# Using Pivot Tables to format data downloaded from WeBS Online

WeBS Online users have the facility to 'Search and Download' data. Thus, information held on the online database can be extracted as a Microsoft Excel file to a personal computer for further use. However, the presentation of the extracted counts can be much improved by the use of the Pivot Table function within Excel. In our experience, the value and power of this function is not widely appreciated and so the following notes aim to guide WeBS counters in how to use Pivot Tables.

As an example, a 'Search and Download' was used to extract the 2004-05 counts for all species for Whitlingham Little Broad:

This is fine, but it is often more helpful, and more visually pleasing, to present the data with species down the side and months across the top, with the counts cross-tabulated in the middle. The quick way to do this is with a Pivot Table. To produce such a table, first click ***Data*** and then ***PivotTable and PivotChart Report***. On the first two dialogue boxes that pop up ('Step 1 of 3' and 'Step 2 of 3'), click ***Next + Next***. On 'Step 3 of 3', click ***Layout*** to get a screen looking like this:
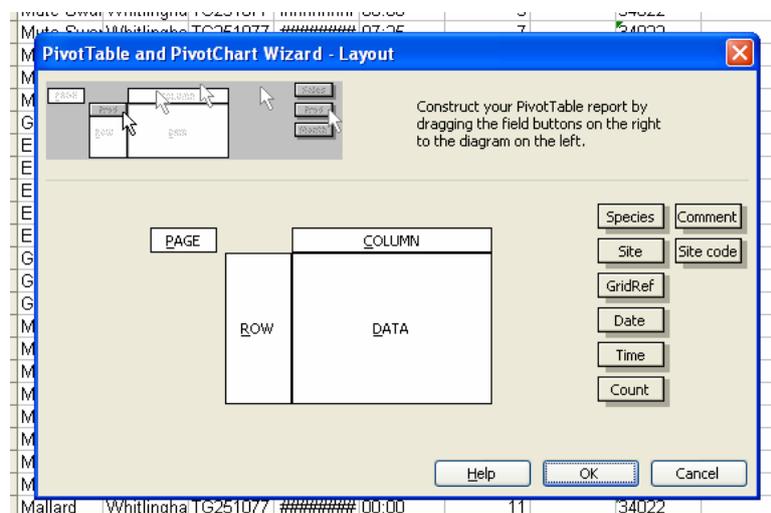
This screen enables you to specify how you want your Pivot Table to appear. Simply drag the 'Species' box into the 'Row' area of the screen. Then drag 'Date' into the 'Column' area. Finally, drag 'Count' into the 'Data' area. You should now see something like:
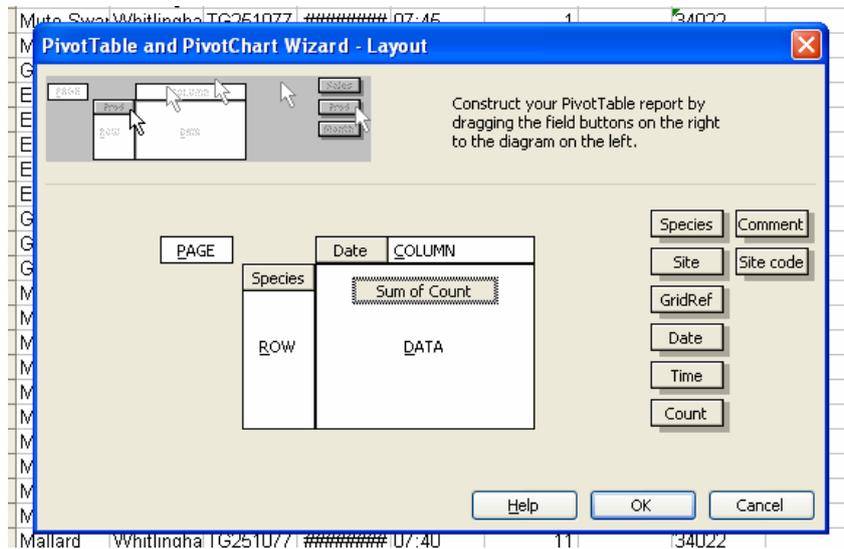
[Note that at this point, it is possible that the 'Data' box will contain 'Count of Count' (instead of 'Sum of Count'). If this happens, double-click on the 'Count of Count' box and change it to 'Sum of Count'. This happens if you have any 'present only' counts, or bracketed undercounts – see further notes below].

After this, simply click **OK** then **Finish**, and you'll get a new sheet that looks like:
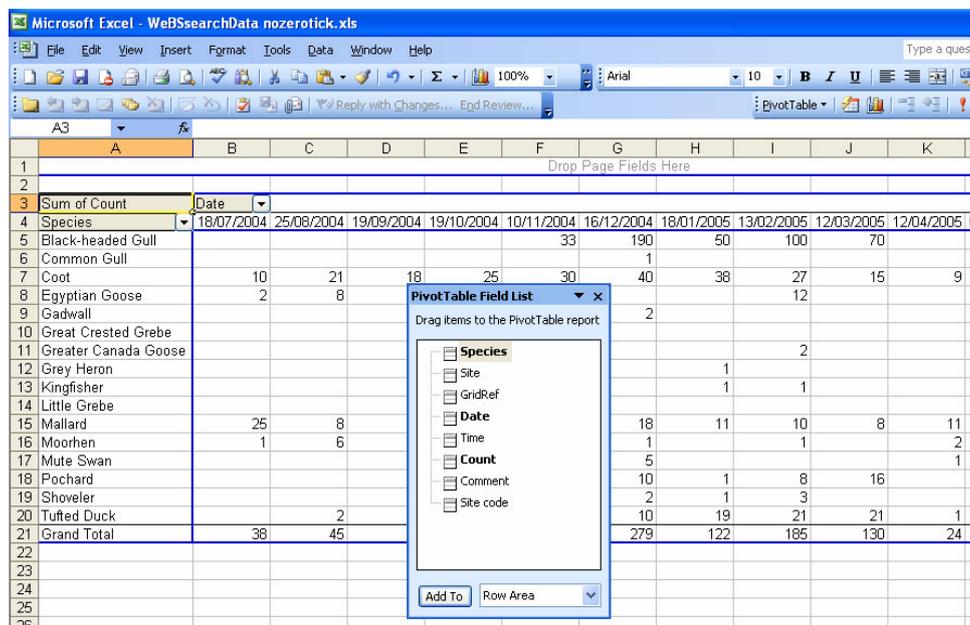
Close the small 'PivotTable Field List' box.

So, this is what we were aiming for – a cross-tabulation of the counts, with species down the side and dates along the top. If you just want to view your data (for checking purposes perhaps) then this is fine, and all you need to do.

However, if you want to do more with your Pivot Table – perhaps print it out and send it to other counters - then it is worth being aware of a few further points. The important thing to remember is that a Pivot Table is a 'live' function of the data on the original sheet. Therefore, you can't delete bits of it easily, as it would no longer be a correct Pivot Table. Almost always, the best thing to do once you've got a Pivot Table, is to stop it actually being a Pivot Table any longer! The quickest way to do this is to select the whole sheet, **Edit>Copy** then **Edit>Paste Special>Values**. This leaves you with something that looks identical to the Pivot Table that you created, but is no longer live-linked to the original data, so it's much more flexible to do things with.

Further tips

There are a host of other possibilities for the way WeBS data (and other data) are handled. As Pivot Tables are so versatile it is impossible to provide guidance on everything that might crop up. However, the following notes should be of use:

1   Dealing with bracketed counts

If your downloaded data includes some counts that were flagged as undercounts, these will appear in the main datasheet with square brackets. This means that Excel will treat them as a string (*i.e.* can include letters) rather than a numeric. Thus, when they go into a Pivot Table, they won't get included in a 'Sum of Counts' (as you can't sum string variables). To get the undercounts into the Pivot Table, you'll first need to get rid of the brackets and turn these counts into numbers. The simplest way is to **Edit>Replace** and replace '[' with nothing, and ']' with nothing. This will turn your undercounts into normal numbers. Of course, this means they won't show up as being undercounts in your Pivot Table either. In many cases, this might not be a problem. If you do want to flag the undercounts in your final table, one way is to turn them into negative numbers. For example, you could **Edit>Replace** '[' with '–' and replace ']' with nothing again.

2   Removing totals

Excel will try to add totals for columns and rows to any Pivot Table. This can sometimes be useful (e.g. it makes sense to have a summed total of all species present on a date) but sometimes not (e.g. it doesn't make sense to have a summed total of all monthly counts for a species). To remove a total, right click on a Pivot Table, Table Options and uncheck the box for 'Grand totals for columns/rows' as required. Note that on most versions on Excel, you can also position yourself in the "Grand total" box on the Pivot Table and type **Alt** then **e** then **d**. The latter tip is also useful for removing subtotals when you have more than one variable in the column headers or row headers (see below).

3   Search and Download for multiple sites

Imagine that you search and download counts for all species for a single year but for two sites. You can introduce the information on the multiple sites to your Pivot Table in several ways. Firstly, within the Pivot Table wizard you could drag the 'Site' button into the 'row' area of the Pivot Table, in addition to the 'Species' button. This would lead to a Pivot Table where the counts for the first site appeared above the counts for the second site:

Alternatively, you could drag the 'Site' button as onto the 'Columns' area of the table, as well as the 'Date' button, and you would get a table with the data for the separate sites presented next to one another. Finally, you can also drag the 'Site' button into a separate 'Page' area of the Pivot Table. This will give you a site selection option on your final Pivot Table:

4   Changing real dates to just show month/year.

To save space on your final outputs, you may prefer to simply present a year's counts with the months heading the columns, rather than the overall count date. To do this, you need to ensure that all counts for a given month were made on the same date (which sometimes doesn't happen at larger complex sites) – if not, see below. In your final table (i.e. not a Pivot Table any longer), select the cells with the dates in them that you want to change the appearance of. Click ***Format>Cells*** , chose 'Custom' and then in the box under 'Type' enter 'mmm'. This will give column headers of the type 'Jan', 'Feb', etc. [There are lots of other ways you can present the date format – this is just one option.]

If you do have counts from multiple dates within a month, you may wish to group the data by month by converting all dates into the first of the month. In the original sheet of data, add a new column called 'nominal date'. In the top cell (cell I2 for example), if the date is currently in column D, then enter the formula

=date(year(d2),month(d2),1)

This will convert 13/05/1997 to 01/05/1997, for example. Then copy this cell and then paste it onto all cells in the column. Having done this, highlight the whole column, copy, then **Edit>Paste Special>Values.** You can now make a Pivot Table as normal but use the nominal date instead of the real date as a column header.

Other useful Excel functions

If you have found this information on Pivot Tables useful, there are many other Excel functions that we have found particularly helpful in the collation and presentation of WeBS data. These are listed below without detailed explanation; all are well explained within Excel (***Insert>Function***) but if you would like further details then please contact the WeBS Team at the BTO.

Date and time functions	*Text functions*
=year	=concatenate
=month	=exact
=day	=left
=weekday	=right
=date	=mid
	=len
Lookup functions	
=vlookup	*Logical functions*
=hlookup	=if