

From: [Marshall, Michael E](#)
To: [Reid, Rebekah N](#); [Endries, Mark](#); [Stephanie DeMay](#); [Becker, Drew N](#)
Subject: SSA progress
Date: Tuesday, February 27, 2018 12:28:44 PM
Importance: High

Hello all,

Just an FYI....I haven't done much more than brainstorm possible approaches to future conditions, although much of that we have talked about over the phone. I just wanted to give you a heads up that the RCW SSA is eating me up right now, and will have me flying to ATL tomorrow through Friday. So, this SSA has temporarily taken a backseat....but, I think we are ok given we wanted to send the entire draft, rather than just the future section, next. Gives us some extra time to pull it all together.

I'm thinking from our discussions, our general approach will be:

Development will be our primary threat to model forward (SLEUTH Model)....impacts to HENA will be discussed in two ways: current populations that will be developed, or partially developed (percent increase in development from now to 2040), and projections of development related to potential habitat identified by the habitat model.

Climate change....this will be very general....discussion of how climate change could exacerbate the effects of development, but no real quantification of temp, precip, etc....might qualitatively build it into scenarios....

I'd also like to discuss a potential targeted conservation scenario that Steph and I have brainstormed for another plant species....it involves use of SECAS blueprint to prioritize conservation into the future....more on this later....maybe on our next Core Team Call.

Speaking of which....Mark: when are you back and available for a Core Team call?

Sorry for my rambling.....Thanks!

Mike

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Mike Marshall
SSA Program Specialist
U.S. Fish and Wildlife Service Region 4
Cell: 512-461-6217
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Work Schedule 1st Week

Monday-Thursday --> In Office 7:30-4:30 CST

Work Schedule 2nd Week

Monday-Thursday --> In Office 7:30-4:30 CST

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From: [Endries, Mark](#)
To: [Marshall, Michael E](#)
Cc: [Reid, Rebekah N](#); [Stephanie DeMay](#); [Becker, Drew N](#)
Subject: Re: SSA progress
Date: Tuesday, February 27, 2018 1:08:37 PM
Attachments: [Sleuth 2040 area estimates by HENA population.xlsx](#)
[Sleuth 2050 area estimates by HENA population.xlsx](#)
Importance: High

Hi Mike,

Timely e-mail. I was getting ready to send one with the SLEUTH data summaries.

I'll be back in the office March 12th. I could potentially meet via conference call next week if needed, I'm at NCTC and my time is somewhat flexible. Driving Monday and Friday all day (7 hour trips), easy to call in then. Teaching classes Tuesday and Wednesday afternoons and not able to meet then. Likely could be available mornings.

I've summarized the SLEUTH data for 2040 and 2050 impacts by HENA population. I couldn't remember which year which is why there are two. I thought 2050, Rebekah had it correct with 2040. Anyway, I just ran both and summarized both. The spreadsheets have 3 individual tabs. A summary in square meters, a summary in acres, and a percent of total area summary. For the acres and percent total tables I also shaded the 0.00 values, I thought the table was hard to read without it. The Acres and Percent Total tab cell values are formulas, so careful with moving any data around. Anyway, have a look and let me know if you have any questions. Also let me know if you'd like the data summarized in any other way.

Thanks!

Mark

Mark Endries

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Asheville, NC 28801
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Mobile: 828.215.1740

On Tue, Feb 27, 2018 at 12:28 PM, Marshall, Michael <michael_marshall@fws.gov> wrote:

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Speaking of which....Mark: when are you back and available for a Core Team call?

Sorry for my rambling.....Thanks!

Mike

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Population Number	Total Area	Already classed Urban	2.5% chance	5% chance	10% chance
1	30,711.68	125	0	51	595
2	36,339.92	4,115	0	0	0
3	24,498.03	6,067	0	0	0
29	249,998.87	0	312	0	236
31	42,929.76	42,936	0	0	0
32	31,220.60	18,964	0	356	0
44	15,081.77	9,225	0	0	0
59	8,172.01	0	592	0	0
77	6,044.43	0	0	0	405
93	11,310.87	81	0	0	0
96	131,391.69	0	0	68	0
98	99,457.49	5,742	0	0	0
100	447,721.30	38,179	0	3,382	0
125	20,742.32	0	1,071	109	0
154	33,924.92	0	0	0	0
176	39,787.48	354	13	0	0
177	26,954.54	6,830	0	4,611	607
178	376,780.11	107,721	0	0	0
179	15,145.19	12,882	0	0	0
206	17,346.37	70	0	0	0
208	55,360.87	9,581	0	0	0
214	95,316.82	3,443	0	2,149	757
216	90,970.88	3,960	0	10,146	4,645
247	58,377.51	2,927	609	9	2,139
248	25,486.16	7,339	0	0	0
252	39,595.93	25,131	0	0	3,175
276	123,688.78	749	0	2,438	3,840
279	1,951.66	0	0	0	0
287	7,901.78	0	0	0	0
291	11,093.19	3,666	0	0	0
292	15,611.18	0	0	3,908	1,732
295	23,486.01	4,275	0	0	0
302	120,342.06	1,757	0	0	84
306	7,804.66	0	0	0	0
312	6,535.27	0	0	0	6
316	43,177.80	8,662	0	0	0
317	584.73	583	0	0	0
318	5,396.86	5,383	0	0	0
320	125.52	124	0	0	0
321	12,761.89	10,949	0	0	0

20% chance	30% chance	40% chance	50% chance	60% chance	70% chance	80% chance	90% chance
0	0	122	181	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	2,279	1,785	0	0	80	0	120
0	0	0	0	0	0	0	0
97	0	0	0	0	0	0	6,365
0	291	0	0	1,976	0	40	0
0	20	0	2,473	132	27	1,070	0
0	0	1	1,836	0	0	91	371
0	0	0	0	0	0	0	0
0	0	0	0	0	219	0	0
0	0	0	0	0	0	0	0
1,239	4,331	1,563	3,842	1,702	3,291	5,574	4,641
2,559	216	0	4,357	4,988	4,517	212	1,171
77	274	0	1,649	1,442	0	0	126
1,663	0	1,497	0	861	0	0	0
38	2,182	0	1,169	96	1,830	3,285	249
874	3,274	3,303	6,093	0	510	10,527	9,028
0	0	0	0	0	1,252	173	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
6,388	622	2,146	0	886	3,076	3,573	7,571
5,139	11,902	1,467	5,400	5,081	405	2,740	0
2,068	0	3,224	1,581	1,531	1,247	0	3,181
0	0	0	0	0	0	0	821
439	82	0	368	0	0	0	1,505
6,787	1,869	433	0	806	0	447	2,317
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	909
0	0	600	1,051	0	2,486	1,433	1,578
0	2,959	0	0	0	0	0	0
577	0	0	2,998	5,778	0	0	800
0	0	426	464	0	0	3,068	3,074
0	0	0	0	4	362	1,179	3,895
603	0	2,335	0	418	1,516	1,652	0
0	0	3,319	521	3,285	7,480	0	7,200
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0

95% chance 97.5% chance 100% chance

0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	706
0	0	0
0	0	0
0	0	3,422
5,683	0	25,314
116	1,424	23,942
3,048	576	0
0	1,383	0
0	0	0
0	0	0
28	1,431	36
2,569	2,240	9,952
776	0	74
0	1,083	16,203
0	0	45,778
1,974	10,002	47,696
2,392	0	16,072
0	0	11,653
5	6	13,516
0	0	0
12	0	0
0	0	1,578
0	0	1,126
283	0	0
0	0	2,872
2,817	58	0
932	2,805	4,785
611	0	1,748
0	0	0
3,058	0	8,924
0	0	0
0	0	0
0	0	0
0	0	0

Population Number	Total Area	Already classed Urban	2.5% chance	5% chance	10% chance	20% chance
1	7.59	0.03	0.00	0.01	0.15	0.00
2	8.98	1.02	0.00	0.00	0.00	0.00
3	6.05	1.50	0.00	0.00	0.00	0.00
29	61.78	0.00	0.08	0.00	0.06	0.00
31	10.61	10.61	0.00	0.00	0.00	0.00
32	7.71	4.69	0.00	0.09	0.00	0.02
44	3.73	2.28	0.00	0.00	0.00	0.00
59	2.02	0.00	0.15	0.00	0.00	0.00
77	1.49	0.00	0.00	0.00	0.10	0.00
93	2.79	0.02	0.00	0.00	0.00	0.00
96	32.47	0.00	0.00	0.02	0.00	0.00
98	24.58	1.42	0.00	0.00	0.00	0.00
100	110.63	9.43	0.00	0.84	0.00	0.31
125	5.13	0.00	0.26	0.03	0.00	0.63
154	8.38	0.00	0.00	0.00	0.00	0.02
176	9.83	0.09	0.00	0.00	0.00	0.41
177	6.66	1.69	0.00	1.14	0.15	0.01
178	93.10	26.62	0.00	0.00	0.00	0.22
179	3.74	3.18	0.00	0.00	0.00	0.00
206	4.29	0.02	0.00	0.00	0.00	0.00
208	13.68	2.37	0.00	0.00	0.00	0.00
214	23.55	0.85	0.00	0.53	0.19	1.58
216	22.48	0.98	0.00	2.51	1.15	1.27
247	14.43	0.72	0.15	0.00	0.53	0.51
248	6.30	1.81	0.00	0.00	0.00	0.00
252	9.78	6.21	0.00	0.00	0.78	0.11
276	30.56	0.19	0.00	0.60	0.95	1.68
279	0.48	0.00	0.00	0.00	0.00	0.00
287	1.95	0.00	0.00	0.00	0.00	0.00
291	2.74	0.91	0.00	0.00	0.00	0.00
292	3.86	0.00	0.00	0.97	0.43	0.00
295	5.80	1.06	0.00	0.00	0.00	0.14
302	29.74	0.43	0.00	0.00	0.02	0.00
306	1.93	0.00	0.00	0.00	0.00	0.00
312	1.61	0.00	0.00	0.00	0.00	0.15
316	10.67	2.14	0.00	0.00	0.00	0.00
317	0.14	0.14	0.00	0.00	0.00	0.00
318	1.33	1.33	0.00	0.00	0.00	0.00
320	0.03	0.03	0.00	0.00	0.00	0.00
321	3.15	2.71	0.00	0.00	0.00	0.00

[illegible]

97.5% chance 100% chance

0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.17
0.00	0.00
0.00	0.00
0.00	0.85
0.00	6.26
0.35	5.92
0.14	0.00
0.34	0.00
0.00	0.00
0.00	0.00
0.35	0.01
0.55	2.46
0.00	0.02
0.27	4.00
0.00	11.31
2.47	11.79
0.00	3.97
0.00	2.88
0.00	3.34
0.00	0.00
0.00	0.00
0.00	0.39
0.00	0.28
0.00	0.00
0.00	0.71
0.01	0.00
0.69	1.18
0.00	0.43
0.00	0.00
0.00	2.21
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

Population Number	Total Area	Already classed Urban	2.5% chance	5% chance	10% chance	20% chance
1	30,711.68	0.41%	0.00%	0.17%	1.94%	0.00%
2	36,339.92	11.32%	0.00%	0.00%	0.00%	0.00%
3	24,498.03	24.77%	0.00%	0.00%	0.00%	0.00%
29	249,998.87	0.00%	0.12%	0.00%	0.09%	0.00%
31	42,929.76	100.01%	0.00%	0.00%	0.00%	0.00%
32	31,220.60	60.74%	0.00%	1.14%	0.00%	0.31%
44	15,081.77	61.17%	0.00%	0.00%	0.00%	0.00%
59	8,172.01	0.00%	7.24%	0.00%	0.00%	0.00%
77	6,044.43	0.00%	0.00%	0.00%	6.70%	0.00%
93	11,310.87	0.72%	0.00%	0.00%	0.00%	0.00%
96	131,391.69	0.00%	0.00%	0.05%	0.00%	0.00%
98	99,457.49	5.77%	0.00%	0.00%	0.00%	0.00%
100	447,721.30	8.53%	0.00%	0.76%	0.00%	0.28%
125	20,742.32	0.00%	5.16%	0.53%	0.00%	12.34%
154	33,924.92	0.00%	0.00%	0.00%	0.00%	0.23%
176	39,787.48	0.89%	0.03%	0.00%	0.00%	4.18%
177	26,954.54	25.34%	0.00%	17.11%	2.25%	0.14%
178	376,780.11	28.59%	0.00%	0.00%	0.00%	0.23%
179	15,145.19	85.06%	0.00%	0.00%	0.00%	0.00%
206	17,346.37	0.40%	0.00%	0.00%	0.00%	0.00%
208	55,360.87	17.31%	0.00%	0.00%	0.00%	0.00%
214	95,316.82	3.61%	0.00%	2.25%	0.79%	6.70%
216	90,970.88	4.35%	0.00%	11.15%	5.11%	5.65%
247	58,377.51	5.01%	1.04%	0.02%	3.66%	3.54%
248	25,486.16	28.80%	0.00%	0.00%	0.00%	0.00%
252	39,595.93	63.47%	0.00%	0.00%	8.02%	1.11%
276	123,688.78	0.61%	0.00%	1.97%	3.10%	5.49%
279	1,951.66	0.00%	0.00%	0.00%	0.00%	0.00%
287	7,901.78	0.00%	0.00%	0.00%	0.00%	0.00%
291	11,093.19	33.05%	0.00%	0.00%	0.00%	0.00%
292	15,611.18	0.00%	0.00%	25.03%	11.09%	0.00%
295	23,486.01	18.20%	0.00%	0.00%	0.00%	2.46%
302	120,342.06	1.46%	0.00%	0.00%	0.07%	0.00%
306	7,804.66	0.00%	0.00%	0.00%	0.00%	0.00%
312	6,535.27	0.00%	0.00%	0.00%	0.09%	9.23%
316	43,177.80	20.06%	0.00%	0.00%	0.00%	0.00%
317	584.73	99.70%	0.00%	0.00%	0.00%	0.00%
318	5,396.86	99.74%	0.00%	0.00%	0.00%	0.00%
320	125.52	98.79%	0.00%	0.00%	0.00%	0.00%
321	12,761.89	85.79%	0.00%	0.00%	0.00%	0.00%

[illegible]

97.5% chance 100% chance

0.00%	0.00%
0.00%	0.00%
0.00%	0.00%
0.00%	0.00%
0.00%	0.00%
0.00%	0.00%
0.00%	4.68%
0.00%	0.00%
0.00%	0.00%
0.00%	30.25%
0.00%	19.27%
1.43%	24.07%
0.13%	0.00%
6.67%	0.00%
0.00%	0.00%
0.00%	0.00%
5.31%	0.13%
0.59%	2.64%
0.00%	0.49%
6.24%	93.41%
0.00%	82.69%
10.49%	50.04%
0.00%	17.67%
0.00%	19.96%
0.02%	53.03%
0.00%	0.00%
0.00%	0.00%
0.00%	80.85%
0.00%	14.25%
0.00%	0.00%
0.00%	18.40%
0.25%	0.00%
2.33%	3.98%
0.00%	22.40%
0.00%	0.00%
0.00%	20.67%
0.00%	0.00%
0.00%	0.00%
0.00%	0.00%
0.00%	0.00%

Population Number	Total Area	Already classed Urban	2.5% chance	5% chance	10% chance
1	30,711.68	125	0	446	1
2	36,339.92	4,115	0	0	0
3	24,498.03	6,067	0	0	0
23	5,665.57	0	810	3,761	1,036
29	249,998.87	0	0	2,584	0
31	42,929.76	42,936	0	0	0
32	31,220.60	18,964	0	0	0
44	15,081.77	9,225	0	0	0
59	8,172.01	0	0	0	0
77	6,044.43	0	0	0	981
93	11,310.87	81	0	0	0
96	131,391.69	0	3,578	4,548	5,175
98	99,457.49	5,742	1,853	0	1,755
99	346,641.70	0	77	0	0
100	447,721.30	38,179	3,002	789	2,123
125	20,742.32	0	0	0	0
154	33,924.92	0	1,253	232	374
176	39,787.48	354	0	8	478
177	26,954.54	6,830	0	309	731
178	376,780.11	107,721	2,233	527	753
179	15,145.19	12,882	0	0	0
206	17,346.37	70	0	0	0
208	55,360.87	9,581	0	0	0
214	95,316.82	3,443	437	17	0
216	90,970.88	3,960	223	2,389	2,458
247	58,377.51	2,927	2,177	3,618	44
248	25,486.16	7,339	0	0	0
252	39,595.93	25,131	0	0	0
276	123,688.78	749	0	2,235	0
279	1,951.66	0	0	0	0
287	7,901.78	0	0	0	0
291	11,093.19	3,666	0	0	0
292	15,611.18	0	550	3,594	3,908
293	7,805.53	0	0	296	0
295	23,486.01	4,275	0	0	0
302	120,342.06	1,757	1,265	3,438	2,191
306	7,804.66	0	0	0	0
312	6,535.27	0	0	0	0
316	43,177.80	8,662	0	0	0
317	584.73	583	0	0	0
318	5,396.86	5,383	0	0	0
320	125.52	124	0	0	0
321	12,761.89	10,949	0	0	0

20% chance	30% chance	40% chance	50% chance	60% chance	70% chance	80% chance	90% chance
594	0	0	102	0	544	0	0
0	0	0	76	0	0	0	0
0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0
1,307	101	0	236	0	0	3,920	144
0	0	0	0	0	0	0	0
0	356	0	97	0	0	0	0
0	0	0	0	0	0	291	1,976
0	0	592	2,085	20	145	132	270
855	21	0	0	405	0	1	1,836
0	0	0	0	0	0	0	0
188	609	68	0	0	0	0	0
32	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
847	0	1,540	0	3,185	1,231	2,977	4,335
0	0	0	1,071	3,694	5,234	766	5,242
1,548	1,430	0	60	0	77	0	274
0	1,764	0	13	0	901	762	1,497
1,877	794	1,459	1,988	0	645	1,175	2,176
1,931	0	0	0	0	874	6,577	6,093
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	334	14	246	1,886	2,302	3,860	3,231
4,806	52	6,793	0	1,446	6,082	1,676	15,824
1,302	0	0	0	9	2,139	1,126	4,166
0	0	0	0	0	0	0	0
4,389	0	0	3,175	439	0	82	368
8,107	4,179	1,757	433	7,743	303	1,380	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	600
3	0	14	1,571	0	3,055	48	0
0	0	0	0	0	0	0	0
0	0	0	0	577	0	0	8,776
0	0	0	84	0	0	0	890
0	0	0	0	0	0	0	0
0	0	0	0	0	6	603	0
0	0	0	0	0	0	0	4,585
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0

95% chance	97.5% chance	100% chance
303	0	0
0	0	0
0	0	0
0	0	0
80	120	0
0	0	0
0	0	6,365
40	0	706
1,070	0	0
91	371	0
0	0	3,422
219	0	30,997
0	0	25,482
0	0	0
4,134	5,307	11,823
3,323	1,257	144
3,091	0	126
861	0	0
222	4,893	1,840
10,655	6,253	17,918
1,252	949	74
0	0	17,286
0	0	45,778
520	1,622	73,156
12,442	0	25,180
812	3,467	14,914
0	0	14,348
0	1,505	0
524	0	0
0	0	1,578
0	909	1,126
3,537	1,176	2,118
0	0	2,872
0	0	0
0	800	2,875
0	3,068	11,596
0	4	7,795
0	2,335	3,586
6,476	7,144	15,582
0	0	0
0	0	0
0	0	0
0	0	0

Population Number	Total Area	Already classed Urban	2.5% chance	5% chance	10% chance	20% chance
1	7.59	0.03	0.00	0.11	0.00	0.15
2	8.98	1.02	0.00	0.00	0.00	0.00
3	6.05	1.50	0.00	0.00	0.00	0.00
23	1.40	0.00	0.20	0.93	0.26	0.00
29	61.78	0.00	0.00	0.64	0.00	0.32
31	10.61	10.61	0.00	0.00	0.00	0.00
32	7.71	4.69	0.00	0.00	0.00	0.00
44	3.73	2.28	0.00	0.00	0.00	0.00
59	2.02	0.00	0.00	0.00	0.00	0.00
77	1.49	0.00	0.00	0.00	0.24	0.21
93	2.79	0.02	0.00	0.00	0.00	0.00
96	32.47	0.00	0.88	1.12	1.28	0.05
98	24.58	1.42	0.46	0.00	0.43	0.01
99	85.66	0.00	0.02	0.00	0.00	0.00
100	110.63	9.43	0.74	0.19	0.52	0.21
125	5.13	0.00	0.00	0.00	0.00	0.00
154	8.38	0.00	0.31	0.06	0.09	0.38
176	9.83	0.09	0.00	0.00	0.12	0.00
177	6.66	1.69	0.00	0.08	0.18	0.46
178	93.10	26.62	0.55	0.13	0.19	0.48
179	3.74	3.18	0.00	0.00	0.00	0.00
206	4.29	0.02	0.00	0.00	0.00	0.00
208	13.68	2.37	0.00	0.00	0.00	0.00
214	23.55	0.85	0.11	0.00	0.00	0.00
216	22.48	0.98	0.06	0.59	0.61	1.19
247	14.43	0.72	0.54	0.89	0.01	0.32
248	6.30	1.81	0.00	0.00	0.00	0.00
252	9.78	6.21	0.00	0.00	0.00	1.08
276	30.56	0.19	0.00	0.55	0.00	2.00
279	0.48	0.00	0.00	0.00	0.00	0.00
287	1.95	0.00	0.00	0.00	0.00	0.00
291	2.74	0.91	0.00	0.00	0.00	0.00
292	3.86	0.00	0.14	0.89	0.97	0.00
293	1.93	0.00	0.00	0.07	0.00	0.00
295	5.80	1.06	0.00	0.00	0.00	0.00
302	29.74	0.43	0.31	0.85	0.54	0.00
306	1.93	0.00	0.00	0.00	0.00	0.00
312	1.61	0.00	0.00	0.00	0.00	0.00
316	10.67	2.14	0.00	0.00	0.00	0.00
317	0.14	0.14	0.00	0.00	0.00	0.00
318	1.33	1.33	0.00	0.00	0.00	0.00
320	0.03	0.03	0.00	0.00	0.00	0.00
321	3.15	2.71	0.00	0.00	0.00	0.00

[illegible]

97.5% chance 100% chance

0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.03	0.00
0.00	0.00
0.00	1.57
0.00	0.17
0.00	0.00
0.09	0.00
0.00	0.85
0.00	7.66
0.00	6.30
0.00	0.00
1.31	2.92
0.31	0.04
0.00	0.03
0.00	0.00
1.21	0.45
1.55	4.43
0.23	0.02
0.00	4.27
0.00	11.31
0.40	18.08
0.00	6.22
0.86	3.69
0.00	3.55
0.37	0.00
0.00	0.00
0.00	0.39
0.22	0.28
0.29	0.52
0.00	0.71
0.00	0.00
0.20	0.71
0.76	2.87
0.00	1.93
0.58	0.89
1.77	3.85
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

Population Number	Total Area	Already classed Urban	2.5% chance	5% chance	10% chance	20% chance
1	30,711.68	0.41%	0.00%	1.45%	0.00%	1.93%
2	36,339.92	11.32%	0.00%	0.00%	0.00%	0.00%
3	24,498.03	24.77%	0.00%	0.00%	0.00%	0.00%
23	5,665.57	0.00%	14.30%	66.38%	18.29%	0.09%
29	249,998.87	0.00%	0.00%	1.03%	0.00%	0.52%
31	42,929.76	100.01%	0.00%	0.00%	0.00%	0.00%
32	31,220.60	60.74%	0.00%	0.00%	0.00%	0.00%
44	15,081.77	61.17%	0.00%	0.00%	0.00%	0.00%
59	8,172.01	0.00%	0.00%	0.00%	0.00%	0.00%
77	6,044.43	0.00%	0.00%	0.00%	16.23%	14.15%
93	11,310.87	0.72%	0.00%	0.00%	0.00%	0.00%
96	131,391.69	0.00%	2.72%	3.46%	3.94%	0.14%
98	99,457.49	5.77%	1.86%	0.00%	1.76%	0.03%
99	346,641.70	0.00%	0.02%	0.00%	0.00%	0.00%
100	447,721.30	8.53%	0.67%	0.18%	0.47%	0.19%
125	20,742.32	0.00%	0.00%	0.00%	0.00%	0.00%
154	33,924.92	0.00%	3.69%	0.68%	1.10%	4.56%
176	39,787.48	0.89%	0.00%	0.02%	1.20%	0.00%
177	26,954.54	25.34%	0.00%	1.15%	2.71%	6.96%
178	376,780.11	28.59%	0.59%	0.14%	0.20%	0.51%
179	15,145.19	85.06%	0.00%	0.00%	0.00%	0.00%
206	17,346.37	0.40%	0.00%	0.00%	0.00%	0.00%
208	55,360.87	17.31%	0.00%	0.00%	0.00%	0.00%
214	95,316.82	3.61%	0.46%	0.02%	0.00%	0.00%
216	90,970.88	4.35%	0.25%	2.63%	2.70%	5.28%
247	58,377.51	5.01%	3.73%	6.20%	0.08%	2.23%
248	25,486.16	28.80%	0.00%	0.00%	0.00%	0.00%
252	39,595.93	63.47%	0.00%	0.00%	0.00%	11.08%
276	123,688.78	0.61%	0.00%	1.81%	0.00%	6.55%
279	1,951.66	0.00%	0.00%	0.00%	0.00%	0.00%
287	7,901.78	0.00%	0.00%	0.00%	0.00%	0.00%
291	11,093.19	33.05%	0.00%	0.00%	0.00%	0.00%
292	15,611.18	0.00%	3.52%	23.02%	25.03%	0.02%
293	7,805.53	0.00%	0.00%	3.79%	0.00%	0.00%
295	23,486.01	18.20%	0.00%	0.00%	0.00%	0.00%
302	120,342.06	1.46%	1.05%	2.86%	1.82%	0.00%
306	7,804.66	0.00%	0.00%	0.00%	0.00%	0.00%
312	6,535.27	0.00%	0.00%	0.00%	0.00%	0.00%
316	43,177.80	20.06%	0.00%	0.00%	0.00%	0.00%
317	584.73	99.70%	0.00%	0.00%	0.00%	0.00%
318	5,396.86	99.74%	0.00%	0.00%	0.00%	0.00%
320	125.52	98.79%	0.00%	0.00%	0.00%	0.00%
321	12,761.89	85.79%	0.00%	0.00%	0.00%	0.00%

[illegible]

97.5% chance 100% chance

0.00%	0.00%
0.00%	0.00%
0.00%	0.00%
0.00%	0.00%
0.05%	0.00%
0.00%	0.00%
0.00%	20.39%
0.00%	4.68%
0.00%	0.00%
6.14%	0.00%
0.00%	30.25%
0.00%	23.59%
0.00%	25.62%
0.00%	0.00%
1.19%	2.64%
6.06%	0.69%
0.00%	0.37%
0.00%	0.00%
18.15%	6.83%
1.66%	4.76%
6.27%	0.49%
0.00%	99.65%
0.00%	82.69%
1.70%	76.75%
0.00%	27.68%
5.94%	25.55%
0.00%	56.30%
3.80%	0.00%
0.00%	0.00%
0.00%	80.85%
11.50%	14.25%
10.60%	19.09%
0.00%	18.40%
0.00%	0.00%
3.41%	12.24%
2.55%	9.64%
0.05%	99.88%
35.73%	54.87%
16.55%	36.09%
0.00%	0.00%
0.00%	0.00%
0.00%	0.00%
0.00%	0.00%

From: [Marshall, Michael E](#)
To: [Endries, Mark](#)
Cc: [Reid, Rebekah N](#); [Stephanie DeMay](#); [Becker, Drew N](#)
Subject: Re: SSA progress
Date: Tuesday, February 27, 2018 1:22:15 PM
Importance: High

Excellent! Thanks Mark, this is great....I'll followup with a proposed Core Team call later.

Mike

On Tue, Feb 27, 2018 at 1:08 PM, Endries, Mark <mark_endries@fws.gov> wrote:

Hi Mike,

Timely e-mail. I was getting ready to send one with the SLEUTH data summaries.

I'll be back in the office March 12th. I could potentially meet via conference call next week if needed, I'm at NCTC and my time is somewhat flexible. Driving Monday and Friday all day (7 hour trips), easy to call in then. Teaching classes Tuesday and Wednesday afternoons and not able to meet then. Likely could be available mornings.

I've summarized the SLEUTH data for 2040 and 2050 impacts by HENA population. I couldn't remember which year which is why there are two. I thought 2050, Rebekah had it correct with 2040. Anyway, I just ran both and summarized both. The spreadsheets have 3 individual tabs. A summary in square meters, a summary in acres, and a percent of total area summary. For the acres and percent total tables I also shaded the 0.00 values, I thought the table was hard to read without it. The Acres and Percent Total tab cell values are formulas, so careful with moving any data around. Anyway, have a look and let me know if you have any questions. Also let me know if you'd like the data summarized in any other way.

Thanks!

Mark

Mark Endries

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Asheville, NC 28801
Office: 828.258.3939 ext. 231
Mobile: 828.215.1740

On Tue, Feb 27, 2018 at 12:28 PM, Marshall, Michael <michael_marshall@fws.gov> wrote:

Hello all,

Just an FYI....I haven't done much more than brainstorm possible approaches to future conditions, although much of that we have talked about over the phone. I just wanted to give you a heads up that the RCW SSA is eating me up right now, and will have me flying to ATL tomorrow through Friday. So, this SSA has temporarily taken a backseat....but, I think we are ok given we wanted to send the entire draft, rather than just the future section, next. Gives us some extra time to pull it all together.

I'm thinking from our discussions, our general approach will be:

Development will be our primary threat to model forward (SLEUTH Model)....impacts to HENA will be discussed in two ways: current populations that will be developed, or partially developed (percent increase in development from now to 2040), and projections of development related to potential habitat identified by the habitat model.

Climate change....this will be very general....discussion of how climate change could exacerbate the effects of development, but no real quantification of temp, precip, etc....might qualitatively build it into scenarios....

I'd also like to discuss a potential targeted conservation scenario that Steph and I have brainstormed for another plant species....it involves use of SECAS blueprint to prioritize conservation into the future....more on this later....maybe on our next Core Team Call.

Speaking of which....Mark: when are you back and available for a Core Team call?

Sorry for my rambling.....Thanks!

Mike

--

Mike Marshall
SSA Program Specialist
U.S. Fish and Wildlife Service Region 4
Cell: 512-461-6217
Alternate email: mmarshall@ag.tamu.edu

Work Schedule 1st Week

Monday-Thursday --> In Office 7:30-4:30 CST

Work Schedule 2nd Week

Monday-Thursday --> In Office 7:30-4:30 CST

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--

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