

Amelia/Powhatan, and Fort Pickett. Deciduous forest dominated with 33.6% of the land area (Table 34). Coniferous forest is the next most common land cover type followed by herbaceous and shrub. The other categories each account for less than 7% of the area.

The homogeneous filters reduced the assessable area greatly, leaving only 39.5% after the 3x3 filter (Table 35) and 17.9% after the 5x5 filter (Table 36). Mixed forest, shrub, and wetlands were the cover types with the greatest reduction in area after the filters were used. Of the 364 reference points used in the every-pixel accuracy assessment (Table 37), 162 were assessable after the 3x3 homogeneous filter (Table 39), and 82 were usable after the 5x5 homogeneous filter (Table 41). The overall accuracy increased from 47.5% in the every-pixel analysis (Table 38), to 66% following the 3x3 filter (Table 40), and finally to 80.5% with the 5x5 assessment (Table 42). Except for mixed forest producer's and wetland producer's, all of the accuracies increased. Mixed forest user's and wetland user's were not calculated at the 5x5 homogeneous level due to lack of points. The Kappa statistic increased after each filter, ending at 0.78 after the 5x5 procedure.

Scene 1535

Lake Gaston is the observable feature in the western part of scene 1535 (Figure 15). Dick Cross Wildlife Management Area, Great Dismal Swamp NWR and the overlap from previously classified scenes, and expert knowledge were all used in aggregating the 1535 hypercluster. The most prevalent land cover types included deciduous forest at 38.3%, herbaceous at 20.4%, and coniferous forest at 20.1% (Table 43).

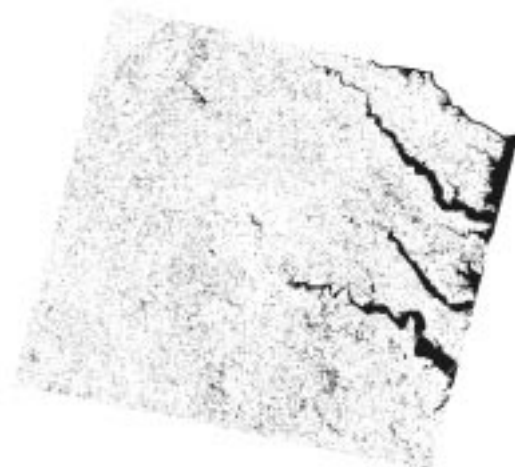
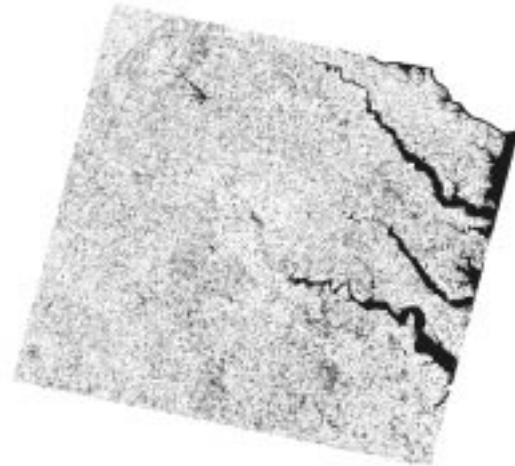
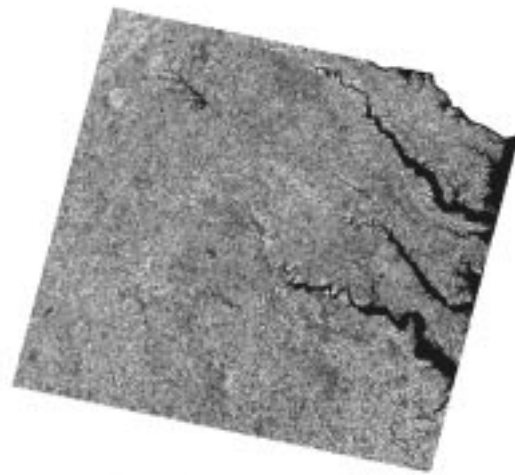


Figure 14. Classification output for scene 1534 full, 3x3 homogeneous, and 5x5 homogeneous.

Table 34. Total area and proportion of each land cover type for scene 1534 when analyzed at the every-pixel level.

	Pixels	Hectares	Acres	Proportion of Total Area
Deciduous Forest	11,546,500	1,039,185.0	2,567,826.0	0.336
Coniferous Forest	8,087,033	727,833.0	1,798,475.0	0.236
Mixed Forest	1,038,679	93,481.1	230,991.8	0.030
Shrub/Scrub	4,576,120	411,850.8	1,017,683.0	0.133
Herbaceous	5,217,229	469,550.6	1,160,260.0	0.152
Open Water	2,167,464	195,071.8	482,022.3	0.063
Disturbed	1,007,492	90,674.3	224,056.1	0.029
Coastal Wetland	697,797	62,801.7	155,183.1	0.020
Total	34,338,314	3,090,448.0	7,636,498.0	1.000

Table 35. Results of the 3x3 homogeneous filter on land cover types within scene 1534 in area, proportion of total area, and proportion remaining from the 1534 every-pixel level.

	Pixels	Hectares	Acres	Proportion of Total Area	Proportion of Every-Pixel
Deciduous Forest	4,868,965	438,206.9	1,082,809.0	0.359	0.422
Coniferous Forest	3,518,417	316,657.5	782,460.8	0.260	0.435
Mixed Forest	20,622	1,856.0	4,586.1	0.002	0.020
Shrub/Scrub	989,050	89,014.5	219,954.8	0.073	0.216
Herbaceous	1,870,193	168,317.4	415,912.2	0.138	0.358
Open Water	1,856,950	167,125.5	412,967.1	0.137	0.857
Disturbed	340,032	30,602.9	75,619.7	0.025	0.338
Coastal Wetland	82,630	7,436.7	18,376.1	0.006	0.118
Total	13,546,859	1,219,217.0	3,012,686.0	1.000	0.395

Table 36. Results of the 5x5 homogeneous filter on land cover types within scene 1534 in area, proportion of total area, and proportion remaining from 1534 every-pixel level.

	Pixels	Hectares	Acres	Proportion of Total Area	Proportion of Every-Pixel
Deciduous Forest	1,884,138	169,572.4	419,013.4	0.306	0.163
Coniferous Forest	1,599,540	143,958.6	355,721.7	0.260	0.198
Mixed Forest	172	15.5	38.2	0.000	0.000
Shrub/Scrub	235,037	21,153.3	52,269.9	0.038	0.051
Herbaceous	636,571	57,291.4	141,567.0	0.103	0.122
Open Water	1,672,194	150,497.5	371,879.2	0.271	0.771
Disturbed	119,651	10,768.6	26,609.2	0.019	0.119
Coastal Wetland	15,571	1,401.4	3,462.8	0.003	0.022
Total	6,162,874	554,658.7	1,370,562.0	1.000	0.179

Table 37. Error matrix for scene 1534 at the every-pixel level. Reference data (aerial videography points) are shown as column headings, while actual pixel values are displayed in the left column as row headings. The number of points classified correctly in each cover-type is in bold.

	Deciduous Forest	Coniferous Forest	Mixed Forest	Shrub/ Scrub	Herbaceous	Water Open	Disturbed	Coastal Wetland	Total
Deciduous Forest	68	22	24	11	12	4	1	3	145
Coniferous Forest	18	34	6	8	4	1	2	1	74
Mixed Forest	4	2	2		1		2		11
Shrub/Scrub	6	6	3	6	7		3		31
Herbaceous	3	2	1	1	23		2	2	34
Open Water	2					27		4	33
Disturbed	1			1	12		9		23
Coastal Wetland	3						1	4	8
Other	3	1	0	0	1	0	0	0	5
Total	108	67	36	27	60	32	20	14	364

Table 38. User's and producer's accuracy for each land cover class, along with overall accuracy and the Kappa statistic, for scene 1534 at the every-pixel level.

	User's	Producer's
Deciduous Forest	0.469	0.630
Coniferous Forest	0.459	0.507
Mixed Forest	0.182	0.056
Shrub/Scrub	0.194	0.222
Herbaceous	0.676	0.383
Open Water	0.818	0.844
Disturbed	0.391	0.450
Coastal Wetland	0.500	0.286
Overall Accuracy	0.475	
Kappa	0.440	

Table 39. Error matrix for scene 1534 at the 3x3 homogeneous level. Reference data (aerial videography points) are shown as column headings, while actual pixel values are displayed in the left column as row headings. The number of points classified correctly in each cover-type is in bold. The number of reference points for each category that falls on non-homogeneous pixels is shown in the last row.

	Deciduous Forest	Conifer Forest	Mixed Forest	Shrub/ Scrub	Herbaceous	Open Water	Disturbed	Coastal Wetland	Total
Deciduous Forest	37	9	6	7	4	3		3	69
Coniferous Forest	2	23	3	4		1		1	34
Mixed Forest									0
Shrub/Scrub	1	1		5	1				8
Herbaceous	3				10		1	1	15
Open Water						26			26
Disturbed					4		6		10
Coastal Wetland									0
Other									0
Total	43	33	9	16	19	30	7	5	162
Non- Homogeneous	65	34	27	11	41	2	13	9	202

Table 40. User's and producer's accuracy for each category, along with overall accuracy and Kappa statistic, for scene 1534 at the 3x3 homogeneous level.

	User's	Producer's
Deciduous Forest	0.536	0.860
Coniferous Forest	0.676	0.697
Mixed Forest		0.000
Shrub/Scrub	0.625	0.312
Herbaceous	0.667	0.526
Open Water	1.000	0.867
Disturbed	0.600	0.857
Coastal Wetland		0.000
Overall Accuracy	0.660	
Kappa	0.630	

Table 41. Error matrix for scene 1534 at the 5x5 homogeneous level. Reference data (aerial videography points) are shown as column headings, while actual pixel values are displayed in the left column as row headings. The number of points correctly classified in each cover-type is in bold. The number of reference points for each category that falls on non-homogeneous pixels is shown in the last row.

	Deciduous Forest	Coniferous Forest	Mixed Forest	Shrub/ Shrub	Herbaceous	Open Water	Disturbed	Coastal Wetland	Total
Deciduous Forest	15	2	1	4	2	1			25
Coniferous Forest		14	1	1				1	17
Mixed Forest									0
Shrub/Scrub				3					3
Herbaceous	1				6		1		8
Open Water						25			25
Disturbed					1		3		4
Coastal Wetland									0
Other									0
Total	16	16	2	8	9	26	4	1	82
Non- Homogeneous	92	51	34	19	51	6	16	13	139

Table 42. User's and producer's accuracy for each land cover class, along with overall accuracy and Kappa statistic, for scene 1534 at the 5x5 homogeneous level.

	User's	Producer's
Deciduous Forest	0.600	0.938
Conifer Forest	0.824	0.875
Mixed Forest		0.000
Shrub/Scrub	1.000	0.375
Herbaceous	0.750	0.667
Open Water	1.000	0.962
Disturbed	0.750	0.750
Coastal Wetland		0.000
Overall Accuracy	0.805	
Kappa	0.780	