

TABLE 1. Overall abundance of trees (stems > 10 cm DBH) in the upland forests of the Mary Flagler Cary Arboretum.

LEGEND

DENSITY : Density (per hectare) of trees (stems > 10 cm DBH), averaged over the entire sample of upland forests.
 BASAL AREA : Basal area (m²/ha) of trees.
 % DENS : Percent of the total density of trees in the upland forests.
 % BA : Percent of the total basal area of trees.
 % FREQ : Percent of the 75 plots in which a species occurred.
 I.V. : Importance value (average of % DENS and % BA) of a species averaged over the entire sample of upland forests.

SPECIES	DENSITY	BASAL AREA	% DENS	% BA	% FREQ	I.V.
Acer pennsylvanicum	0.27	0.0024	0.05	0.01	1.33	0.03
Acer rubrum	96.27	2.7519	18.70	11.88	74.67	15.29
Acer saccharum	58.93	1.7570	11.45	7.59	58.67	9.52
Amelanchier sp.	3.20	0.0507	0.62	0.22	10.67	0.42
Betula lenta	22.93	0.8628	4.46	3.73	32.00	4.09
Carya glabra	36.53	1.2516	7.10	5.41	50.67	6.25
Carya ovata	6.67	0.1764	1.30	0.76	18.67	1.03
Carya tomentosa	4.80	0.1143	0.93	0.49	5.33	0.71
Cornus florida	1.87	0.0216	0.36	0.09	9.33	0.23
Fagus grandifolia	2.13	0.1722	0.41	0.74	5.33	0.58
Fraxinus americana	18.40	0.5370	3.58	2.32	33.33	2.95
Fraxinus pennsylvanica	0.27	0.0391	0.05	0.17	1.33	0.11
Juniperus virginiana	3.73	0.0716	0.73	0.31	5.33	0.52
Liriodendron tulipifera	1.07	0.1108	0.21	0.48	2.67	0.34
Ostrya virginiana	4.53	0.0604	0.88	0.26	12.00	0.57
Pinus rigida	3.47	0.1663	0.67	0.72	4.00	0.70
Pinus strobus	31.47	1.5982	6.11	6.90	36.00	6.51
Populus grandidentata	0.27	0.0058	0.05	0.03	1.33	0.04
Prunus avium	0.53	0.0076	0.10	0.03	2.67	0.07
Prunus serotina	1.33	0.0365	0.26	0.16	5.33	0.21
Quercus alba	21.33	1.4722	4.15	6.36	40.00	5.25
Quercus bicolor	1.60	0.1707	0.31	0.74	4.00	0.52
Quercus prinus	73.60	4.7619	14.30	20.57	61.33	17.43
Quercus rubra	56.00	3.8351	10.88	16.56	64.00	13.72
Quercus velutina	21.87	1.5237	4.25	6.58	41.33	5.41
Rhamnus cathartica	0.27	0.0026	0.05	0.01	1.33	0.03
Sassafras albidum	0.27	0.0028	0.05	0.01	1.33	0.03
Tilia americana	1.07	0.0318	0.21	0.14	1.33	0.17
Tsuga canadensis	38.40	1.5212	7.46	6.57	22.67	7.02
Ulmus americana	1.33	0.0313	0.26	0.14	5.33	0.20

TABLE 2. Relative abundance of tree species by canopy position within the upland forests.

LEGEND

- % CD: Relative density among canopy trees (trees with > 25% of their crowns exposed to the sky).
 % CB: Relative basal area among canopy trees.
 % SD: Relative density among subcanopy trees (trees with < 25% of their crowns exposed to the sky).
 % SB: Relative basal area among subcanopy trees.
 % UD: Relative density among understory trees (stems > 10 cm DBH but completely overtopped by canopy and subcanopy trees).
 % UB: Relative basal area among understory trees.

SPECIES	% CD	% CB	% SD	% SB	% UD	%UB
Acer pennsylvanicum	0.00	0.00	0.14	0.04	0.00	0.00
Acer rubrum	15.05	9.42	24.54	17.97	15.91	12.72
Acer saccharum	6.81	5.45	11.55	9.96	18.92	17.26
Amelanchier sp.	0.00	0.00	1.28	0.72	0.65	0.42
Betula lenta	6.15	3.69	3.85	4.31	2.58	2.25
Carya glabra	7.33	5.40	6.56	5.02	7.53	6.65
Carya ovata	0.26	0.25	2.43	2.07	1.29	0.79
Carya tomentosa	0.52	0.26	1.14	0.90	1.29	1.13
Cornus florida	0.00	0.00	0.43	0.16	0.86	0.63
Fagus grandifolia	0.39	0.66	0.57	1.02	0.22	0.57
Fraxinus americana	4.06	2.44	3.28	1.97	3.23	2.39
Fraxinus pennsylvanica	0.13	0.26	0.00	0.00	0.00	0.00
Juniperus virginiana	0.52	0.17	0.71	0.42	1.08	1.03
Liriodendron tulipifera	0.26	0.65	0.14	0.14	0.22	0.17
Ostrya virginiana	0.13	0.02	0.86	0.34	2.15	1.91
Pinus rigida	1.31	0.88	0.43	0.54	0.00	0.00
Pinus strobus	6.68	7.21	2.43	3.59	10.75	14.62
Populus grandidentata	0.13	0.04	0.00	0.00	0.00	0.00
Prunus avium	0.00	0.00	0.29	0.13	0.00	0.00
Prunus serotina	0.39	0.12	0.14	0.24	0.22	0.17
Quercus alba	5.89	6.92	3.85	6.21	1.72	2.32
Quercus bicolor	0.39	0.84	0.29	0.61	0.22	0.30
Quercus prinus	21.60	24.69	12.55	14.39	4.95	6.82
Quercus rubra	12.83	17.11	13.41	19.39	3.87	3.50
Quercus velutina	6.41	8.26	3.85	4.00	1.29	1.13
Rhamnus cathartica	0.00	0.00	0.00	0.00	0.22	0.13
Sassafras albidum	0.00	0.00	0.00	0.00	0.22	0.14
Tilia americana	0.00	0.00	0.43	0.49	0.22	0.15
Tsuga canadensis	2.62	5.13	4.28	5.05	20.22	22.66
Ulmus americana	0.13	0.12	0.43	0.18	0.22	0.11

TABLE 3. Absolute and relative densities (per hectare) of saplings and understory tree species (all stems > 1.0 m height and < 10 cm DBH) in the upland forests.

LEGEND

LOCAL DENSITY: Average density for only those plots in which a species was present.
 PERCENT FREQUENCY: Percent of the 75 plots in which a species occurred.
 OVERALL DENSITY: Average density for all 75 plots.
 RELATIVE DENSITY: Percent of total density of saplings contributed by a species.

SPECIES	LOCAL DENSITY	PERCENT FREQUENCY	OVERALL DENSITY	RELATIVE DENSITY
<i>Acer pennsylvanicum</i>	336.67	16.00	53.87	2.40
<i>Acer rubrum</i>	312.45	70.67	220.80	9.84
<i>Acer saccharum</i>	480.00	66.67	320.00	14.26
<i>Amelanchier</i> sp.	284.44	60.00	170.67	7.60
<i>Betula lutea</i>	120.00	1.33	1.60	0.07
<i>Betula lenta</i>	195.71	37.33	73.07	3.26
<i>Betula populifolia</i>	80.00	1.33	1.07	0.05
<i>Carpinus caroliniana</i>	400.00	24.00	96.00	4.28
<i>Castanea dentata</i>	100.00	13.33	13.33	0.59
<i>Carya glabra</i>	112.59	36.00	40.53	1.81
<i>Carya ovata</i>	115.56	12.00	13.87	0.62
<i>Carya tomentosa</i>	80.00	1.33	1.07	0.05
<i>Cornus florida</i>	320.98	54.67	175.47	7.82
<i>Crataegus</i> sp.	40.00	1.33	0.53	0.02
<i>Fagus grandifolia</i>	328.42	25.33	83.20	3.71
<i>Fraxinus americana</i>	129.57	61.33	79.47	3.54
<i>Fraxinus pennsylvanica</i>	160.00	1.33	2.13	0.10
<i>Fraxinus</i> sp.	120.00	1.33	1.60	0.07
<i>Hammamelis virginiana</i>	635.15	44.00	279.47	12.45
<i>Juniperus virginiana</i>	160.00	5.33	8.53	0.38
<i>Ostrya virginiana</i>	676.28	57.33	387.73	17.28
<i>Picea glauca</i>	40.00	1.33	0.53	0.02
<i>Pinus strobus</i>	83.64	14.67	12.27	0.55
<i>Populus grandidentata</i>	40.00	1.33	0.53	0.02
<i>Prunus serotina</i>	120.00	6.67	8.00	0.36
<i>Quercus alba</i>	106.67	16.00	17.07	0.76
<i>Quercus bicolor</i>	40.00	2.67	1.07	0.05
<i>Quercus illicifolia</i>	160.00	1.33	2.13	0.10
<i>Quercus prinus</i>	136.67	16.00	21.87	0.97
<i>Quercus rubra</i>	126.00	26.67	33.60	1.50
<i>Quercus velutina</i>	142.50	21.33	30.40	1.35
<i>Rhamnus cathartica</i>	128.89	12.00	15.47	0.69
<i>Sassafras albidum</i>	60.00	2.67	1.60	0.07
<i>Tsuga canadensis</i>	301.18	22.67	68.27	3.04
<i>Ulmus americana</i>	93.33	8.00	7.47	0.33

TABLE 4: Average densities (per hectare) of saplings, by 2 cm size classes.

SPECIES	SIZE CLASS (cm)				
	0 - 2	2 - 4	4 - 6	6 - 8	8 - 10
Acer pennsylvanicum	41.07	3.73	5.33	3.73	0.00
Acer rubrum	90.13	51.73	41.60	26.13	11.20
Acer saccharum	196.27	62.93	35.20	19.73	5.87
Amelanchier sp.	126.40	24.00	12.80	4.80	2.67
Betula lutea	1.60	0.00	0.00	0.00	0.00
Betula lenta	46.40	9.60	4.80	10.13	2.13
Betula populifolia	0.53	0.00	0.53	0.00	0.00
Carpinus caroliniana	83.73	8.00	2.67	1.60	0.00
Castanea dentata	10.67	1.60	1.07	0.00	0.00
Carya glabra	8.53	14.40	11.20	5.33	1.07
Carya ovata	4.27	4.80	1.60	1.60	1.60
Carya tomentosa	0.00	0.00	0.00	0.00	1.07
Cornus florida	109.87	38.93	17.07	8.00	1.60
Crataegus sp.	0.53	0.00	0.00	0.00	0.00
Fagus grandifolia	67.20	11.20	2.67	1.60	0.53
Fraxinus americana	37.33	17.60	12.27	9.07	3.20
Fraxinus pennsylvanica	1.07	0.53	0.53	0.00	0.00
Fraxinus sp.	1.60	0.00	0.00	0.00	0.00
Hammamelis virginiana	254.93	21.87	2.67	0.00	0.00
Juniperus virginiana	1.07	2.67	2.13	1.60	1.07
Ostrya virginiana	337.60	33.07	11.20	3.20	2.67
Picea glauca	0.00	0.00	0.00	0.00	0.53
Pinus strobus	0.00	1.07	5.33	3.20	2.67
Populus grandidentata	0.00	0.00	0.00	0.00	0.53
Prunus serotina	6.93	0.00	0.53	0.53	0.00
Quercus alba	8.53	2.67	4.27	1.07	0.53
Quercus bicolor	0.00	0.53	0.00	0.00	0.53
Quercus illicifolia	2.13	0.00	0.00	0.00	0.00
Quercus prinus	12.80	5.33	2.13	1.07	0.53
Quercus rubra	10.13	5.33	10.67	5.87	1.60
Quercus velutina	10.13	6.93	5.87	4.80	2.67
Rhamnus cathartica	12.27	2.13	1.07	0.00	0.00
Sassafras albidum	1.07	0.00	0.53	0.00	0.00
Tsuga canadensis	15.47	16.00	16.00	11.73	9.07
Ulmus americana	1.60	1.60	3.20	0.53	0.53
TOTALS	1501.87	348.27	214.93	125.33	53.87

TABLE 5. Densities (per m²) and frequencies of occurrence of woody seedlings (stems < 1.0 m in height) in the upland forests.

LEGEND

LOCAL DENSITY: Average density for only those plots in which a species was present.
 PERCENT FREQUENCY: Percent of the 75 plots in which seedlings occurred.
 OVERALL DENSITY: Average density for all 75 plots.
 RELATIVE DENSITY: Percent of the total density of seedlings contributed by a species.

SPECIES	LOCAL DENSITY	PERCENT FREQUENCY	OVERALL DENSITY	RELATIVE DENSITY
<i>Acer pennsylvanicum</i>	1.6875	5.33	0.0900	2.2005
<i>Acer rubrum</i>	1.7969	64.00	1.1500	28.1174
<i>Acer saccharum</i>	0.9052	38.67	0.3500	8.5575
<i>Amelanchier</i> sp.	0.9118	45.33	0.4133	10.1059
<i>Betula lenta</i>	0.3000	6.67	0.0200	0.4890
<i>Carpinus caroliniana</i>	1.3333	4.00	0.0533	1.3040
<i>Castanea dentata</i>	0.2500	2.67	0.0067	0.1630
<i>Carya glabra</i>	0.3875	26.67	0.1033	2.5265
<i>Carya ovata</i>	0.4167	4.00	0.0167	0.4075
<i>Cornus florida</i>	0.9423	17.33	0.1633	3.9935
<i>Crataegus</i> sp.	0.2500	2.67	0.0067	0.1630
<i>Fagus grandifolia</i>	0.5833	4.00	0.0233	0.5705
<i>Fraxinus americana</i>	1.3864	44.00	0.6100	14.9144
<i>Hammamelis virginiana</i>	0.7375	26.67	0.1967	4.8085
<i>Juniperus virginiana</i>	0.6250	2.67	0.0167	0.4075
<i>Liriodendron tulipifera</i>	1.2500	1.33	0.0167	0.4075
<i>Ostrya virginiana</i>	0.5375	26.67	0.1433	3.5045
<i>Prunus serotina</i>	0.5588	45.33	0.2533	6.1940
<i>Quercus alba</i>	0.4792	16.00	0.0767	1.8745
<i>Quercus illicifolia</i>	0.5000	1.33	0.0067	0.1630
<i>Quercus prinus</i>	0.5385	17.33	0.0933	2.2820
<i>Quercus rubra</i>	0.4821	18.67	0.0900	2.2005
<i>Quercus velutina</i>	0.5500	13.33	0.0733	1.7930
<i>Rhamnus cathartica</i>	0.5417	8.00	0.0433	1.0595
<i>Sassafras albidum</i>	0.5000	8.00	0.0400	0.9780
<i>Tsuga canadensis</i>	1.0000	1.33	0.0133	0.3260
<i>Ulmus americana</i>	0.2500	2.67	0.0067	0.1630

TABLE 6. Cover (% of plot surface area) of shrub species within the upland forests of the Arboretum.

LEGEND

LOCAL COVER: Average cover for only those plots in which a species was present.
 PERCENT FREQUENCY: Percent of the 75 plots in which shrubs were encountered along the transects used to measure shrub cover.
 OVERALL COVER: Average cover for all 75 plots.
 RELATIVE COVER: Percent of total shrub cover contributed by a species.

SPECIES	LOCAL COVER	PERCENT FREQUENCY	OVERALL COVER	RELATIVE COVER
<i>Berberis thunbergii</i>	0.87	2.67	0.02	0.24
<i>Corylus cornuta</i>	5.07	4.00	0.20	2.09
<i>Cornus alternifolia</i>	0.20	1.33	0.00	0.03
<i>Cornus racemosa</i>	4.99	18.67	0.93	9.58
<i>Euonymus alatus</i>	0.28	1.33	0.00	0.04
<i>Gaylussacia baccata</i>	1.97	14.67	0.29	2.98
<i>Lindera benzoin</i>	2.44	8.00	0.20	2.01
<i>Lonicera tatarica</i>	0.69	4.00	0.03	0.28
<i>Parthenocissus quinquefolia</i>	4.38	32.00	1.40	14.43
<i>Prunus virginiana</i>	0.12	1.33	0.00	0.02
<i>Rhododendron nudiflorum</i>	1.35	1.33	0.02	0.19
<i>Rhododendron</i> sp.	8.60	1.33	0.11	1.18
<i>Rosa multiflora</i>	0.32	1.33	0.00	0.04
<i>Rosa</i> sp.	2.00	2.67	0.05	0.55
<i>Rubus</i> sp.	6.74	10.67	0.72	7.41
<i>Sambucus pubens</i>	0.16	1.33	0.00	0.02
<i>Smilax rotundifolia</i>	0.33	4.00	0.01	0.14
<i>Toxicodendron radicans</i>	0.43	5.33	0.02	0.23
<i>Vaccinium angustifolium</i>	1.93	26.67	0.51	5.30
<i>Vaccinium</i> sp.	1.39	6.67	0.09	0.95
<i>Vaccinium vacillans</i>	3.37	5.33	0.18	1.85
<i>Viburnum acerifolium</i>	6.30	72.00	4.54	46.74
<i>Viburnum prunifolium</i>	2.13	4.00	0.09	0.88
<i>Viburnum rafinesquianum</i>	1.10	13.33	0.15	1.51
<i>Vitis</i> sp.	1.07	12.00	0.13	1.32

TABLE 7. Two-way table of tree species importance values in the upland forests of the Mary Flagler Cary Arboretum. See Appendix A for an explanation of the species codes.

NOTE: The scale indicates a doubling of importance values,
i.e. 0 = present as standing dead only,
1 < 2.5%, 2 < 5.0%, 3 < 10.0%, 4 < 20.0%, 5 < 40.0%, 6 < 80.0%,
7 > 80.0%

CHESTNUT OAK FORESTS									
	Hemlock subtype	Hickory subtype	Maple subtype	OAK - HICKORY FORESTS			RED MAPLE FORESTS		
	PLOT NUMBERS								
SPECIES	7867668667	951666764661568	81155568166757718	718685637181556858555	677966947245				
CODES	6093692030	860023455310630	24755505000999905	503724906090005760300	337269300570				
	1889476152	915640967 1765	70456290 0987814	0029 071 7047 59 23	911 79 77266				
		0	8 4	8					
ACPE	-----2-----								
TSCA	5656030442	-3445-61-----0-----	-----0-----4-2-----		-----5-----				
FAGR	-----		-----2-----445-----						
POGR	-----		-----1-----						
TIAM	-----		-----4-----						
ACSA	-----2-----	24442345253554	53-75635443554553	-----2--4-1-4-1-2--	11--65333---				
OSVI	-----0-----	-----3-1--322-----	-----13-----		-----02-----				
QUPR	--55665656	655556554-34345	2343655-636-65455	---3--405-3523--1---	6-----				
QURU	-463555243	545553-4-556344	467-445646452-325	---4--5025---3-43---	223--2-----				
CAGL	-----2234334333533534		-----33--44653-0-22--3-53533--	4-1--22---					
CATO	-----	-----5-----	-----3-----	-----32-----					
BELE	53-----3-2-----	-----3-----	-----34-1-23-42-----	-----54454453-5-----	-----34--2-----				
FRAM	-----	-----125-3333-4-2-----	-----12-4--2-2-----	-----053-4--0-44-4-0-43-3-3-5-----					
QUAL	-----234-----	-----244445454-----	-----1-----3-----	3242154--4-45345-4-55					
CAOV	-----	-----2-----2-----	-----13-----	45232-3--23-----1--2-----					
COFL	-----0-0-----		-----3--2-----	221---0-----2-----	0-----2--				
QUVE	----2-0----	322-----3--3-----	-----3-20-----3-----	6642344544655-243-654	3013-----				
SAAL	-----		-----0-----	-----1-----					
FRPE	-----				-----3-----				
LITU	-----				-----34-----				
PIRI	-----				4-3-----				
PRPE	-----				0-----				
QUBI	-----				-----3-----				
RHCA	-----				-----2-----				
PRAV	-----			-----1-----	0-----1--				
PRSE	-----			-----2-----	-----1-----				
JUVI	-----			0-----	534--2-----				
ULAM	-----			-----2--3-----	-----2-----				
ACRU	-1---32443-	11212-2--2-----	341--332-32-44343	5024655564454632-42-5	444655567776				
AMSP	-----2-----		-----112-----	-----22-----	-----3-4-----				
PIST	6--2344243-	4---30--3---0-----	-----2320-----	0--55-033-----	434--2146-45-----				

TABLE 8. Two-way table of the relative densities of saplings and understory tree species in the upland forests.

NOTE: The scale indicates a doubling of relative density,
i.e. 1 < 2.5%, 2 < 5.0%, 3 < 10.0%, 4 < 20.0%, 5 < 40.0%,
6 < 80.0%, 7 > 80.0%.

CHESTNUT OAK FORESTS									
	Hemlock subtype	Hickory subtype	Maple subtype	OAK - HICKORY FORESTS				RED MAPLE FORESTS	
	PLOT NUMBERS								
SPECIES	7867668667	951666764661568	81155568166757718	718685637181556858555	677966947245				
CODES	6093692030	860023455310630	24755505000999905	503724906090005760300	337269300570				
	1889476152	915640967 1765	70456290 0987814	0029 071 7047 59 23	911 79 77266				
		0	8 4	8					
ACPE	---542-6---	-----4-----2-	-1-----5-22-6-	-----1-----	-----1-----				
TSCA	7736---32---	-6-4-6-----	-----2---2-3-11-1-	---4-----7---	-----				
FAGR	----3-----	-1-----2-----	11---22--5---576-1	-----1--1-4-3-2--1-	-----1-----				
POGR	-----	-----1-----	-----	-----	-----				
ACSA	--4-----25-	42563-57321645	34456533364644-223-	-4---4435---526-2--	34310654-2--				
OSVI	3-5-3---45-	544-546266-465	64664-16235-452-11-	-----111--143---	35-56-----4-				
QUPR	----324---	-1-----3-----	-----5-2-----	-----12-----3-----	2-----2-----				
QURU	----336---	-3---2-----	-----1-4-5-----	13-----1--11--1-	2111----1--3				
CAGL	----43---	-4--23-----11--2-	-----1-2-3-1--11	44-2---2---3---4-2-4-	--21-22---3				
CATO	-----	-----1-----	-----	-----	-----				
BELE	4-3-3--3---	-----1--1-----	-----3-----4-	-2--1-214331-21--6-	42-13-126-55				
FRAM	-----34-2-	-3-4-3-23113-43-	13--2-22-----112-	1-344113132-611--3-	213112242-43				
QUAL	-----	-----1-1-----	-----	11-3-1-----4-----	431--2-----				
CAOV	-----	-----	1-----3-----	1--2-4--2-3---4-2-	-----				
COFL	-----2332-3-1-2-33244-	253---	3-33-61--345442-354-36--422--2-3--5213----	5					
QUVE	-----	-----	3-----	21--21-1-1-1-1--5243-242-----					
SAAL	-----	-----	1-----	-----	3-----				
BEPO	-----	-----	-----	-----	3-----				
FRPE	-----	-----	-----	-----	2-----				
QUBI	-----	-----	-----	1-----	1-----				
RHCA	-----	1-----1-----	-----	5451-33-----1-----	-----				
PRSE	-----	-----	-----	3-----1-----	1-----5--4				
JUVI	-----	-----	-----	-----	344-----1--				
ULAM	-----	1-----	-----	1--2-----3-----	-----1--2-				
ACRU	--4-33-353-	22544---21--2124-232-43--3-342-54624225126411--425	536121-5574-						
AMSP	--3-45--44	364234-32144223214-5--35--1-344--154-5-1-31-2-1--3531-3----	43						
PIST	---35---4-	1--1-----	-----	2-1---1--13-4-	-----				
BEAL	---4-----	-----	-----	-----	-----				
CACA	-----	3-----3-----	1--3-6--2--1--631-1--	11-533-3-					
CADE	-----12-	1-----	3321-----2---1-----	-----3					
CRSP	-----	-----	-----	-----	1-----				
HAVI	--5---34-6-	36-1--5--366322-3-3-4-654--553545-5--6--4--3--5-53----							
PIGL	-----	-----	-----	1-----	-----				
QUIL	-----	-----	-----	2-----	-----				

TABLE 9. Two-way table of woody seedling density (#/m²) in the upland forests.

NOTE: The scale indicates a doubling of absolute density,
i.e. 1 < .25, 2 < .50, 3 < 1.0, 4 < 2.0, 5 < 4.0, 6 < 8.0,
7 < 16.0, etc.

CHESTNUT OAK FORESTS									
	Hemlock subtype	Hickory subtype	Maple subtype	OAK - HICKORY FORESTS				RED MAPLE FORESTS	
	PLOT NUMBERS								
SPECIES	7867668667	951666764661568	81155568166757718	718685637181556858555	677966947245				
CODES	6093692030	860023455310630	24755505000999905	503724906090005760300	337269300570				
	1889476152	915640967 1765	70456290 0987814	0029 071 7047 59 23	911 79 77266				
		0	8 4	8					
ACPE	---4---42	-----5-----							
TSCA	3-----								
FAGR			-----3-----	-----2-----	-----2-----				
ACSA	-----1-----	1-13--262--6--	14-441-11-1--1-2-	51-----11-1411--	-----1-4-1----				
OSVI	-----1-----	32---23-2--2-34	21-----1111-11--	-----3-----	-----1-----				
QUPR	-----3---1-	311-----1---3-	-----12-3-4-1--		-----1-----				
QURU		3-1-----	3-----1-2-----	31-2-----11-----	-----11---2--3-				
CAGL	-----1-----	3-1-1--1--21--	-----1---1-----	-----2-----121--	311-2-13---1				
BELE		-----1-----	-----11-----	-----2-----	-----1-----				
FRAM		2-----13-26445-	12-24-----4-----	2-431-1-1-41-4-1--	5-64-71---12142				
QUAL		-----1-21-11--		-----5--1--1-3-1--	-----11-----				
CAOV				-----1--3-----	-----1-----				
COFL		3-1-----1--33-	-----3-----	14-----1--1--5-----	-----1-----4				
QUVE			-----1-----	23-----3-----2-4--	-----1--21---1				
SAAL		-----1-----	-----3--2--1-----	-----1-----3-----					
LITU					-----4-----				
RHCA				-----3-----1--1-----	-----3-2---1				
PRSE	--1-1242--	1-13---1-121--	1--43-4-1-----22-	111-31-2---4-----	23-21-1-4--31				
JUVI					-----13-----				
ULAM					-----1---1---				
ACRU	--113-5631-	151-4-4-5-2-2-4-	3--3413---5--543-	46-52414-44511-12--	6-5-2-447563				
AMSP	-----12--5-	1451---11-13-2-	24---1-531-1-----	31-14-4--5---3--2---	143453--3-----				
CACA		-----1-----		-----3-----	-----5-----				
CADE			-----1-----		-----1-----				
CRSP		-----1-----		-----1-----					
HAVI	-----1-----	-----1-----	3---13-2---3-	2-3---213243---4---	2--5-2-1-----				
QUIL				-----2-----					

TABLE 10. Two-way table of shrub cover in the upland forests. See Appendix B for an explanation of the shrub species codes.

NOTE: The scale indicates a doubling of percent cover by a shrub species,
1 < 1.0%, 2 < 2.0%, 3 < 4.0%, 4 < 8.0%, 5 < 16.0%, 6 < 32.0%,
7 < 64.0%, etc.

	Hemlock subtype	Hickory subtype	Maple subtype	OAK - HICKORY FORESTS	RED MAPLE FORESTS
	7867668667	951666764661568	81155568166757718	718685637181556858555	677966947245
SHRUB	6093692030	860023455310630	24755505000999905	503724906090005760300	337269300570
SPECIES CODES	1889476152	915640967 1765	70456290 0987814	0029 071 7047 59 23	911 79 77266
	0		8 4	8	
ALNRUG	-	-	-	-0-	-
BERSP.	-	-	-	-	-0
BERTHU	--0--	--0--	--0--	-01-20-0--0--	--0--000-
CEAAME	-	-0-	-	-0-	-
CELSP.	-	-	-0-0-0-0-	-00--0--0-	-
CORAME	-	-	-	-	-0-
CORCOR	-	--2-0-	-501-	-00--0--	-0-
CORALT	-	-0-	-1-	-	-
CORRAC	----1---	0---0-0-0-1-01	000-----0-0-	00306-020---000-0--6-30	11--4--513
CRASP.	-	-0-0-	-	-0-0-0-0-	-00--0-
DIELON	-	-	-0-	-0-	-
EUOALA	-	-	-	-00-	-01--0-
GAYBAC	----1---	300---1---	0-1--1--3-	01-----3-12-0--0-	0-0-5-----0
I LEVER	-	-0-	-	-0-0-0-0-	-0--0--0-
KALLAT	----0-	-	-	-	-
LIN BEN	0---0-0-	0---0-001-	-0-00-0-	-1-40--4-0--0-0-	0---1-0--1
LONDIO	----0-	-0-0-	-0-	-0-0-	-0--0--
LONMOR	-	-	-	-0-	-
LONSP.	-	-0-	-	-	-0
LONTAT	----0-	0---0-	0---1--0-	-01--0--0--	0---01--
LONXYL	-	-	-0-	-	-
MITREP	-0----	0--00--00--00-	0-0-0-0--0000-	0-0--0--0--	0-----
PARQUI	----00--	012--011-	00-0-6-0--00	11244506-41--110-2--	2-0104154--2
P ARSP.	-	-0-0-	-0-0-	-0-	-
PRUVIR	-	-0-	-0-	-0-	-0-1--
RHALAN	-	-0-	-	-	-
RHOARB	-	-	-	-	-0-
RHONUD	--0--00002-	-0-	-0-00--00-	-0-	-0
RHOVIS	-	-	-	-0-	-
RHOSP.	-	-0-	-	-	-5-
RHUGLA	--0-	-	-0-	-0-	-
RHURAD	----0-	0---0-	00-----0-0-00-00	00-0--0--0--0-	-0--00-0-0

TABLE 10. (continued)

NOTE: The scale indicates a doubling of percent cover by a shrub species,
 1 < 1.0%, 2 < 2.0%, 3 < 4.0%, 4 < 8.0%, 5 < 16.0%, 6 < 32.0%,
 7 < 64.0%, etc.

CHESTNUT OAK FORESTS												
	Hemlock subtype	Hickory subtype	Maple subtype	OAK - HICKORY FORESTS					RED MAPLE FORESTS			
	PLOT NUMBERS											
SHRUB	7867668667	951666764661568	81155568166757718	718685637181556858555	677966947245							
SPECIES	6093692030	860023455310630	24755505000999905	503724906090005760300	337269300570							
CODES	1889476152	915640967 1765	70456290 0987814	0029 071 7047 59 23	911 79 77266							
		0	8 4	8								
ROSCAR	-----	-----	-----	-----	-----	0						
ROSMUL	---0---	0-0---0-0-0-	---0-0---	0-000---	0-00---	10	00	---	0-0---			
ROSPAL	-----	-----	-----	0								
ROSSP.	-----	---0---	1-----	0-----	3---0---	0			0			
ROSVIR	-----	-----	-----	0					0			
RUBALL	-----	---00---	-----	-----	-----				0			
RUBOCC	-----	-----	0-----	-----	-----							
RUBSP.	---0---	0-0---0-1---	01-0---	0-0---	004---	31	---	0-0---			071004	
SAMRAC	-----	-----	-----	0	1							
SMIROT	-----	---1---	-----	1			0		0-1			
SPILAT	-----	-----	-----	-----	-----				0			
TOXRAD	-----	-----	1-----	1		1			1			
VACANG	--0-441-1-	131-1---0123-0-	3-----	504-0--10		2			11		12	
VACCOR	-----	-----	-----	0					0			
VACSP.	----2-0-0-	--2-----	01--0---	0		0-0-0-	10	---	0		3	
VACSTA	-----	0-----	0-----	0	0				0			
VACVAC	---2-0-0-	---00---00---	10-0---	0-0---	00--0-5--1---	0			0		0	
VIBACE	-040133150-	3425643-434215	44546545453356354	3-42102046-4335100					46012023			
VIBLEN	-----	-----	0-----	0								
VIBPRU	-----	0-----	0-----	0	3-3-0-1-0-0-0				0			
VIBRAF	---00---	10133-0--00-0-	110--00---	0	0-0-1-200-0--0				2-1---	0-0-		
VITAES	---0---	-----	-----	0	00							
VITSP.	----1---	0--000-0-00--00	0-000-10--00-0-	00301-001-010000	--0--0-1-130---							

Table 12. Mean importance values of the major tree species of the forest types of the Cary Arboretum.

SPECIES ¹	CHESTNUT OAK FORESTS			OAK - HICKORY FORESTS	RED MAPLE FORESTS
	HEMLOCK subtype	HICKORY subtype	MAPLE subtype		
<i>Acer rubrum</i>	3.97	1.16	6.31	17.62	50.79
<i>Acer saccharum</i>	0.22	13.06	24.27	1.46	6.57
<i>Betula lenta</i>	6.40	0.48	2.56	8.02	2.47
<i>Carya glabra</i>	0.58	14.28	1.25	10.54	1.90
<i>Carya ovata</i>		0.51	0.48	3.01	0.23
<i>Cornus florida</i>			0.30	0.50	0.19
<i>Fraxinus americana</i>		3.93	1.48	4.41	4.12
<i>Pinus strobus</i>	13.68	2.54	1.01	6.93	11.69
<i>Quercus alba</i>		8.08	4.15	10.57	
<i>Quercus prinus</i>	31.03	23.12	25.58	4.57	6.55
<i>Quercus rubra</i>	17.21	18.20	25.38	5.67	1.58
<i>Quercus velutina</i>	0.35	1.82	1.45	17.77	1.10
<i>Tsuga canadensis</i>	26.14	9.07	0.72	4.23	

¹ Species present in > 5 stands.

Table 13. Relative abundances (i.e. percent of total density) of saplings and understory trees in the major forest types of the Cary Arboretum.

SPECIES	CHESTNUT OAK FORESTS			OAK - HICKORY FORESTS	RED MAPLE FORESTS
	HEMLOCK subtype	HICKORY subtype	MAPLE subtype		
<i>Acer pennsylvanicum</i>	21.08	1.14	4.52		0.13
<i>Acer rubrum</i>	11.66	3.24	5.51	8.57	25.49
<i>Acer saccharum</i>	4.48	22.40	14.22	11.35	10.79
<i>Amelanchier</i> sp.	7.62	11.25	4.52	7.86	5.85
<i>Betula lenta</i>	3.59	0.19	1.65	3.57	8.71
<i>Carpinus caroliniana</i>		0.86	0.66	9.84	5.33
<i>Castanea dentata</i>	0.90	0.29	1.43	0.48	0.13
<i>Carya glabra</i>	2.24	1.43	0.88	2.86	1.56
<i>Carya ovata</i>			0.33	1.83	
<i>Cornus florida</i>	1.35	4.58	7.72	12.54	6.50
<i>Fagus grandifolia</i>	0.45	0.48	13.67	1.98	0.13
<i>Fraxinus americana</i>	1.79	4.00	1.65	4.76	3.64
<i>Hamamelis virginiana</i>	5.83	8.87	13.45	19.05	7.28
<i>Ostrya virginiana</i>	7.62	33.17	24.15	1.75	15.73
<i>Pinus strobus</i>	4.48	0.19		0.87	
<i>Quercus alba</i>		0.19		1.67	1.17
<i>Quercus prinus</i>	1.35	0.76	1.54	0.95	0.52
<i>Quercus rubra</i>	4.48	0.67	2.76	1.11	0.91
<i>Quercus velutina</i>			0.22	2.30	3.38
<i>Rhamnus cathartica</i>		0.19		2.14	
<i>Sassafras albidum</i>			0.11	0.16	
<i>Tsuga canadensis</i>	19.73	5.82	0.77	1.27	
AVERAGE DENSITY ¹	892	2797	2134	2400	2563

¹ Stems/hectare

Table 14. Relative cover¹ of shrub species in the major forest types of the Cary Arboretum.

SPECIES ²	CHESTNUT OAK FORESTS			OAK - HICKORY FORESTS	RED MAPLE FORESTS
	HEMLOCK subtype	HICKORY subtype	MAPLE subtype		
<i>Berberis thunbergii</i>				0.82	
<i>Cornus racemosa</i>	1.35	0.58	0.09	22.89	12.07
<i>Corylus cornuta</i>		2.07	6.12		
<i>Gaylussacia baccata</i>	0.63	2.49	1.41	2.42	6.59
<i>Lindera benzoin</i>		0.25		5.96	1.01
<i>Lonicera tatarica</i>			0.40	0.22	0.43
<i>Parthenocissus quinquefolia</i>		2.94	10.05	23.95	17.86
<i>Rhododendron nudiflorum</i>		1.41			
<i>Rosa multiflora</i>				0.15	
<i>Rosa</i> spp.			0.16	1.71	
<i>Rubus</i> spp.		0.66		3.73	27.50
<i>Vaccinium angustifolium</i>	27.81	9.25	7.05	0.59	1.59
<i>Vaccinium vacillans</i>	3.75	0.41		5.46	
<i>Vaccinium</i> spp.	3.44	1.16	0.11	0.26	2.26
<i>Viburnum acerifolium</i>	62.40	70.56	73.85	25.44	21.30
<i>Viburnum prunifolium</i>				2.99	
<i>Viburnum rafinesquianum</i>		8.13	0.20	0.74	0.72
<i>Vitis</i> spp.	0.63		0.27	2.19	2.50
TOTAL COVER ³	4.8%	8.0%	16.1%	12.8%	17.3 %

¹ Average percent of total shrub cover in a stand.

² Species present in > 5 stands.

³ Average percent of ground covered by shrubs in a stand.

Table 15. Structural characteristics (mean and range) of the major upland forest types of the Cary Arboretum.

	CHESTNUT OAK FORESTS			OAK - HICKORY FORESTS	RED MAPLE FORESTS
	HEMLOCK subtype	HICKORY subtype	MAPLE subtype		
Age of largest tree	108 (54-163)	100 (52-164)	104 (57-303)	73 (35-150)	64 (36-140)
Canopy height (m)	22.8 (16-30)	24.3 (16-33)	25.2 (17-34)	22.9 (15-33)	22.1 (10-31)
Percent sky visible	11.8 (3-30)	7.1 (0-26)	6.8 (0-15)	11.8 (1-56)	8.3 (2-16)
Tree density (stems/ha)	540.0 (400-1040)	537.3 (300-820)	469.4 (220-680)	494.3 (320-1100)	565.0 (360-1020)
Tree basal area (m ² /ha)	28.3 (18-54)	22.3 (14-31)	24.9 (12-41)	20.0 (8-45)	23.0 (7-34)
Sapling density (stems/ha)	892 (360-2400)	2797 (200-5440)	2134 (640-5200)	2400 (560-6520)	2563 (720-4920)
Seedling density (#/m ²)	2.35 (0-6.5)	4.07 (0.5-7.75)	2.99 (0.3-5.5)	4.07 (0.3-9.0)	7.17 (1.8-18.3)
Shrub cover (%)	4.80 (0-12.6)	8.04 (1.1-26.3)	16.06 (3.3-43.0)	12.81 (0-34.3)	17.33 (0-73.8)

TABLE . Two-way table of the relative basal area of species in the canopy stratum of the upland forests.

NOTE: The scale indicates a doubling of relative basal area,
i.e. 0 = present in other canopy strata,
1 < 2.5%, 2 < 5.0%, 3 < 10.0%, 4 < 20.0%, 5 < 40.0%, 6 < 80.0%,
7 > 80.0%

CHESTNUT OAK FORESTS

	Hemlock subtype	Hickory subtype	Maple subtype	OAK - HICKORY FORESTS	RED MAPLE FORESTS
	PLOT NUMBERS				
	786766866795166676466156881155568166757718718685637181556858555677966947245				
SPECIES	609369203086002345531063024755505000999905503724906090005760300337269300570				
CODES	1889476152 915640967 1765 70456290 0987814 0029 071 7047 59 23911 79 77266				
	0	8	4	8	
ACPE	-----0-----				
TSCA	3645000000-0000-50-----0-----0-----5-0-----5-----				
FAGR	-----0-----505-----				
POGR	-----1-----				
TIAM	-----0-----				
ACSA	-----0-0330044534033204-63534000045500-----0--0-0-0-1-0--00--55004---				
OSVI	-----0-----0-0--000-----00-----00-----1-----				
QUPR	--56666767445567655-004454404655-607-66465---4--504-0504--0---7-----				
QURU	-564565030644654-5-546454567-555756270-306---5--6005---4-54---000--0-----				
CAGL	-----30043340404450604-----01--403663-0-30--0-64530--3-0--00----				
CATO	-----4-----0-----30-----				
BELE	53-----3-0-----4-----33-0-03-00-----00450453-5-----40---3				
FRAM	-----004-3040-3-4-----00-3--0-0---043-0--0-30-3-0-53-4-4-5-----				
QUAL	-----035-----056555560---0-----4-4050060--5-45155-5-55-----				
CAOV	-----0-----0--0--03-----03000-0--00-----0--0-----				
COFL	-----0-0-----0--0-000---0--0--0-----0-----0--				
QUVE	---3-0---533---4--0-----3-30---4---7730444655765-004-7534000-----				
SAAL	-----0-----0-----				
BEPO	-----0-----				
FRPE	-----4-----				
LITU	-----45-----				
PIRI	-----5-2-----				
PRPE	-----0-----				
QUBI	-----3--0-6-----				
RHCA	-----0-----				
PRAV	-----0-----0--0--				
PRSE	-----3-----1-----00-0-----				
JUVI	-----0-----332--0-----				
ULAM	-----0--0-----0-----0-40---				
ACRU	-0---00020-00000-0--0---000--110-00-234000003553060053600-40-5400755077076				
AMSP	-----0-----000-----00-----0-0-----				
PIST	6--0025050-5---00--0---0-----6200---0--45-000-----004--0046-66-----				

TABLE . Two-way table of the relative basal area of species in the subcanopy stratum of the upland forests.

NOTE: The scale indicates a doubling of relative basal area,
i.e. 0 = present in other canopy strata,
1 < 2.5%, 2 < 5.0%, 3 < 10.0%, 4 < 20.0%, 5 < 40.0%, 6 < 80.0%,
7 > 80.0%

CHESTNUT OAK FORESTS

	Hemlock subtype	Hickory subtype	Maple subtype	OAK - HICKORY FORESTS	RED MAPLE FORESTS
	PLOT NUMBERS				
	786766866795166676466156881155568166757718718685637181556858555677966947245				
SPECIES	609369203086002345531063024755505000999905503724906090005760300337269300570				
CODES	1889476152 915640967 1765 70456290 0987814 0029 071 7047 59 23911 79 77266				
	0	8	4	8	
ACPE	-----4-----				
TSCA	6706000060-0050-70-----0-----0-----0-0-----5-----				
FAGR	-----3-----053-----				
POGR	-----0-----				
TIAM	-----6-----				
ACSA	-----2-4266044504246652-76605305650650-----4-4-4-5-0-3--00--60440--				
OSVI	-----0-----3-0--300-----00-----03-----3-----				
QUPR	--65765000665005040-404550340000-635-50465---2--006-5000--3---7-----				
QURU	-050006645356050-4-466000467-600657600-046---0--5035---0-40---344--3-----				
CAGL	-----00300044035633535-----40--453601-0-03--6-43503--5-2--00---				
CATO	-----5-----2-----40-----				
BELE	50-----0-0-----0-----35-1-00-50-----54005444-0-----06---0				
FRAM	-----005-0302-0-0-----00-3--1-0---053-5--0-04-4-0-00-1-4-3-----				
QUAL	-----200-----443340065---0-----0-0000104--0-60505-3-06-----				
CAOV	-----2---3---00-----56633-0-43---2--4-----				
COFL	-----0-0-----5--0-020---0--0-----0-----2--				
QUVE	---0-0---300---0--3---0-00---0---4620243400630-050-5000003-----				
SAAL	-----0-----0-----				
BEPO	-----0-----				
FRPE	-----0-----				
LITU	-----04-----				
PIRI	-----0-4-----				
PRPE	-----0-----				
QUBI	-----0--4-4-----				
RHCA	-----0-----				
PRAV	-----1-----0-----2--				
PRSE	-----0-----0-----00-5-----				
JUVI	-----0-----506--0-----				
ULAM	-----2--3-----3-----0-00---				
ACRU	-2---54655-00044-3--0---340--350-20-550046026655664336603-33-0435654657777				
AMSP	-----2-----035-----03-----2-6-----				
PIST	4--0000005-0--50--0---0-----0000---0--04-004-----165--0006-00-----				

TABLE . Two-way table of the relative basal area of species in the understory stratum of the upland forests.

NOTE: The scale indicates a doubling of relative basal area,
i.e. 0 = present in other canopy strata,
1 < 2.5%, 2 < 5.0%, 3 < 10.0%, 4 < 20.0%, 5 < 40.0%, 6 < 80.0%,
7 > 80.0%

CHESTNUT OAK FORESTS

	Hemlock subtype	Hickory subtype	Maple subtype	OAK - HICKORY FORESTS	RED MAPLE FORESTS
	PLOT NUMBERS				
SPECIES	786766866795166676466156881155568166757718718685637181556858555677966947245				
CODES	609369203086002345531063024755505000999905503724906090005760300337269300570				
	1889476152	915640967	1765	70456290 0987814 0029	071 7047 59 23911 79 77266
	0		8	4	8
ACPE	-----0-----				
TSCA	0776050666-6566-74----	0-----	0-----	0-4-----	7-----
FAGR	-----		0--004-----		
POGR	-----	0-----			
TIAM	-----		3-----		
ACSA	-----0-0505400506475670-77746565640055-----	0-0-0-4-0-0--54--	70040--		
OSVI	-----0-----	5-4--336-----	35-----	03-----	0-----
QUPR	--00500000635020004-060000040000-640-60045----	0--005-0074--0----	0-----		
QURU	-000036060003004-0-400000006-003000304-000----	0--4004--0-30----	000--0--		
CAGL	-----05544505045500050-----	30--506600-0-00--0-00606--0-0--64----			
CATO	-----	4-----	6-----	04-----	
BELE	00-----0-5-----	0-----	05-0-50-07-----	65003240-0-----	00--0
FRAM	-----	335-3043-0-0-----	34-0--0-4--060-4--0-04-0-0-04-0-0-0-----		
QUAL	-----000-----	000005000-----	5-----	0-0403006--0-00004-0-00-----	
CAOV	-----	4--0--40-----	00050-4--04-----	0--0-----	
COFL	-----0-0-----		0-3-502--0--4-----	0--0-----	0--
QUVE	---0-0--000---0--0-----	0-00--0--0053004000000-430-0000020-----			
SAAL	-----		0-----	3-----	
BEPO	-----				0
FRPE	-----				0
LITU	-----				04
PIRI	-----				0-0-----
PRPE	-----				0-----
QUBI	-----				0--5--0-----
RHCA	-----				5-----
PRAV	-----		0-----	0-----	0--
PRSE	-----		0-----	0--30-0-----	
JUVI	-----		0-----	606--6-----	
ULAM	-----		0--5-----	0-----	0-00--
ACRU	-0---30500-32500-0--6----	254--455-44-470507002505456660050-20-0660000667077			
AMSP	-----0-----	300-----	40-----	4-0-----	
PIST	0--5665400-0--60--6----	0-----	0560--0--66-066-----	652--5457-06-----	

TABLE . Two-way table of the percentage of live trees with dieback of upper canopy branches.

NOTE: The scale indicates a doubling of the percent of trees with dieback i.e. 0 = no trees with upper branch dieback
1 < 2.5%, 2 < 5.0%, 3 < 10.0%, 4 < 20.0%, 5 < 40.0%, 6 < 80.0%, 7 > 80.0%

CHESTNUT OAK FORESTS

	Hemlock subtype	Hickory subtype	Maple subtype	OAK - HICKORY FORESTS	RED MAPLE FORESTS
	PLOT NUMBERS				
SPECIES	786766866795166676466156881155568166757718718685637181556858555677966947245				
CODES	609369203086002345531063024755505000999905503724906090005760300337269300570				
	1889476152	915640967	1765	70456290 0987814 0029 071 7047 59 23911 79 77266	
	0		8	4	8
ACPE	-----0-----				
TSCA	0230000050-0453-00-----0-----0-----0-7-----0-----				
FAGR	-----7-----000-----				
POGR	-----0-----				
TIAM	-----0-----				
ACSA	-----0-04007000000000430-00000400000000-----0--0-0-0-0-0--07--00007---				
OSVI	-----0-----0-0--000-----00-----00-----0-----				
QUPR	--55554404500506505-000660040666-605-00044---0--006-0400--0---6-----				
QURU	-060665040704066-0-646070056-606553070-004---7--6005--0-00---000--0-----				
CAGL	-----70500006003007405-----00--000000-0-00--0-00000--0-0--00-----				
CATO	-----0-----0-----00-----				
BELE	00-----0-0-----6-----00-7-00-00-----00006000-4-----00---0				
FRAM	-----004-0600-0-7-----70-5--0-7---066-5--0-06-0-0-00-0-6-0-----				
QUAL	-----000-----066604005---7-----0-0077065--7-04004-0-40-----				
CAOV	-----0-----0--0--00-----00050-0-00-----0--0-----				
COFL	-----0-0-----7--7-077---0-----0-----0-----7--				
QUVE	----7-0---777---7--0-----7-70---0---6607567677650-067-5007000-----				
SAAL	-----0-----0-----				
BEPO	-----0-----				
FRPE	-----0-----				
LITU	-----0-----				
PIRI	-----5-0-----				
PRPE	-----0-----				
QUBI	-----0-----7--5-----				
RHCA	-----0-----				
PRAV	-----0-----0-----7--				
PRSE	-----0-----0-----70-0-----				
JUVI	-----0-----000--7-----				
ULAM	-----0--6-----0-----0-00---				
ACRU	-0---70066-00070-0--0---000--550-57-000005006556556056070-00-0460664355005				
AMSP	-----0-----700-----00-----0-0-----				
PIST	0--7740700-0--50--6---0-----0000---0--00-077-----070--7063-00-----				