

Exercise#4: Working with Temporal Data

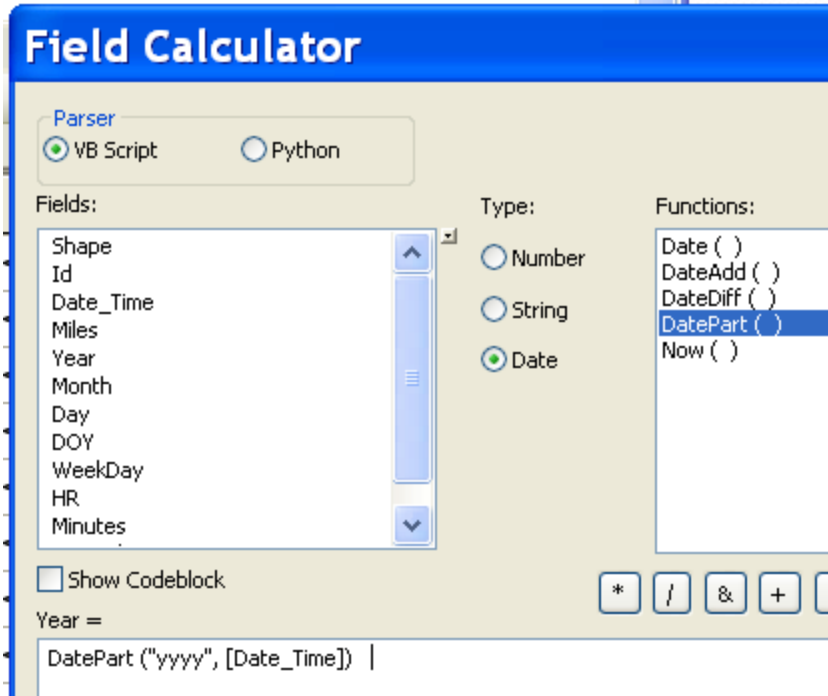
In this exercise, we will work with a date field. In a geodatabase, date fields contain date and time that can be extracted to new fields. We will start by extracting date and time information using the visual basic function **DatePart** where:

Setting	Description
yyyy	Year
q	Quarter
m	Month
y	Day of year
d	Day
w	Weekday
ww	Week
h	Hour
n	Minute
s	Second

Start by adding the short integer fields with the following names to your Fish_Locations point attribut table:

Shape *	Id	Date_Time	Miles	Year	Month	Day	DOY	WeekDay	HR	Minutes	Seconds
Point	1	1/16/2013 12:00:00 PM	3.2159	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
Point	1	2/16/2013 12:00:00 PM	42.0889	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
Point	1	4/16/2013 12:00:00 PM	81.9399	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
Point	1	5/16/2013 12:00:00 PM	94.6574	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
Point	2	1/16/2013 12:00:00 PM	1.3794	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
Point	2	6/21/2013 12:00:00 PM	57.078	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
Point	2	4/16/2013 12:00:00 PM	83.0746	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
Point	2	5/16/2013 12:00:00 PM	115.237	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
Point	2	6/21/2013 12:00:00 PM	128.879	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
Point	3	1/16/2013 12:00:00 PM	0.3875	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
Point	3	2/16/2013 12:00:00 PM	63.7416	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
Point	3	4/16/2013 12:00:00 PM	107.8826	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>

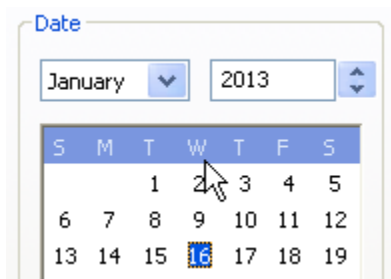
To use the DatePart function, use the field calculator and the setting for the part you want to extract, for example, for Year:



Continue these field calculations for the remaining fields...

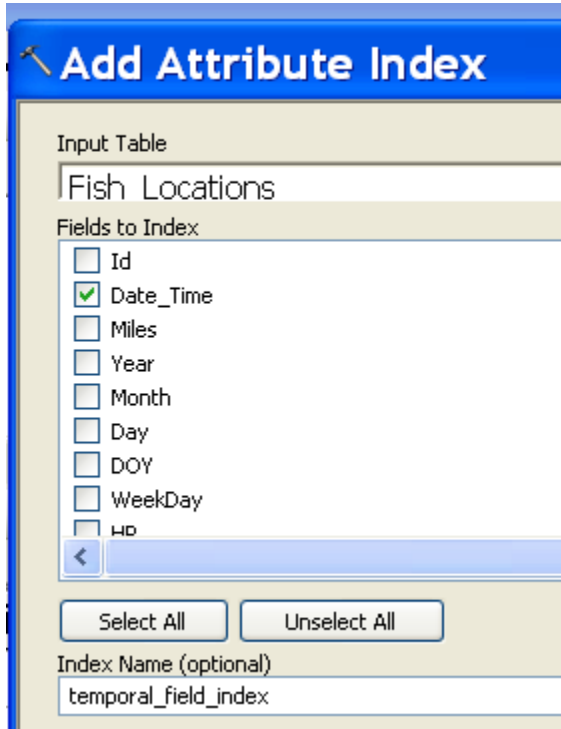
Date_Time	Year	Month	Day	DOY	WeekDay	HR	Minutes
1/16/2013 12:00:00 PM	2013	1	16	16	4	12	0
2/16/2013 12:00:00 PM	2013	2	16	47	7	12	0
4/16/2013 12:00:00 PM	2013	4	16	106	3	12	0
5/16/2013 12:00:00 PM	2013	5	16	136	5	12	0

WeekDay starts with a value of 1 on Sunday, so Jan 16 should be a Wednesday....check with a calendar...

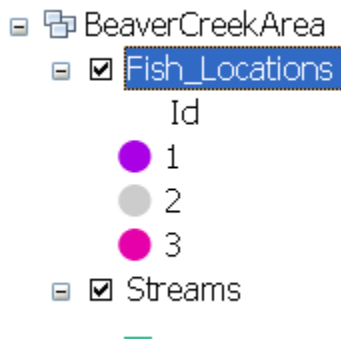


Temporal Layers

Since we have a date field, we can enable the layer property of time. First build and index on your date-time field (always an excellent practice).



In this example, we will work Symbolize your fish locations by ID.



And specify the temporal property of this layer...

Layer Properties

General Source Selection Display Symbology Fields Definition Query Labels Joins & Relates Time HTML Popu

Enable time on this layer

Time properties

Layer Time: Each feature has a single time field

Time Field: Date_Time Sample: 1/16/2013 12:00:00 PM

Field Format: <Date/ Time>

Time Step Interval: 9 Days

Layer Time Extent: 1/16/2013 12:00:00 PM To: 6/30/2013 12:00:00 PM Calculate

Data changes frequently so calculate time extent automatically.

Advanced settings


Time Zone: none

Values are adjusted for daylight savings

Time Offset: 0.00 Years

Display data cumulatively

Open the time slider...

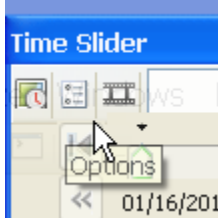


Time Slider

Open the Time Slider window to control the time period represented by the data in this map.

Disabled if none of the layers in your map have time properties enabled.

Press F1 for more help.



And set your time to display on a monthly step

Time Slider Options

Time Display | Time Extent | Playback | Other

Time zone: <None> Adjust for daylight saving changes

Time step interval: 1.0 Months

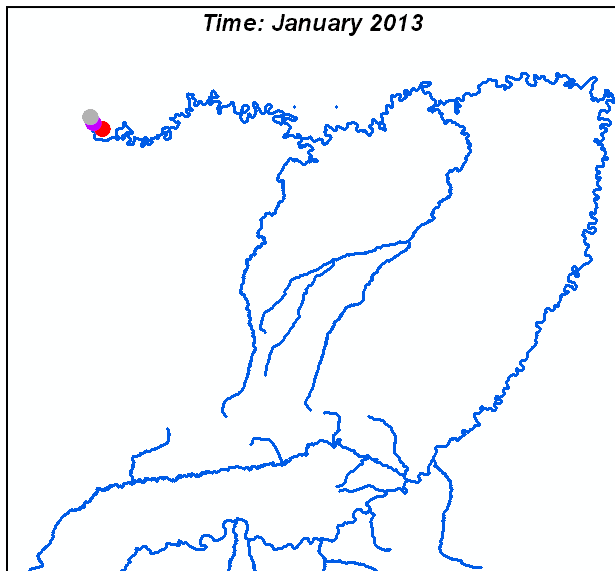
Time window: 0.0 Months

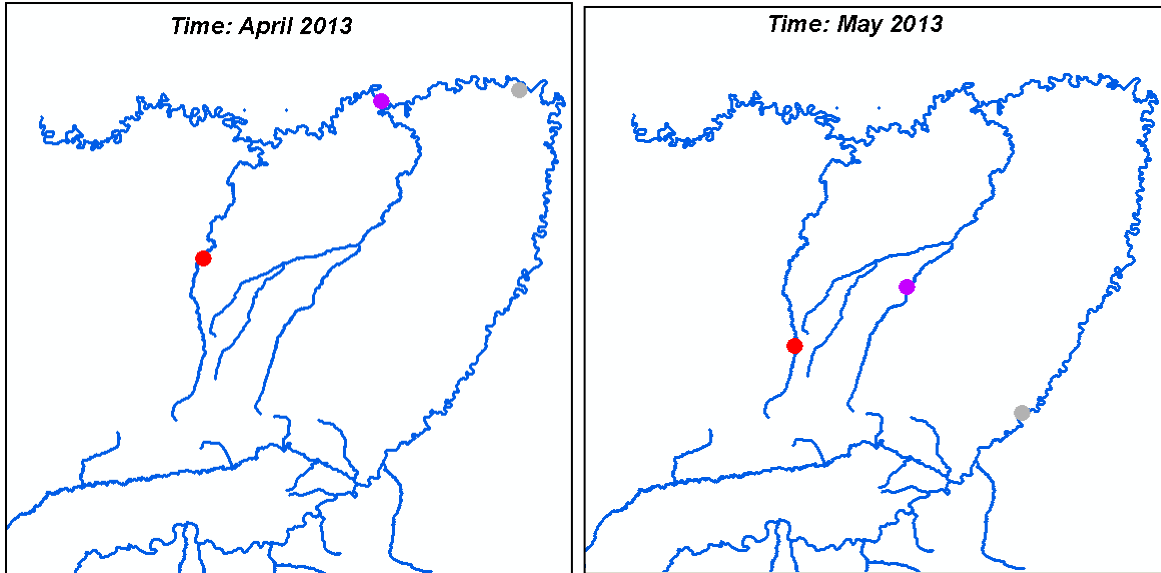
Time window options: Display data for entire time window

Display date format: September 2013 (MMMM yyyy)

Display time format: <none>

Show time on map display





Distance and Days Between Locations

Since we have a date field and a Miles field, we can compute the upstream distance and days between fish locations...

Id	Miles	Date_Time *
1	3.2159	1/16/2013 12:00:00 PM
2	1.3794	1/16/2013 12:00:00 PM
3	0.3875	1/16/2013 12:00:00 PM
4	10.0000	2/10/2013 12:00:00 PM

The first locations are all on January 16, so use the Day of Year (DOY) field and compute Days:

Date_Time *	DOY	Days
1/16/2013 12:00:00 PM	16	0
1/16/2013 12:00:00 PM	16	0
1/16/2013 12:00:00 PM	16	0
2/16/2013 12:00:00 PM	47	31
2/16/2013 12:00:00 PM	47	31
4/16/2013 12:00:00 PM	106	90
4/16/2013 12:00:00 PM	106	90
4/16/2013 12:00:00 PM	106	90
5/16/2013 12:00:00 PM	136	120
5/16/2013 12:00:00 PM	136	120
5/16/2013 12:00:00 PM	136	120
6/21/2013 12:00:00 PM	172	156

Add a double precision field and compute miles traveled from the first location...

Id	Miles	Days	MilesTraveled
1	3.2159	0	0.0
1	42.0889	31	38.9
1	81.9399	90	78.7
1	94.6574	120	91.4
2	1.3794	0	0.0
2	57.078	156	55.7
2	83.0746	90	81.7
2	115.237	120	113.9
2	128.879	156	127.5
3	0.3875	0	0.0
3	63.7416	31	63.4
3	107.8826	90	107.5

(0 out of 15 Selected)