred name.
- G. Finally join to INDEX_TAXON_NAME again to pick up any other entries with the same preferred list item (ie. Synonyms).