

the Clinch/Hidden Valley study site were used in this mountainous classification.

Deciduous forest was present on over half of the image (Table 97). Coniferous forest and herbaceous were the only other categories found on more than 15% of the land area.

Following the 3x3 homogeneity filter, 47.5% of the original area was still assessable (Table 98). This number was reduced to 24.4% following the 5x5 filter (Table 99). Two hundred-seven reference points were used in the every-pixel accuracy assessment (Table 100). One hundred-fourteen were available for the 3x3 level assessment (Table 102), while 72 were used in the 5x5 level (Table 104) assessment. The overall accuracy increased from 58.9% at the every-pixel level (Table 101), to 77.2% at the 3x3 level (Table 103), and finally to a relatively high 90.3% at the 5x5 level (Table 105). Deciduous producer's, both coniferous, and herbaceous user's accuracies were all 100% following the 5x5 evaluation. However, shrub producer's and disturbed producer's had zero accuracies at the same level. As expected, the Kappa was highest after the 5x5 filter procedure.

Scene 1834

Scene 1834 (Figure 22) is the only scene that contained significant portions of the Appalachian Plateau physiographic province, predominate in the northcentral portion of this scene. The Clinch Mountain/Hidden Valley was the main training dataset for this heavily shadowed mountain image. Almost 70% of this area was classified as deciduous forest (Table 106). Coniferous forest and herbaceous land cover were each found to be on over 10% of the area.

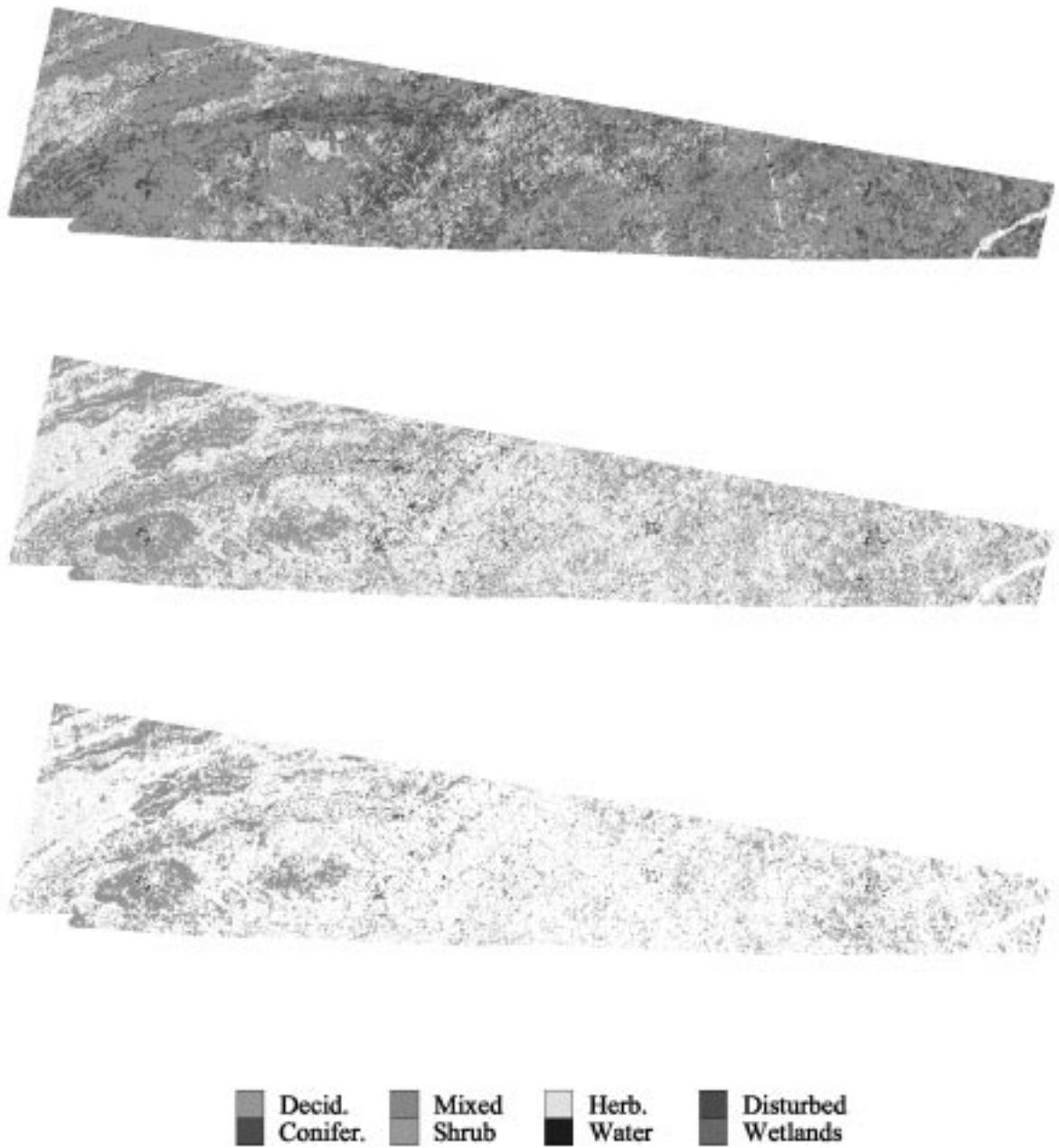


Figure 21. Classification output for scene 1735 full, 3x3 homogeneous, and 5x5 homogeneous.

Table 97. Total area and proportion of each land cover type for scene 1735 when analyzed at the every-pixel level.

	Pixels	Hectares	Acres	Proportion of Total Area
Deciduous Forest	3,041,294	273,716.0	676,353.0	0.525
Coniferous Forest	1,385,616	124,705.0	308,147.0	0.239
Mixed Forest	48,754	4,387.9	10,842.4	0.008
Shrub/Scrub	332,018	29,881.6	73,837.5	0.057
Herbaceous	885,231	79,670.8	196,867.0	0.153
Open Water	48,594	4,373.5	10,806.8	0.008
Disturbed	48,316	4,348.4	10,745.0	0.008
Coastal Wetland	0	0	0	0.000
Total	5,789,823	521,084.0	1,287,599.0	1.000

Table 98. Results of the 3x3 homogeneous filter on land cover types within scene 1735 in area, proportion of total area, and proportion remaining from the 1735 every-pixel level.

	Pixels	Hectares	Acres	Proportion of Total Area	Proportion of Every-Pixel
Deciduous Forest	1,846,650	166,199.0	410,676.0	0.671	0.607
Coniferous Forest	461,672	41,550.5	102,671.0	0.168	0.333
Mixed Forest	1,552	139.7	345.1	0.001	0.032
Shrub/Scrub	30,263	2,723.7	6,730.2	0.011	0.091
Herbaceous	396,536	35,688.2	88,185.6	0.144	0.448
Open Water	5,979	538.1	1,329.7	0.002	0.123
Disturbed	9,680	871.2	2,152.7	0.004	0.200
Coastal Wetland	0	0	0	0.000	0.000
Total	2,752,332	247,710.0	612,091.0	1.000	0.475

Table 99. Results of the 5x5 homogeneous filter on land cover types within scene 1735 in area, proportion of total area, and proportion remaining from 1735 every-pixel level.

	Pixels	Hectares	Acres	Proportion of Total Area	Proportion of Every-Pixel
Deciduous Forest	1,108,997	99,809.7	246,630.0	0.786	0.365
Coniferous Forest	137,106	12,339.5	30,491.0	0.097	0.099
Mixed Forest	26	2.3	5.8	0.000	0.001
Shrub/Scrub	1,462	131.6	325.1	0.001	0.004
Herbaceous	159,539	14,358.5	35,479.9	0.113	0.180
Open Water	808	72.7	179.7	0.001	0.017
Disturbed	2,260	203.4	502.6	0.002	0.047
Coastal Wetland	0	0	0	0.000	0.000
Total	1,410,198	126,917.8	313,614.0	1.000	0.24356

Table 100. Error matrix for scene 1735 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	109		7	9	11		2		138
Coniferous Forest	14	3	6	1	5		2		31
Mixed Forest	1	2							3
Shrub/Scrub	1		1		6		1		9
Herbaceous				1	10		3		14
Open Water	2	1					1		4
Disturbed				1					1
Coastal Wetland									0
Other	1	1	2	1	2				7
Total	128	7	16	13	34	0	9	0	207

Table 101. User's and producer's accuracy for each land cover class, along with overall accuracy and the Kappa statistic, for scene 1735 at the every-pixel level.

	User's	Producer's
Deciduous Forest	0.790	0.852
Coniferous Forest	0.097	0.429
Mixed Forest	0.000	0.000
Shrub/Scrub	0.000	0.000
Herbaceous	0.714	0.294
Open Water	0.000	
Disturbed	0.000	0.000
Coastal Wetland		
Overall Accuracy	0.589	
Kappa	0.276	

Table 102. Error matrix for scene 1735 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	80		4	6	4		1		95
Coniferous Forest	6	2	2		1		1		12
Mixed Forest									0
Shrub/Scrub							1		1
Herbaceous					6				6
Open Water									0
Disturbed									0
Coastal Wetland									0
Other									0
Total	86	2	6	6	11	0	3	0	114
Non- Homogeneous	42	5	10	7	23		6		93

Table 103. User's and producer's accuracy for each category, along with overall accuracy and Kappa statistic, for scene 1735 at the 3x3 homogeneous level.

	User's	Producer's
Deciduous Forest	0.842	0.930
Coniferous Forest	0.167	1.000
Mixed Forest		0.000
Shrub/Scrub	0.000	0.000
Herbaceous	1.000	0.545
Open Water		
Disturbed		0.000
Coastal Wetland		
Overall Accuracy	0.772	
Kappa	0.373	

Table 104. Error matrix for scene 1735 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	60			3	3		1		67
Coniferous Forest		1							1
Mixed Forest									0
Shrub/Scrub									0
Herbaceous					4				4
Open Water									0
Disturbed									0
Coastal Wetland									0
Other									0
Total	60	1	0	3	7	0	1	0	72
Non-Homogeneous	68	6	16	10	27		8		135

Table 105. User's and producer's accuracy for each land cover class, along with overall accuracy and Kappa statistic, for scene 1735 at the 5x5 homogeneous level.

	User's	Producer's
Deciduous Forest	0.896	1.000
Conifer Forest	1.000	1.000
Mixed Forest		
Shrub/Scrub		0.000
Herbaceous	1.000	0.571
Open Water		
Disturbed		0.000
Coastal Wetland		
Overall Accuracy	0.903	
Kappa	0.556	