

The Flat File:

A spreadsheet is a set of columns and rows, with one record per line. Known as a **flat file**, these spreadsheets contain records with no structured relationships. Very useful when you have tabular data such as a phone and address list.

The flat file design puts all information in one table, with columns (fields) to represent all pieces of required data. A flat file may contain many fields, often with duplicate data. If you have two or more flat files that contain weed site data, for example, and a site needs to be updated, you have to manually modify the fields in each file that contains that site's information, because changing information in one file has no bearing on other files.

It is for this reason that most flat file users enter all their data into one long spreadsheet. At first glance, that seems to work just fine, except for the fact that you will be doing a lot of duplicate data entry.

A very simplistic example:

Site #	Easting	Northing	Mapsheet	Jurisdiction	Survey Date	Spec 1	Spec 2	Spec 3	Surv.By	Trt. Date	Trt. Type	etc	etc
2007:													
101	678900	5546789	83F009	CPR	15-Jul-07	SK	DK	TC	John B.	15-Jul-07	BP		
102	653987	5539876	82G096	Private	19-Jul-07	TC	YH		John B.	20-Jul-07	HP		
103	669246	5539873	83F001	Mun.	22-Jul-07	OH	YH	BW	Ellen K.	22-Jul-07	BP		
~etc~	~~~	~~~	~~~	~~~	~~~	~~~	~~~	~~~		~~~	~~~		
~etc~	~~~	~~~	~~~	~~~	~~~	~~~	~~~	~~~		~~~	~~~		
2008:													
102	653987	5539876	83G096	Private	19-Jul-07	TC	YH		John B.	18-Jun-08	HP		
103	669246	5539873	83F001	Mun.	22-Jul-07	OH	YH	BW	Ellen K.	18-Jul-08	HP		
~~~	~~~	~~~	~~~	~~~	~~~	~~~	~~~	~~~		~~~	~~~		

(Because of limited space on this page, this is a very simple table. There would be many more columns for area, location, site comments, treatment comments, a treatment type column for each species, etc, etc.)

- John B. surveyed site 102 in July 2007 and treated it by hand-pulling. The next year, John visits site 102 again, but *all he does is a hand-pulling treatment*.
- Ellen K. surveyed site 103 in July 2007 and treated it using a backpack sprayer. In 2008, Ellen goes back to the site and does some more hand-pulling.
  - Note how all the known data for these sites now needs to be re-entered on a new line, even though most of it hasn't changed since last year. The more columns there are, the more likely the possibility of unnecessary duplication.

→ But one of the biggest disadvantages of flat files is their limitation in returning information. Other than sorting and/or filtering the columns, there is no possibility of **querying** your data, because there simply is no automation between flat files.

## A Relational Database:

A relational database, on the other hand, incorporates multiple tables with methods for the tables to work together, minimizing the amount of data to be entered, and allowing for complicated questions to be asked of the data.

In the above example, there would be no need to enter any site or survey data for 2008, because the only activity that was performed was a treatment; therefore only a treatment record would be required.

## Invasive Alien Plant Program - IAPP

IAPP is an **Oracle** database and has the capacity of holding and processing gigantic amounts of data, including images. The Oracle platform is very robust and stable, and it is Oracle's reputation as the "Sherman tank of databases" that has made it the largest enterprise software manufacturer in the world! (even bigger than Microsoft...)

**Now let's see how complicated John B's activities on site 102 are in IAPP:**

**In 2007:**

He observes a new infestation; there were no invasives there before, so he creates a new site:

- Click **Add a New Site** on the home page.
- In the **Add** screen, enter the **UTM coordinates and zone** and click Continue:

- In the next screen, the *only* mandatory data is
  - Date
  - Jurisdiction

**This is very useful!** Retain your own file system; this field can be searched on.

Autofill for all BEC information and Mapsheet

- In the next screen, enter the Survey Date
  - This is the *only* mandatory field in this screen
  - Surveyor is optional; however, your Data Manager may request that you enter this field

**Another useful Paper File ID;** this can be different from the Site PFID.

Autofill for Agency in all screens

## Benefits of a Relational Database versus a flat file, and how to enter Site, Survey and Treatment Data in IAPP

- Finally, enter the invasive plant species you found:
  - Pick the plant from the dropdown list
  - Enter the Estimated Area

**Add Site (Step 4 of 5) - Add Invasive Plant Species**

<b>Invasive Plant Species</b>	Common tansy (TANA VUL)	<b>Estimated Area (Ha)</b>	0.1
<b>Distribution</b>		<b>Survey Type</b>	Cursory
<b>Density</b>			

**Comments**

**Proposed Activity**

[Add Activity](#)  **Agent/Herbicide**

**Added Activities**

- Click Continue, and review that all the data you entered is correct:

**Add Site (Step 5 of 5) - Confirmation**

<b>Site UTM Location</b>			
<b>Zone</b>	11	<b>Latitude</b>	
<b>Easting</b>	653987	<b>Longitude</b>	
<b>Northing</b>	5539876		
<b>Site Details</b>			
<b>Site Created Date</b>	2007-07-19	<b>Zone</b>	MS
<b>Jurisdiction</b>	Private Land	<b>Subzone</b>	dk
<b>Range Unit ID</b>		<b>Phase</b>	
<b>Paper File ID</b>	EKIP-WHATEVERYOULIKE	<b>Variant</b>	1
<b>District Lot Number</b>		<b>Site Series</b>	
<b>Mapsheet</b>	082G096	<b>Slope</b>	
<b>Site Location Details</b>		<b>Aspect</b>	
<b>Site Comments</b>		<b>Elevation</b>	
<b>Survey Details</b>			
<b>Survey Date</b>	2007-07-19	<b>Paper File ID</b>	EKIP-WHATEVERYOULIKE
<b>Survey Agency</b>	East Kootenay Invasive Plant Council	<b>Employer</b>	
<b>Surveyors</b>	CATHERINE MACRAE		
<b>Invasive Plant Species 1</b>			
<b>Invasive Plant Species</b>	TANA VUL (Common tansy)	<b>Estimated Area (Ha)</b>	0.1
<b>Survey Type</b>	Cursory	<b>Distribution</b>	
<b>Recommended Activities</b>		<b>Density</b>	
<b>Comments</b>			

- Bingo! You're done. You have created:
  - A **Site**
  - A **Species** on the Site
  - A **Survey** for the Species

***None of this will ever have to be repeated for a subsequent site visit, unless you decide after a few years that a new survey is warranted because there have been significant changes in area or distribution!***

- Now John also wants to enter the manual treatment he performed, so he clicks the Mechanical treatment tab, clicks the Add link, and enters the treatment data in the form:
  - The only mandatory data here is the date, species treated, area treated, and treatment method.

## Benefits of a Relational Database versus a flat file, and how to enter Site, Survey and Treatment Data in IAPP

- **Once again, there is that very useful Paper File ID!** This time for a treatment. The Treatment Paper File ID can also be searched on, even to locate batches of files.
- And again, the Agency is already filled out for you.

Home > Site (082G096-246166) > Mechanical Treatments > Add Mechanical Treatment

Site		
Mapsheets: 082G096	Site ID: 246166	Paper File ID: EKIP-WHATEVERYOULIKE

  

Add Mechanical Treatment	
<b>General</b>	
Paper File ID: <input type="text"/>	
Treatment Date: 2007-07-19	Agency: East Kootenay Invasive Plant Council
<b>Application</b>	
Employer: <input type="text"/>	<a href="#">Search</a>
<b>Applicators</b>	
<a href="#">Manage Applicators</a>	
<b>Mechanical Treatment</b>	
Plant Species: Common tansy (TANA VUL)	Area Treated (ha): 0.1 <input type="text"/>
Treatment Method: Hand pulling	
<b>Comments</b>	
<input type="text"/>	
<input type="button" value="Save"/> <input type="button" value="Save &amp; Close"/> <input type="button" value="Cancel"/>	

- Click Save and Close, and it's done.

### 2008 – The Next Year:

Although some time was spent creating the site and establishing a species on the site, this was a one-time task. The next year, when John came back and did some hand-pulling, all that was necessary was to add another mechanical treatment record to the site!

Actions
<a href="#">Add Site</a>
<a href="#">Add Batch Plan</a>

  

Search
<a href="#">Site</a>
<a href="#">Treatment</a>
<a href="#">Monitoring</a>
<a href="#">Submission</a>

  

Go To Site ID
<input type="text" value="246166"/> <input type="button" value="Go"/>

  

Invasive Plant Key
<input checked="" type="radio"/> Common Name
<input type="radio"/> Latin Code

So John simply enters the Site ID in the **Go To Site ID** box on the home page, clicks the **Mechanical Treatment** tab, clicks the Add link, and adds another treatment.

Home > Site (082G096-246166) > Mechanical Treatments

Site		
Mapsheets: 082G096	Site ID: 246166	Paper File ID: EKIP-WHATEVERYOULIKE

  

Site Details	Invasive Plants	Plans	Biological Treatments	Chemical Treatments	Mechanical Treatments	Biological Dispersals
<b>Mechanical Treatment 1 of 2</b>						<a href="#">Add</a>
<b>Treatment</b>						<a href="#">Delete</a> <a href="#">Edit</a>
Paper File ID:		Treatment ID:	225849			
Date:	2008-06-18	Agency:	East Kootenay Invasive Plant Council			
<b>Application</b>						
Employer:						
<b>Applicators:</b>						
<b>Mechanical Treatment</b>						
Plant Species:	Common tansy (TANA VUL)	Area Treated:	0.1 ha			
Treatment Method:	Hand pulling					
<b>Comments</b>						
Treatment Entered: 2008-10-16 [DIR/LAKRISTI] Treatment Updated: 2008-10-16 [DIR/LAKRISTI]						
<b>Images</b>						
ID	Date	Perspective	Agency			<a href="#">Add</a>
There are no images attached to this treatment.						
<b>Monitoring Records</b>						