






Lab#5: GIS Tables

In this lab, you will be creating and analyzing tables from the polygons representing wildfire perimeters from 1940-2018. Download and unzip the **Fire History** data from the Alaska Fire Service website <https://fire.ak.blm.gov/predsvcs/maps.php>

AICC ArcIMS Mapping Products [requires JavaScript]

- Active Fires on Google Earth  [Updated on Demand]
- Fire Perimeter Shape File Download  [Updated on Demand]
- Statewide Fires 
- Current Lightning 
- Fire History 

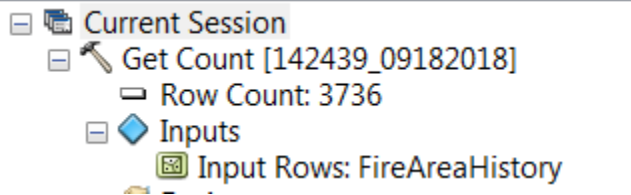
Layer Name

Perimeters Since 1940 ▼

Export in Alaska Albers NAD 83

Extract Shape File

Use the **Get Count** geoprocessing tool to determine how many rows are in your polygon attribute table.



Current Session

- Get Count [142439_09182018]
 - Row Count: 3736
 - Inputs
 - Input Rows: FireAreaHistory

The field FireYear is a 5-character text field.

Fields	Definition Query	Labels	Joins & Relates	Time	HTM
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Appearance	
Alias	FireYear
Highlight	No
Read-Only	No
Field Details	
Data Type	Text
Length	5
Name	FireYear

Add a short integer field named Year and use the field calculator to populate the integer field.

FireAreaHistory					
	FID	Shape	FireName	FireYear	YEAR
	0	Polygon	Kandik River	2005	2005
	1	Polygon	Slate Creek	2007	2007
	2	Polygon	HULT CREEK	1968	1968
	3	Polygon	HAYSTACK MT	1968	1968

Use the **Add Field** geoprocessing tool in batch mode to add 3 double precision fields named Hectares, KM2, Acres.

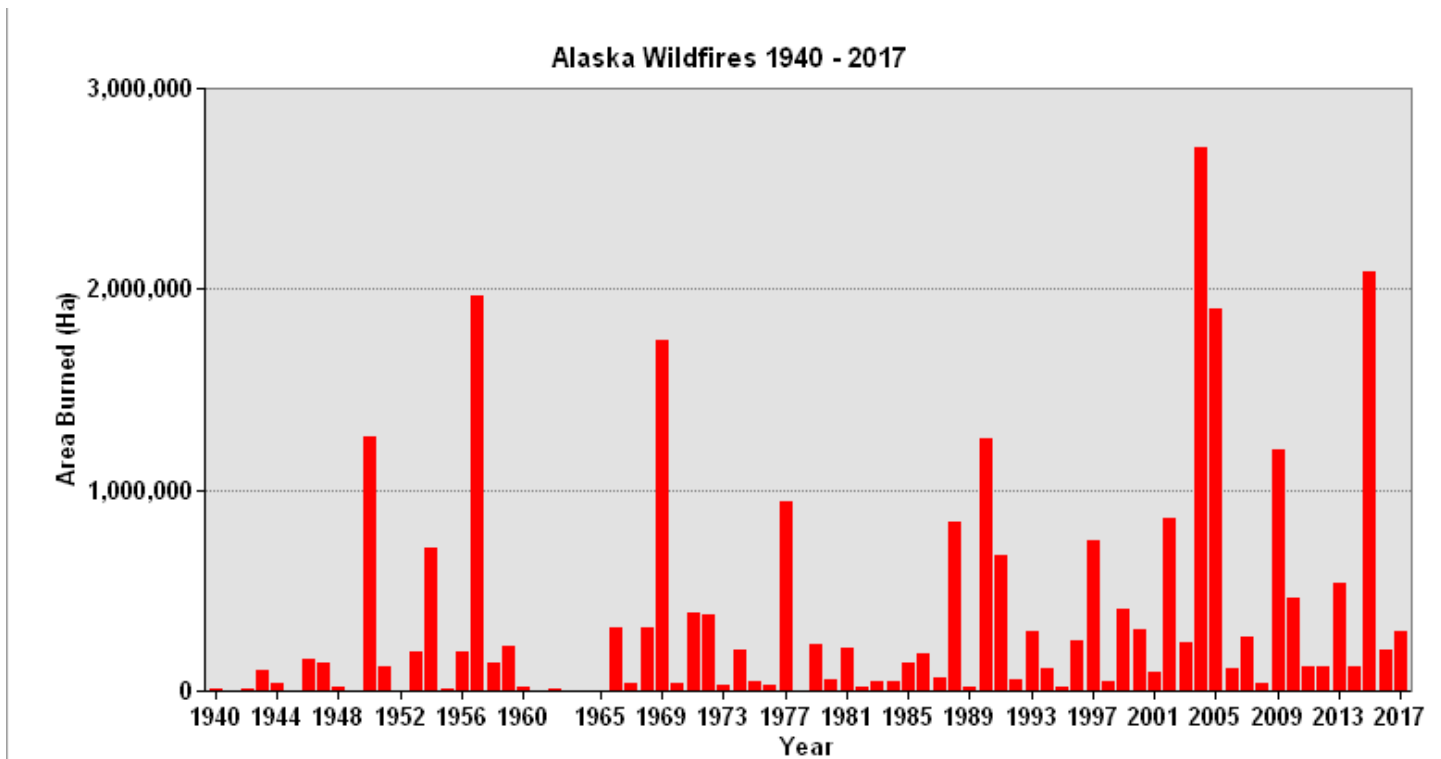
Add Field			
	Input Table	Field Name	Field Type
1	FireAreaHistory	Hectares	DOUBLE
2	FireAreaHistory	KM2	DOUBLE
3	FireAreaHistory	Acres	DOUBLE

Open your table, right mouse click and Calculate Geometry to compute the area Hectares, KM2, Acres.

FireAreaHistory								
	FID	Shape	FireName	FireYear	YEAR	HECTARES	KM2	ACRES
	0	Polygon	Kandik River	2005	2005	62,496.2	625.0	154,431.6
	1	Polygon	Slate Creek	2007	2007	77.5	0.8	191.4
	2	Polygon	HULT CREEK	1968	1968	2,152.0	21.5	5,317.6
	3	Polygon	HAYSTACK MT	1968	1968	8,145.3	81.5	20,127.5

Use the **Delete Field** geoprocessing tool to delete the AREA,LEN fields..

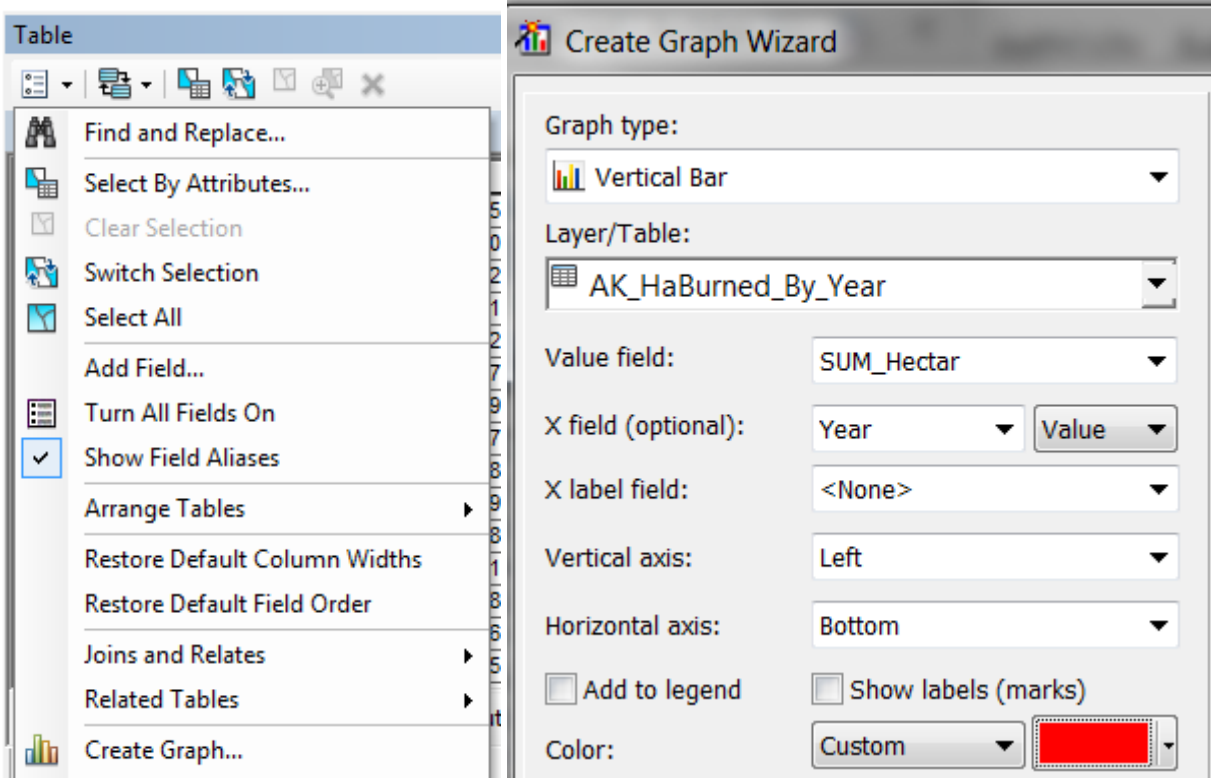
Create a chart of total hectares burned per year.



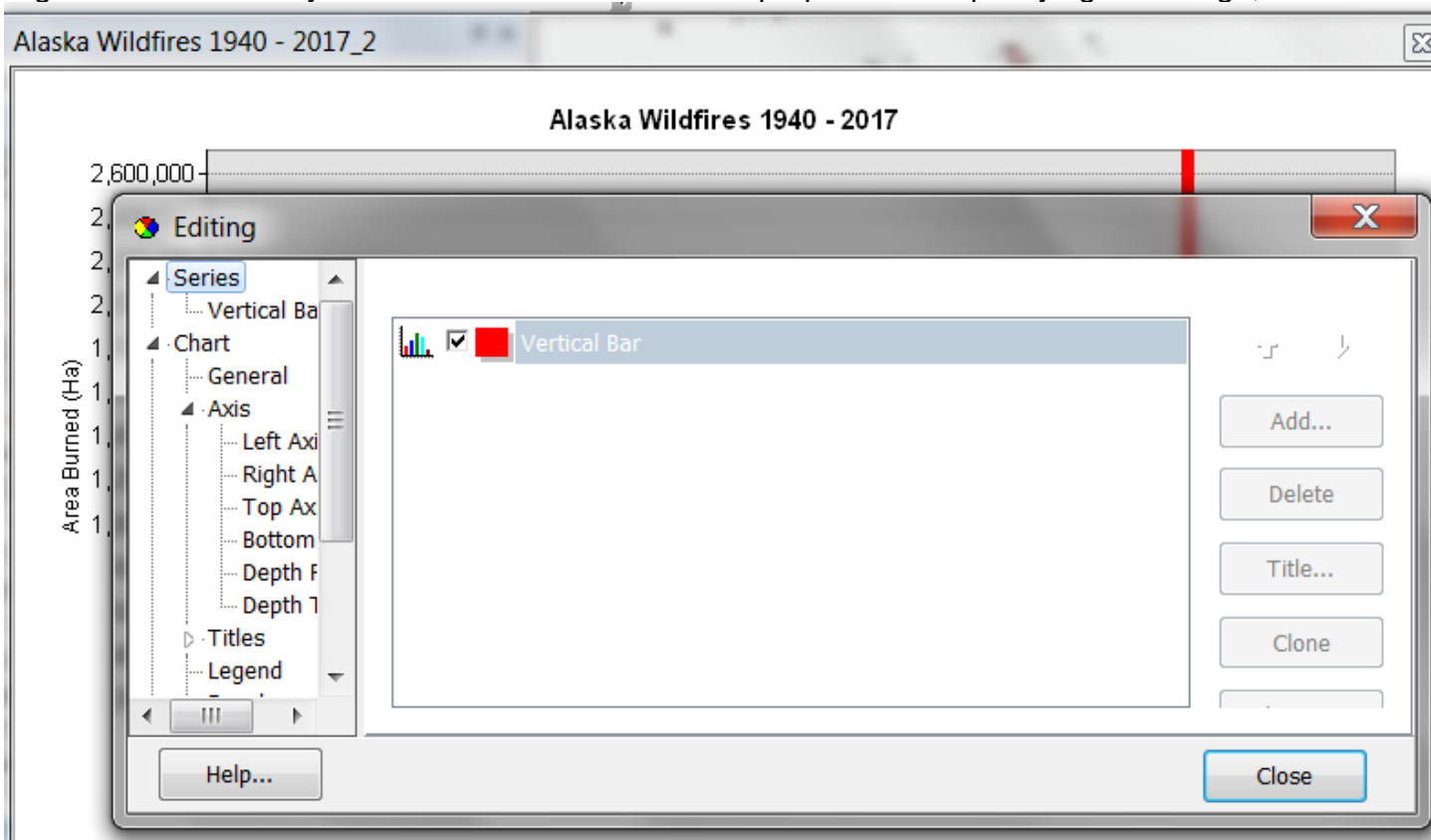
First use the **Summary Statistic** geoprocessing tool to create a new table of total hectares burned per year.

AK_HaBurned_By_Year			
Year	FREQUENCY	SUM_Hectar	
1940	1	5206.430571	
1942	5	11519.195032	
1943	8	98581.048218	
1944	1	38907.340169	

Next with your table open, under the Table Options menu, select Create Graph...



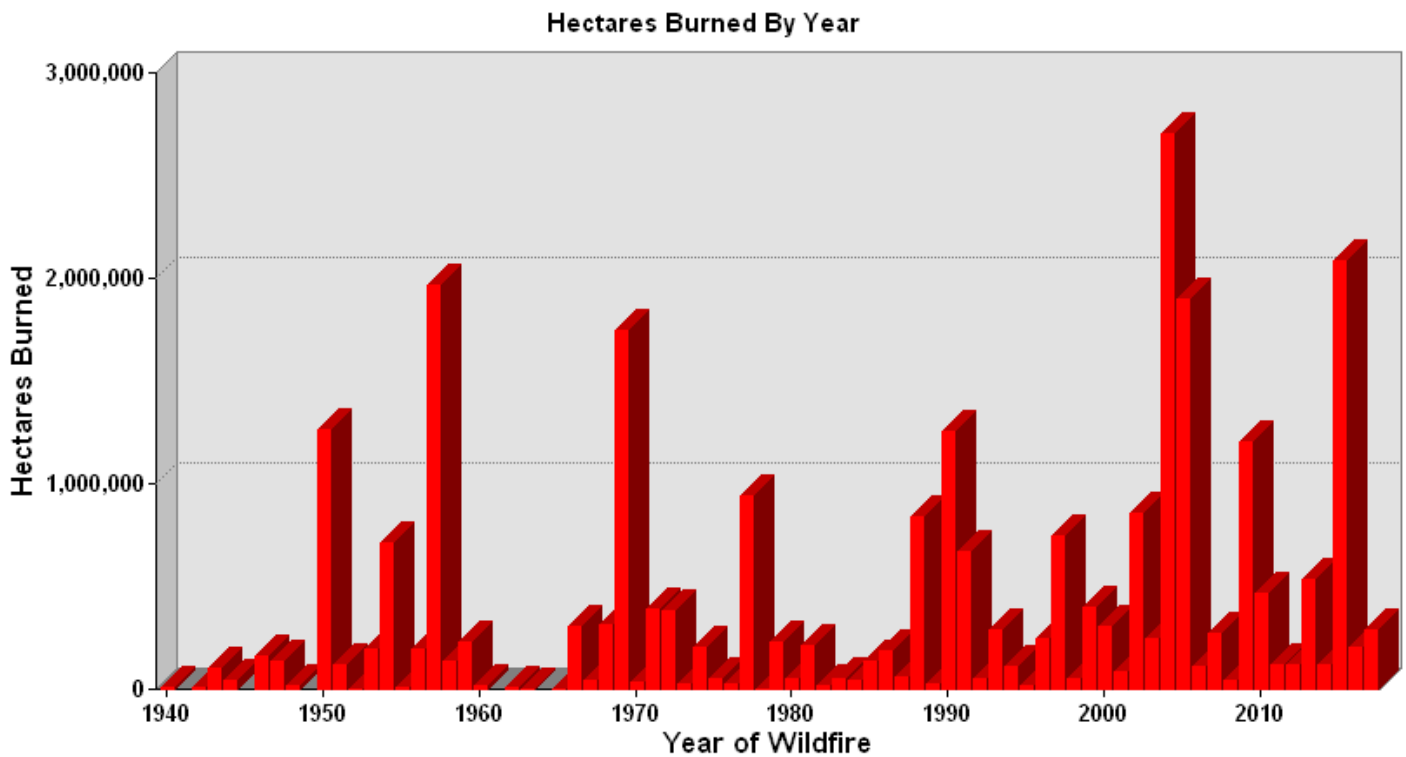
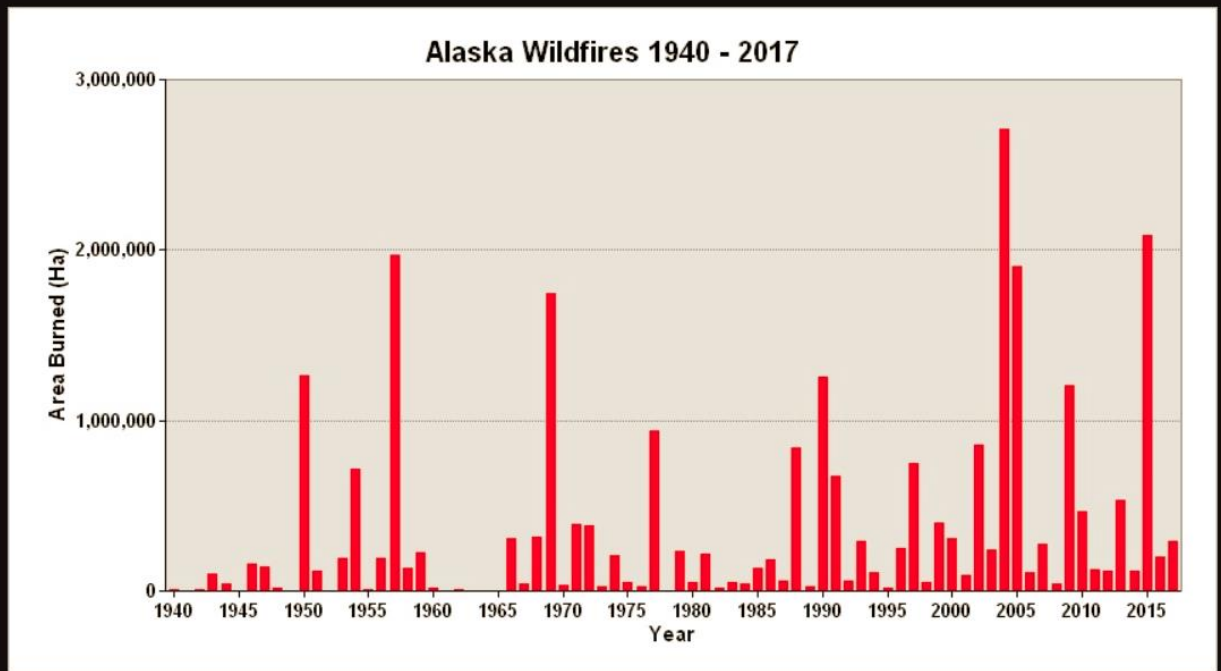
Right mouse click on your chart and select advanced properties for specifying axis range, etc.



Right mouse click an export as a jpg file...use a web browser to view your jpg.

<http://dverbyla.net/nrm338/>

file:///C:/nrm338/lab5/AK_fires/AK_Fires_1940_2017.jpg



The top four years in terms of hectares burned were 2004,2015, 1957,2005.

Create a pdf report of fires since 2000 per year.

Create a layer of fires since 2000.

Table

FID	Shape	FireName	YEAR
0	Polygon	Kandik River	2005
1	Polygon	Slate Creek	2007
6	Polygon	Folger Creek	2008
8	Polygon	Veh-Tenjerlow	2008

First change the numeric format of your hectares to display one to the right of the decimal and use comma separators:

Hectares
6,071.1
4.7
3,806.4
6,083.2
5,216.8
121.0
0.2
141.1

Next specify descriptive field alias for FireName, YEAR, Hectares fields:

FIRES SINCE 2000

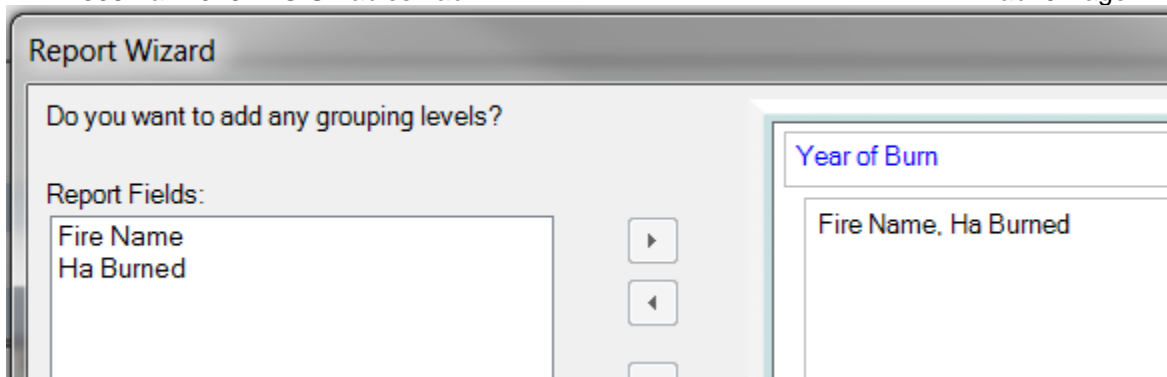
FID	Shape	Fire Name	Year of	Ha Burned
0	Polygon	Kandik River	2005	62,496.2
1	Polygon	Slate Creek	2007	77.5
6	Polygon	Folger Creek	2008	204.3
8	Polygon	Veh-Tenjerlow	2008	0.5

Then from your table options, select Reports...

We want a report for each fire year, a list of fire names and hectares burned.

Report Fields:

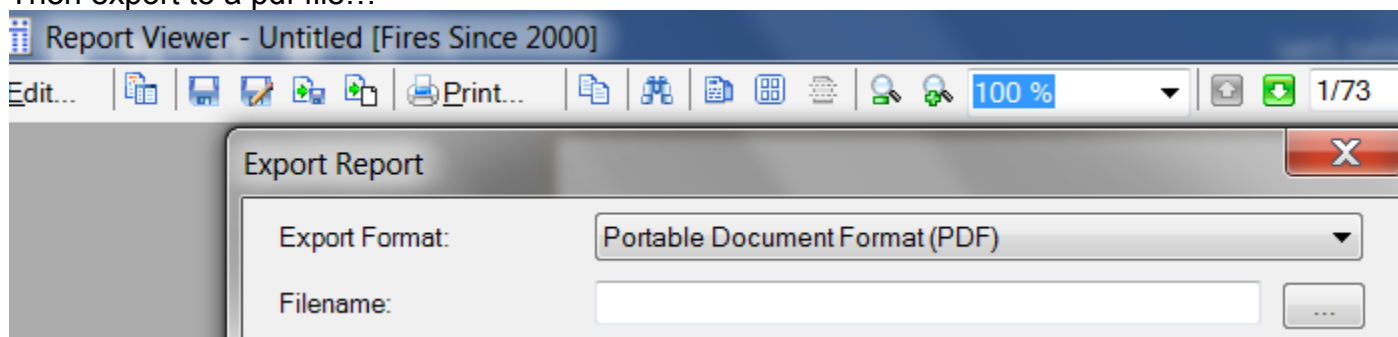
Fire Name
Year of Burn
Ha Burned



Edit your report to your preference:

Year of Burn	Fire Name	Ha Burned
2000		
	BearPaw Mt.	14,883.2
	BEAVER CK	469.1
	Beaver Creek	1,367.5
	Rent Tree	97.6

Then export to a pdf file...



Report.pdf - Adobe Acrobat Reader DC

File Edit View Window Help

Home Tools Report.pdf x Sign

69 / 73 75%

	Moose Creek	122.4
2017		
	4/18/2017	
	Zane Hills	867.1
	4/24/2017	
	DTAW Oklahoma Impact Area Rx	19,645.2
	5/4/2017	
	4.5 Mile Nistler Road	9.9
	5/7/2017	
	YTA Stuart Creek IA Grass Rx	7,322.7
	5/11/2017	
	Saltrey Creek	37.7
	5/13/2017	
	Deep Creek	15.7

Create Excell pie chart of general cause classes.

We want one class for lightning so use the field calculator to assign the same name for Lightning and Lightning-WFU, and “Unknown”

FID	Shape	Fire Name	GenCause	Y
71	Polygon	BearPaw Mt.	Unknown	
479	Polygon	Ten Mile Creek	Unknown	
513	Polygon	CLEAR	Unknown	

First, use the **Summary Statistic** geoprocessing tool create a table for wildfires since 2000 of total hectares by general cause.

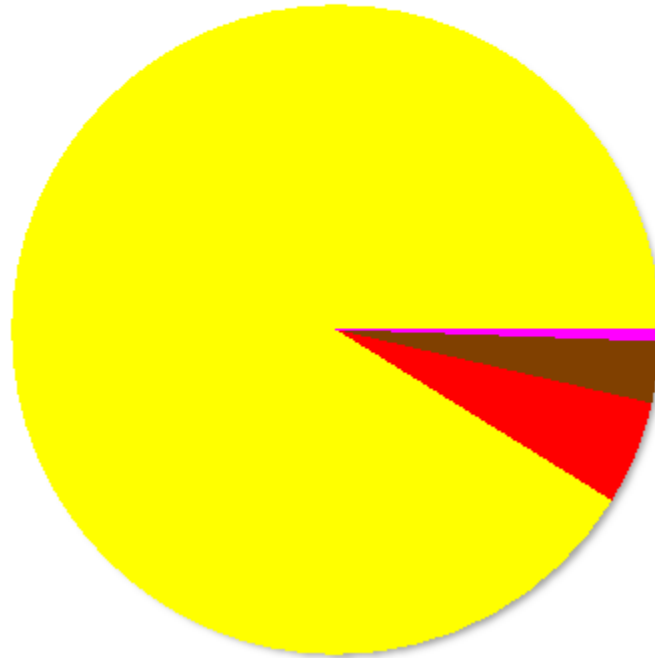
GenCause	FREQUENCY	SUM_HECTARES
Camping	1	0.4
Cause and Origin Not Identified	7	12,631.9
Debris Burning	2	18.0
False Alarm	1	1,133.3
Human	194	612,786.6
Lightning	1697	10,757,947.7
Miscellaneous	3	344.1
Natural Out	1	46.4
Other Human Cause	2	20.7
Prescribed	33	70,052.6
Under Investigation	3	11,074.9
Unknown	53	360,268.4

Next compute percent of total hectares:

GenCause	FREQUENCY	SUM_HECTARES	Percent
Camping	1	0.4	0.00%
Cause and Origin Not Identified	7	12,631.9	0.11%
Debris Burning	2	18.0	0.00%
False Alarm	1	1,133.3	0.01%
Human	194	612,786.6	5.18%
Lightning	1697	10,757,947.7	90.97%
Miscellaneous	3	344.1	0.00%
Natural Out	1	46.4	0.00%
Other Human Cause	2	20.7	0.00%
Prescribed	33	70,052.6	0.59%
Under Investigation	3	11,074.9	0.09%
Unknown	53	360,268.4	3.05%

Use either Arcmap or Excel to create a pie chart of the top four general causes. And create a pie chart of your own design.

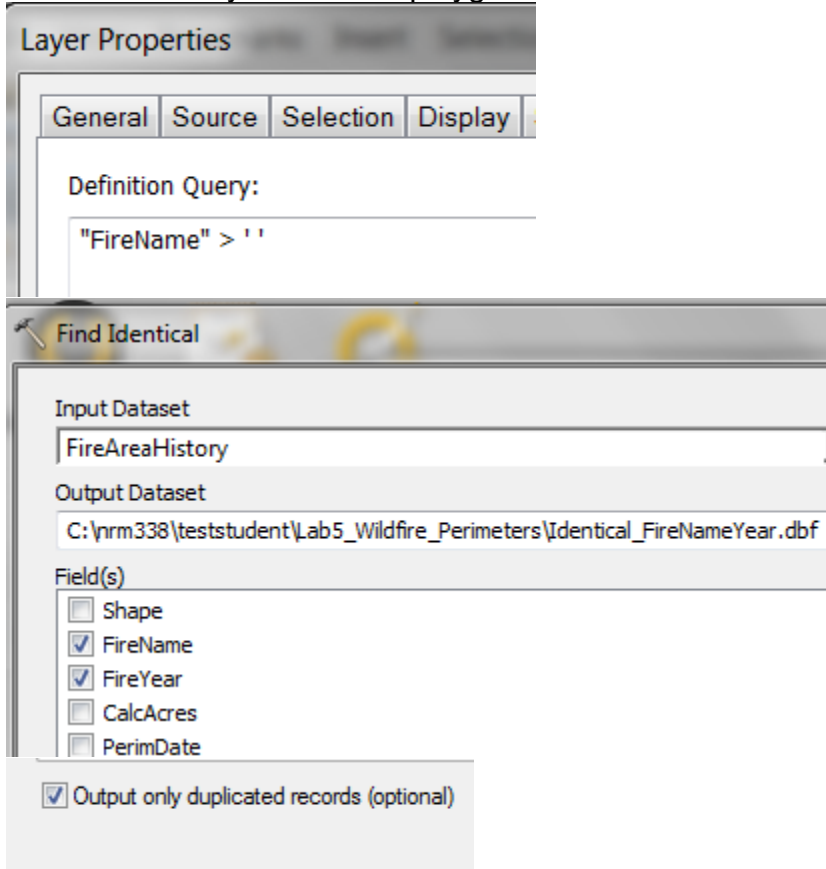
Wildfire Area Burned Since 2000



Create table of different wildfires with same name.

Use the Find Identical geoprocessing tool to create a table where the FireName and FireYear are identical.

First create a layer of all fire polygons that have a fire name



Use the **Join Field** geoprocessing tool to join the FireName, FireYear to your table.

Finally use the **Frequency** geoprocessing tool to see if any of these fires are from the same year

FREQUENCY	FireName	YEAR
3	Moose Creek	2002
2	Bear Creek	2013
2	Beaver Creek	2005
2	Big Creek	1999
2	Dall River	2000
2	FYU NE 22	1988
2	Kingasivik Mountains	2010
2	MHM N 25	1991
2	MHM SE 27	1986
2	Mission Creek	2005
2	PORCUPINE	1993
2	Rock Creek	2004
2	South Fork	2001
2	Swinging Dome	1989
2	Timber Creek	2013
2	West Fork	2015

So for example, there were 3 Moose Creek burns in 2002:

Fire Name	GenCause	Year of	Ha Burned
Moose Creek	Lightning	2002	2,134.7
Moose Creek	Lightning	2002	37.0
Moose Creek	Lightning	2002	2,178.5

Table of Discovery Dates

For the fires that occurred since 2000, create a chart of week of fire discovery:

DiscDate	Week
1/3/2003	1
1/1/2018	1
2/20/2018	8
3/12/2003	11
3/14/2013	11

The use the Frequency geoprocessing tool and create a chart

Week of Fire Discovery 2000 - 2018

