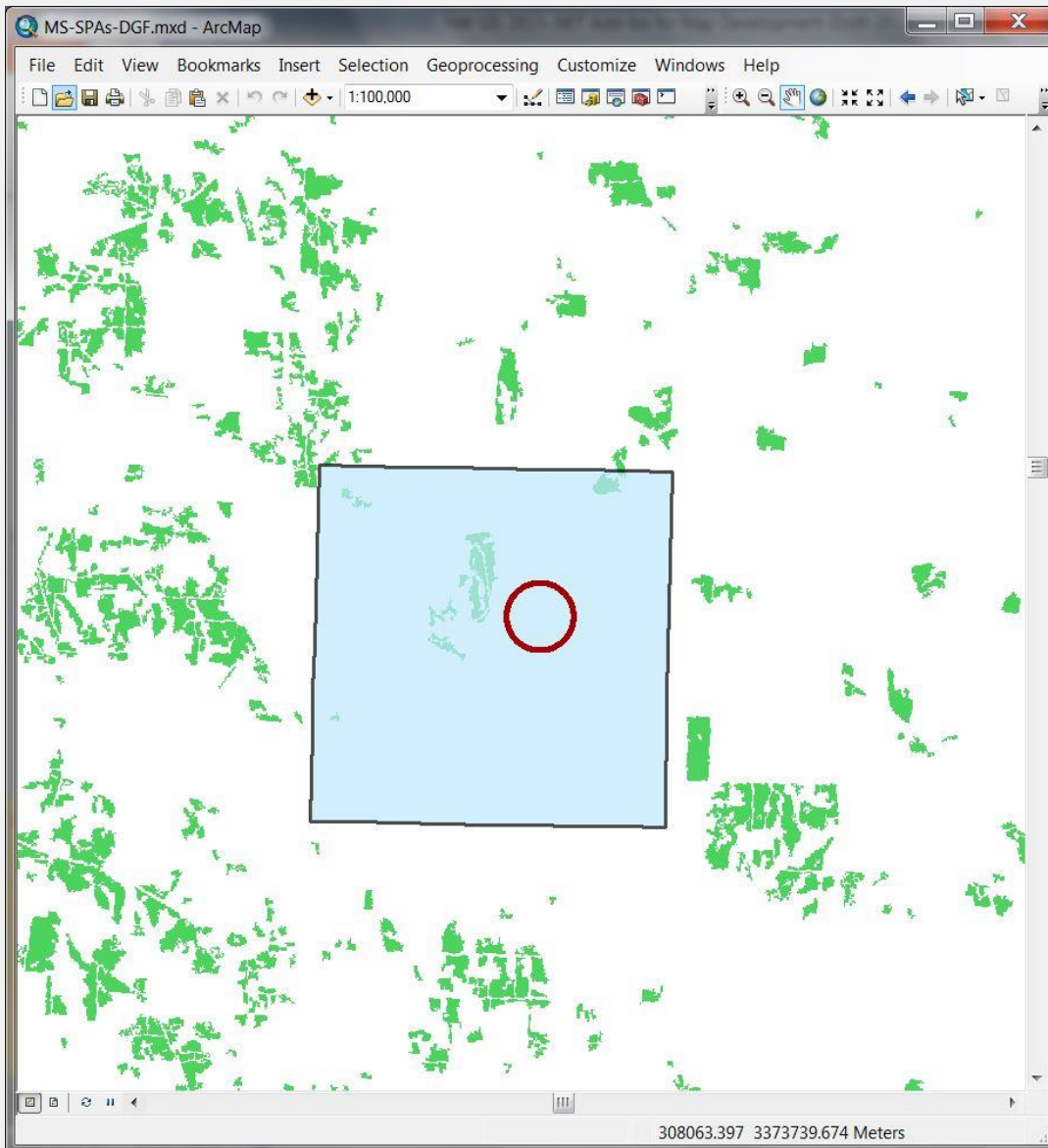


# Species Protection Area Development with .NET

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# Species Protection Area Tools – Primary Area



SPA Tools

SPA Development

#	Unit ID	SPAs Created	Primary SPA Found	QC Status
1	1	1	1	0
2	2	1	1	0
3	3	1	1	0
4	4	1	1	0
5	5	1	1	0
6	6	1	1	0
7	8	0	0	0
8	9	0	0	0
9	10	0	0	0
10	11	1	1	0
11	13	1	1	0

State: MS

Units: < > Load Filter: None Use Selection

Current: 1 Count: 13 w/SPAs: 9 Zoom To UTM Info

SPAs: Create Set Attributes Identify Primary Apply to all

Reset Data Checks Create Buffered Unit

QC Status: 0 Assign Create ZS Tables Create NLCD tables

Start Point: Get Use point

Sel. pt at X: 8 Y: 8 Use Outside %:

Shift Limit X: Y: Use Allowable spill %: 0.001

Sel. pt adj. factor X: 1.00 Y: 1.00 Use

Sel. pts rotation angle: 0 Use

Sections: Buffer Distance: Create Secs. Get Position: SW Set Corner

Reset Create Q. Secs Create SPA-Sec. Sel

#	ID	Manual Primary	Auto Primary	Unit Count	C81 Area	C82 Area	C81 + C82 Area	Rejected	Rejection Reasons
5	5	0	0	2	1095300	67500	1162800	False	
6	6	1	1	2	827100	67500	894600	False	
7	101	-1	-1	2	-1	-1	-1	True	Unit buffer spill; Unit buffer spill - Y
8	102	-1	-1	2	-1	-1	-1	True	Unit buffer spill; Unit buffer spill - X
9	103	-1	-1	2	-1	-1	-1	True	Unit buffer spill; Unit buffer spill - X

Messages

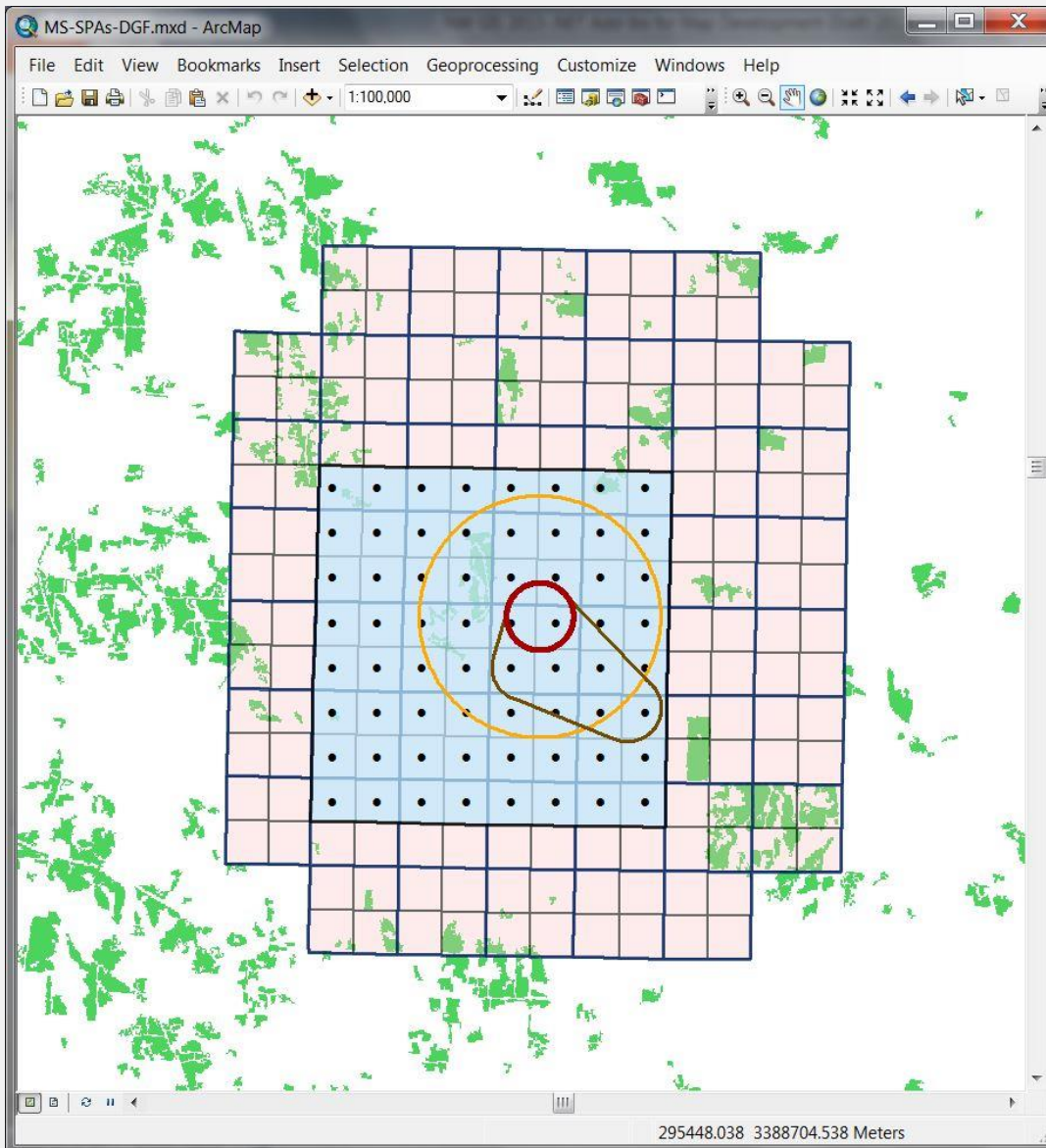
Clear Messages

Reset Form

Goal: define protection areas for species habitat locations according to rules that vary from state to state. Example:

- U.S. Fish and Wildlife Service Critical Habitat (CH) locations for Dusky Gopher Frog in Mississippi
- Polygon of defined maximum size positioned such that
  - number of overlapping CH locations is maximized
  - area of agricultural land cover is minimized
- Polygons based on aggregation of selected quarter sections

# Species Protection Area Tools – Area Construction



SPA Tools

SPA Development

#	Unit ID	SPAs Created	Primary SPA Found	QC Status
1	1	1	1	0
2	2	1	1	0
3	3	1	1	0
4	4	1	1	0
5	5	1	1	0
6	6	1	1	0
7	8	0	0	0
8	9	0	0	0
9	10	0	0	0
10	11	1	1	0
11	13	1	1	0

State: MS

Units: < > Load Filter: None Use Selection

Current: 1 Count: 13 w/SPAs: 9 Zoom To UTM Info

SPAs: Create Set Attributes Identify Primary Apply to all

Reset Data Checks Create Buffered Unit

QC Status: 0 Assign Create ZS Tables Create NLCD tables

Start Point: Get Use point

Sel. pt at X: 8 Y: 8 Use Outside %:

Shift Limit X: Y: Use Allowable spill %: 0.001

Sel. pt adj. factor X: 1.00 Y: 1.00 Use

Sel. pts rotation angle: 0 Use

Sections: Buffer Distance: Create Secs. Get Position: SW Set Corner

Reset Create Q. Secs. Create SPA-Sec. Sel

#	ID	Manual Primary	Auto Primary	Unit Count	C81 Area	C82 Area	C81 + C82 Area	Rejected	Rejection Reasons
5	5	0	0	2	1095300	67500	1162800	False	
6	6	1	1	2	827100	67500	894600	False	
7	101	-1	-1	2	-1	-1	-1	True	Unit buffer spill; Unit buffer spill - Y
8	102	-1	-1	2	-1	-1	-1	True	Unit buffer spill; Unit buffer spill - X
9	103	-1	-1	2	-1	-1	-1	True	Unit buffer spill; Unit buffer spill - X

Messages

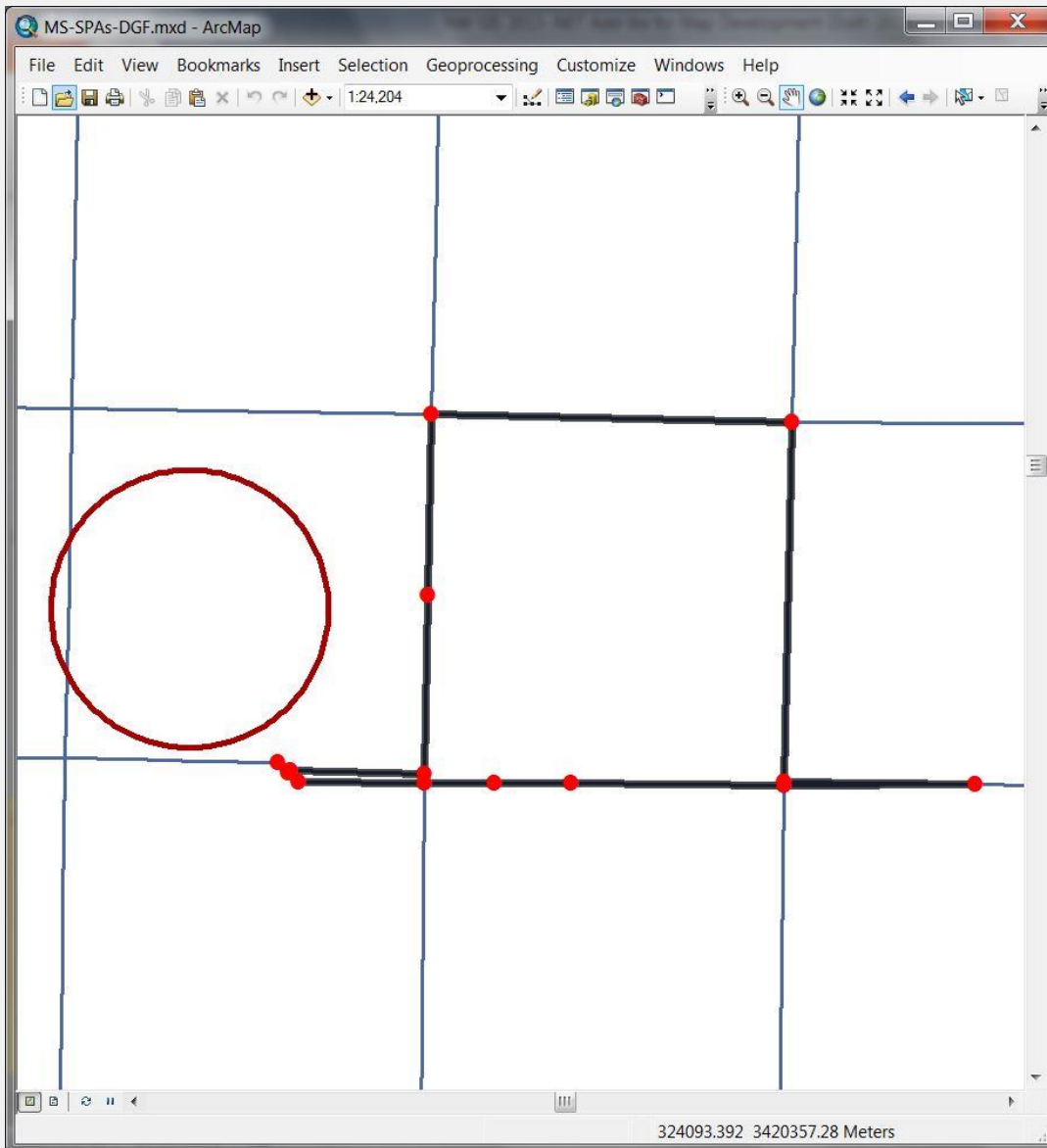
Clear Messages

Reset Form

## Key datasets:

- Public Land Survey Sections
- Derived quarter sections
- Critical Habitat locations
- Buffered Critical Habitat locations
- Selection points
- 2006 National Land Cover Data (NLCD)

# Species Protection Area Tools – Challenges



The SPA Tools window is shown with the 'SPA Development' tab selected. It contains a table with columns: #, Unit ID, SPAs Created, Primary SPA Found, and QC Status. The table has 13 rows of data. Below the table are buttons for 'Display Primary', 'Zoom To', 'Clear Details', 'Delete', and 'Copy'. To the right of the table are various controls for 'State', 'Units', 'Current', 'Count', 'w/SPAs', 'Filter', 'Zoom To', 'UTM Info', 'SPAs', 'Create', 'Set Attributes', 'Identify Primary', 'Apply to all', 'Reset Data', 'Checks', 'Create Buffered Unit', 'QC Status', 'Assign', 'Create ZS Tables', 'Create NLCD tables', 'Start Point', 'Get', 'Use point', 'Sel. pt at X', 'Y', 'Use', 'Outside %', 'Shift Limit X', 'Y', 'Use', 'Allowable spill %', 'Sel. pt adj. factor X', 'Y', 'Use', 'Sel. pts rotation angle', 'Use', 'Sections', 'Buffer Distance', 'Create Secs', 'Get', 'Position', 'SW', 'Set Corner', 'Reset', 'Create Q. Secs', 'Create SPA-Sec. Sel'. At the bottom is a 'Messages' panel with 'Clear Messages' and 'Reset Form' buttons.

#	Unit ID	SPAs Created	Primary SPA Found	QC Status
4	4	1	1	0
5	5	1	1	0
6	6	1	1	0
7	8	0	0	0
8	9	0	0	0
9	10	0	0	0
10	11	1	1	0
11	13	1	1	0
12	14	0	0	0
13	15	1	1	0

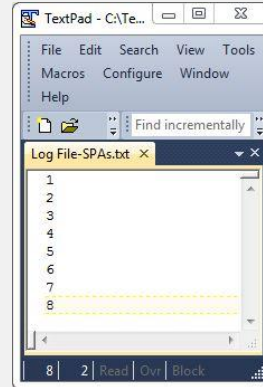
- Quarter section creation problem due to inability to automatically find corners
- Manually define corners and pass to procedure



# Species Protection Area Tools – Operation

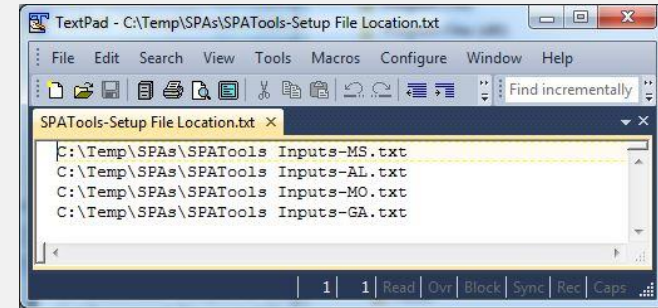
The SPA Tools application window displays the SPA Development tab. It includes a table of units with columns for Unit ID, SPAs Created, Primary SPA Found, and QC Status. Below the table, there are various configuration options and buttons for creating and managing SPAs.

#	Unit ID	SPAs Created	Primary SPA Found	QC Status
1	1	1	1	0
2	2	1	1	0
3	3	1	1	0
4	4	1	1	0
5	5	1	1	0
6	6	1	1	0
7	8	0	0	0
8	9	0	0	0
9	10	0	0	0
10	11	1	1	0
11	13	1	1	0

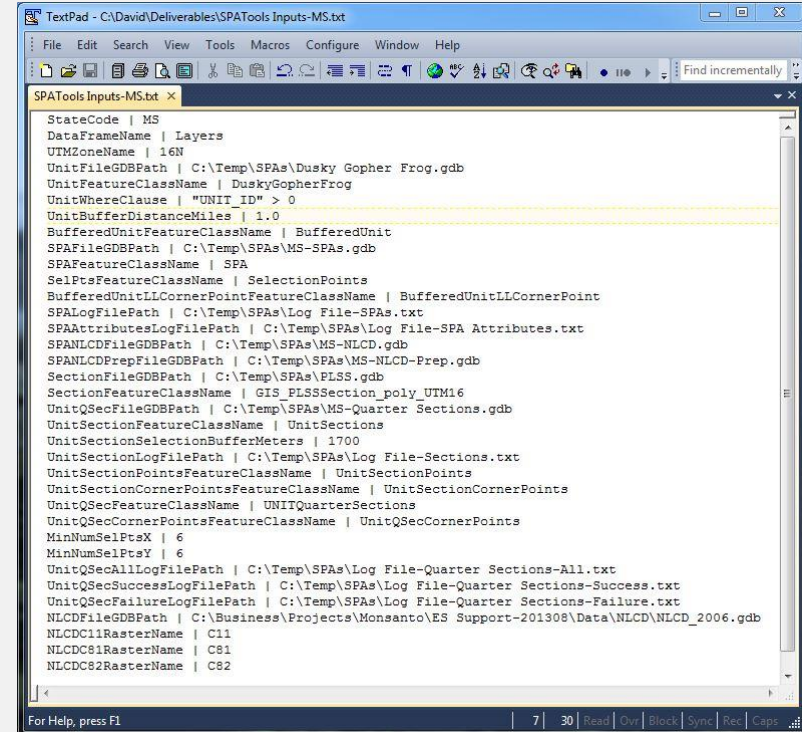


Log file

Setup file location file



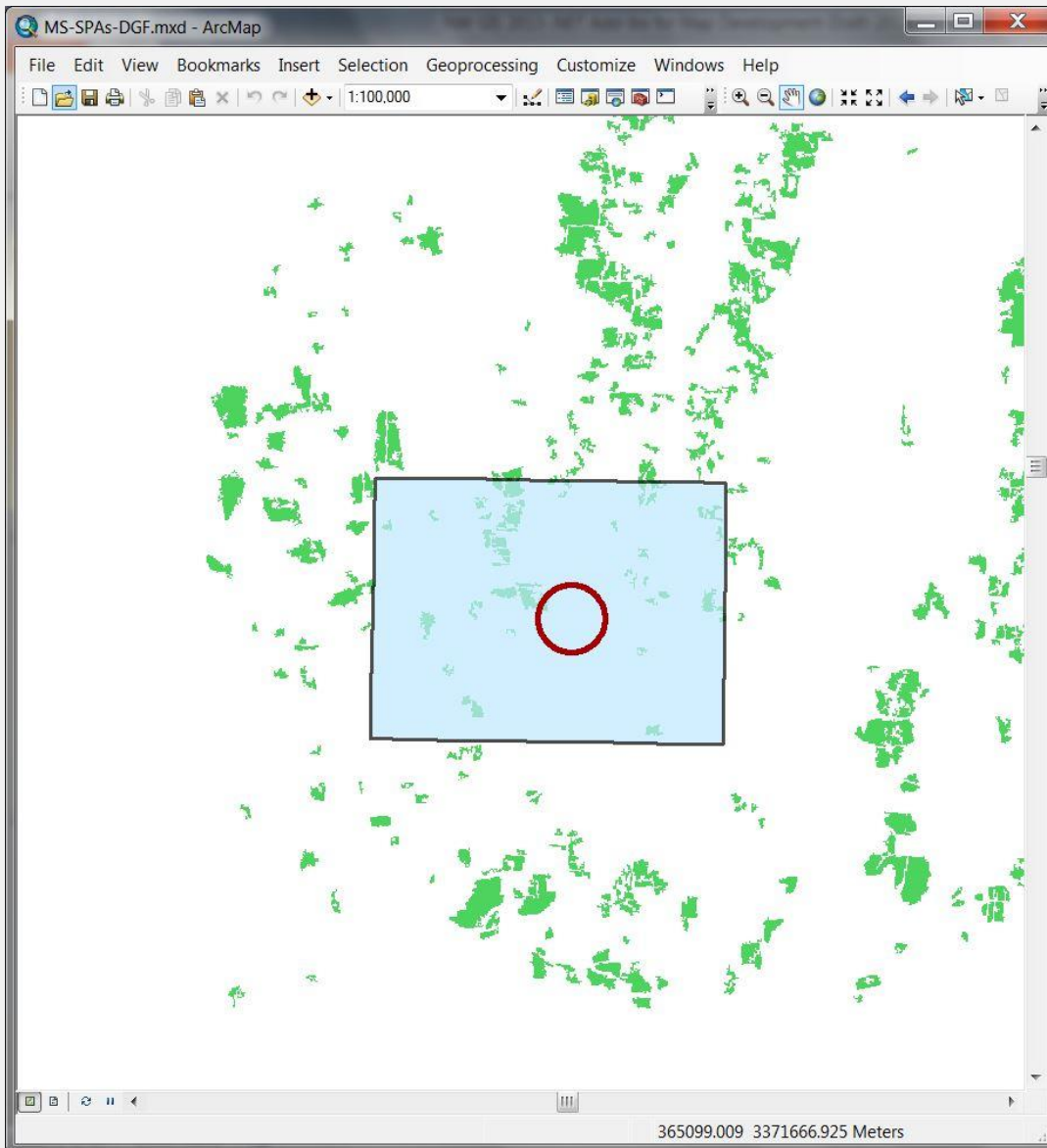
Setup file



## Deliverables

Name	Date modified	Type	Size
Code	10/13/2013 2:17 PM	File folder	
MS-Quarter Sections.gdb	10/13/2013 2:25 PM	File folder	
MS-SPAs.gdb	10/13/2013 2:25 PM	File folder	
MS-SPAs-DGF.mxd	10/13/2013 1:18 PM	ArcGIS ArcMap Document	2,439 KB
SPAs-MS-DGF-20131013-1420.zip	10/13/2013 2:20 PM	Compressed (zipped) Folder	1,078 KB
SPATools Inputs-MS.txt	10/13/2013 2:11 PM	TXT File	2 KB
SPATools-20131013-1415.esriaddin	10/13/2013 1:18 PM	Esri AddIn File	265 KB

# Species Protection Area Tools – Deliverable



SPA Tools

SPA Development

#	Unit ID	SPAs Created	Primary SPA Found	QC Status
4	4	1	1	0
5	5	1	1	0
6	6	1	1	0
7	8	0	0	0
8	9	0	0	0
9	10	0	0	0
10	11	1	1	0
11	13	1	1	0
12	14	0	0	0
13	15	1	1	0

State: MS

Units: < > Load Filter: None Use Selection

Current: 13 Count: 13 w/SPAs: 9 Zoom To

SPAs

Start Point: ☐ Use point

Sel. pt. at X: 8 Y: 6 ☒ Use

Shift Limit X: - Y: - ☐ Use

Sel. pt. adj. factor X: 1.00 Y: 1.00 ☐ Use

Sel. pts rotation angle: 0 ☐ Use

Allowable spill %: 0.001

< > Load Display Primary: 2 Set Primary

Display Primary Zoom To Clear Details

#	ID	Manual Primary	Auto Primary	Unit Count	C81 Area	C82 Area	C81 + C82 Area	Rejected	Rejection Reasons
1	1	0	0	1	1314900	179100	1494000	False	
2	2	1	1	1	1188900	179100	1368000	False	
3	101	-1	-1	1	-1	-1	-1	True	Unit buffer spill; Unit buffer spill - Y
4	102	-1	-1	1	-1	-1	-1	True	Unit buffer spill; Unit buffer spill - X

Messages

Clear Messages

Reset Form

- Read-only version of tools (functionality hidden as required)
- Tools appearance is a low priority
- Main priority is output data