

A SURVEY OF NATIVE/NON-NATIVE SPECIES BALANCE IN A PUBLIC PARK IN CADDO PARISH, LOUISIANA

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ABSTRACT

A floristic survey of 4 hectare Columbia Park in Shreveport, Louisiana, found that of a total of 225 species (64 families and 163 genera), 35% were non-native. All species are listed in an appendix.

During the 2020 pandemic, when somewhat confined, we undertook a floristic survey of a frequently mowed public park. Columbia Park is located south of Columbia street, between Line Avenue and Creswell Street in Shreveport, Louisiana (Fig. 1). The 4 hectare park was established in 1924 (O’Pry 1928, p. 190) and had been clearcut in the early 20th century. Its original cover was likely pine-oak woodland (see MacRoberts & MacRoberts 2009 and references). Soils are a Woodtell-urban land complex with slopes up to 20% (Edwards et al 1980). At the slope base, a narrow, concreted stream runs roughly east-west across the park. Small seepage areas are evident along the lower slope which feed into the stream. Much of the park is taken up with pavilions and play areas.

Plant cover consists primarily of non-native grasses, notably *Stenotaphrum secundatum*, *Cynodon dactylon*, *Digitaria* spp., and *Paspalum* spp. Species of *Trifolium* are common, particularly *T. repens*. The stream course is dominated by *Colocassia esculenta* and *Alternanthera philoxeroides*. Canopy trees are native oaks and pine (*Pinus echinata* and *P. taeda*) (Fig. 1). There is no pine regeneration in the park and the older pines are approximately 100 years old; a typical individual felled by hurricane Laura in 2020 had 110 annual rings. Native herbs and grasses occur in over-dispersed patches, typically of few individual plants.

It has been found that in highly disturbed places such as city parks the ratio of non-natives to natives is very high, ranging between 19% and 60% with Central Park, New York (341 ha.), having the highest number (MacRoberts et al 2008 and references). Our purpose here was to determine the ratio of native to non-native species.

We visited Columbia Park regularly from 1976 to 2019, and daily from April to December 2020, and catalogued all species encountered except obviously planted horticultural introductions (e.g. *Koeleruteria*, *Nandina*, *Lagerstroemia*, *Rosa*, *Vitex*). We primarily followed the taxonomy and exotic status given in MacRoberts (2006). Of the 225 species (64 families and 163 genera) we identified, 78 (35%) were non-native (Appendix 1). Caddo Parish as a whole (2283 km²) has 1455 species, of which 17 % are non-native (MacRoberts & MacRoberts 2006, 2020). Thus, Columbia Park has twice the percentage of non-natives as the parish, which appears to be typical for such habitats (MacRoberts et al 2008). Interestingly, four species new to Caddo Parish were discovered during the survey (MacRoberts & MacRoberts 2020, MacRoberts et al 2020). All of these were non-native and are rapidly spreading across the USA (Nesom 2009; Kartesz 2014).

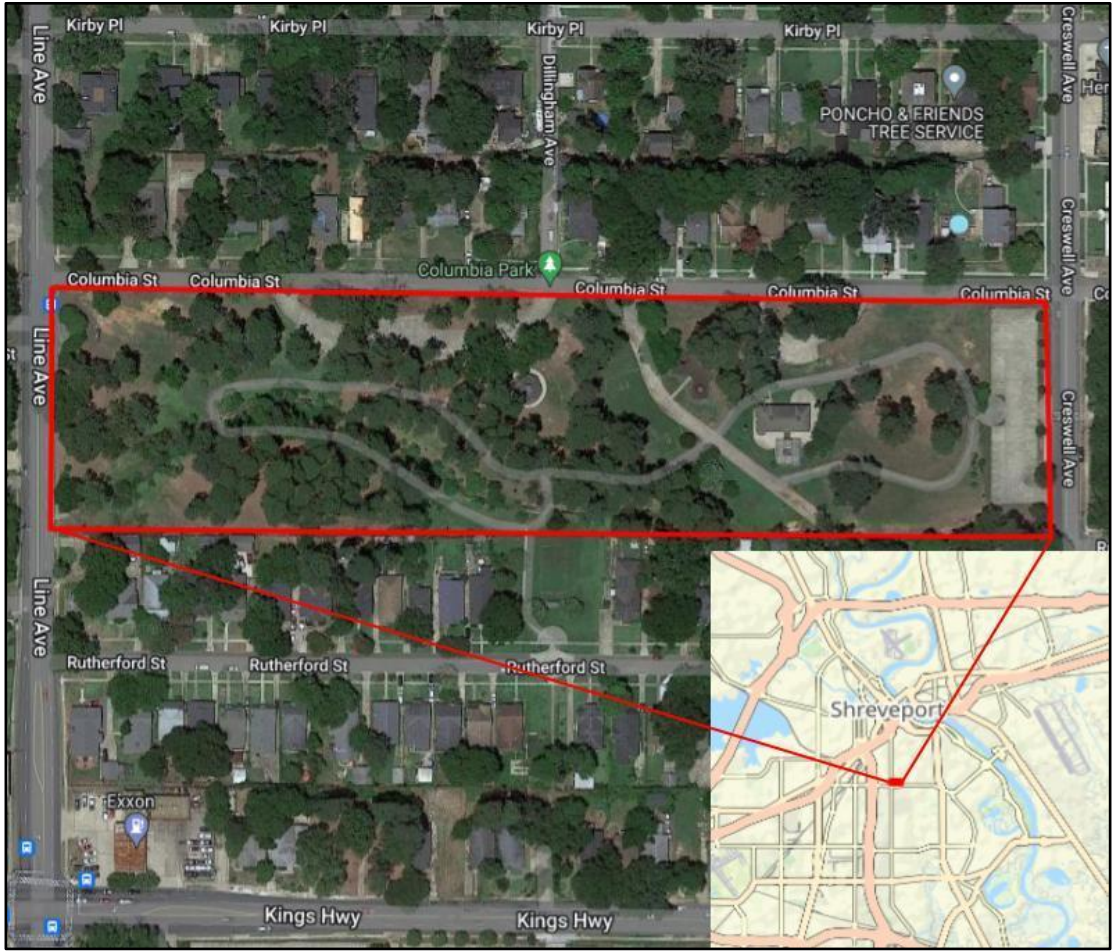


Figure 1. The boundaries of Columbia park as surveyed (red rectangle) and inset of relative location in Shreveport.

ACKNOWLEDGEMENTS

Thanks to Dominica Carriere, LSUS archives, for information on the history of the park. We thank Christina Calcaterra (Fort Polk Conservation Unit) and Chris Doffitt (Louisiana Department of Wildlife and Fisheries) for reviewing this manuscript.

LITERATURE CITED

Edwards, J.P., P.G. Martin, J.W. Magonu, W.W. Kilpatrick, and C. Henry. 1980. Soil Survey of Caddo Parish, Louisiana. U.S. Dept. of Agriculture Conservation Service.

Kartesz, J.T. 2014. The Biota of North America Program (BONAP). Chapel Hill, North Carolina.

MacRoberts, B.R. and M.H. MacRoberts. 2006. An updated, annotated, vascular flora of Caddo Parish, Louisiana with notes on regional phytogeography and ecology. *Sida* 22: 1191–1219.

MacRoberts, B.R. and M.H. 2009. Floristics of upland shortleaf pine/ oak-hickory forest in northwestern Louisiana. *J. Bot. Res. Inst. Texas* 3: 367–374.

MacRoberts, M.H. and B.R. MacRoberts, and G.M. Hanson. 2008. Vascular flora of Bichkam-Dickson/ Red River Education and Research Park, Caddo Parish, Louisiana: An oxbow lake community with comments on exotic/native species ratios. *J. Bot. Res. Inst. Texas* 2: 1389–1406.

MacRoberts, M.H. and B.R. MacRoberts. 2020. Additions to the flora of Caddo Parish, Louisiana. *Phytoneuron* 74: 1–4.

- MacRoberts, M.H., B.R. MacRoberts, and C.M. Allen. 2020. *Polypogon viridis* (Poaceae): New to Louisiana. *Phytoneuron* 73: 1–4.
- Nesom, G.L. 2009. Assessment of invasive and ecological impact of non-native plants of Texas. *J. Bot. Res. Inst. Texas* 3: 971–991.
- O’Pry, M.H. 1928. *Chronicles of Shreveport*. Journal Printing Company, Shreveport, Louisiana.

Appendix 1. Species identified at Columbia Park. Those with an asterisk (*) are non-native. Records are not vouchered.

ACANTHACEAE- *Ruellia simplex* C.Wright*

ALISMATACEAE- *Sagittaria platyphylla* (Engelm.) J.G. Sm., *Hydrocleys nymphoides* (Humb. & Bonpl. ex Willd.) Buchenau*

ALLIACEAE- *Allium canadensis* L., *Nothoscordum bivalve* (L.) Britton, *Nothoscordum gracile* (Aiton) Stearn*

ALTINGIACEAE- *Liquidambar styraciflua* L.

AMARANTHACEAE- *Alternanthera philoxeroides* (Mart.) Griseb.*, *Alternanthera sessilis* (L.) R.Br. ex DC.*, *Amaranthus arenicola* I.M.Johnst., *Amaranthus retroflexus* L.*

AMARYLLIDACEAE- *Habranthus tubispathus* (L'Hér.) Traub, *Leucojum vernum* L.*

ANACARDIACEAE- *Toxicodendron radicans* (L.) Kuntze

APIACEAE- *Ammoselinum butleri* (Engelm. Ex S. Watson) Coult & Rose, *Bowlesia incana* Ruiz & Pav.*, *Cyclospermum leptophyllum* (Pers.) Sprague ex Britton & P. Wilson*, *Eryngium prostratum* Nutt. ex D.C., *Torilis arvensis* (Huds.) Link*

AQUIFOLIACEAE- *Ilex* sp. L.*

ARACEAE- *Colocassia esculenta* (L.) Schott*

ARALIACEAE- *Hydrocotyle verticillata* Thunb.

ASPARAGACEAE- *Liriope muscari* (Decne.) L.H.Bailey*, *Ornithogalum umbellatum* L.*, *Muscari neglectum* Guss. ex Ten.*

ASTERACEAE- *Calyptocarpus vialis* Less.*, *Cirsium horridulum* Michx., *Coreopsis tinctoria* Nutt., *Eclipta prostrata* (L.) L., *Erigeron annuus* (L.) Pers., *Erigeron canadensis* L., *Erigeron philadelphicus* L., *Erigeron tenuis* Torr. & A.Gray, *Eupatorium serotinum* Michx., *Gamochaeta* sp., *Helenium amarum* (Raf.) H. Rock, *Hypochaeris radicata* L.*, *Krigia caespitosa*, *Lactuca canadensis* L., *Lactuca floridana* (L.) Gaertn., *Mikania scandens* B.L. Rob., *Packera glabella* (Poir.) C. Jeffrey, *Pyrrhopappus carolinianus* (Walt.) DC., *Solidago altissima* L., *Soliva sessilis* Ruiz & Pav.*, *Sonchus oleraceus* L.*, *Symphotrichum lateriflorum* (L.) A. & D. Love, *Symphotrichum subulatum* (Michx.) Nesom, *Taraxacum officinale* (L.) Weber ex Wigg.*, *Youngia japonica* (L.) DC.*

- BIGNONIACEAE- *Bignonia capreolata* L., *Campsis radicans* (L.) Bureau
- BORAGINACEAE- *Heliotropium indicum* L., *Nemophila aphylla* (L.) Brummitt
- BRASSICACEAE- *Cardamine pennsylvanica* Muhl. ex Willd., *Lepidium densiflorum* Schrad.,
Lepidium virginicum L.
- CAPRIFOLIACEAE- *Lonicera japonica* Thunb.*
- CARYOPHYLLACEAE- *Cerastium glomeratum* Thuill.*, *Polycarpon tetraphyllum* L.*, *Stellaria media* (L.) Vill.*
- COMMELINACEAE- *Commelina communis* L.*, *Commelina diffusa* Burm. f.*, *Murdannia nudiflora* (L.) Brenan*, *Tradescantia ohiensis* Raf.
- CONVOLVULACEAE- *Dichondra carolinensis* Michx., *Ipomoea cordatotriloba* Dennst., *Ipomoea lacunosa* L.
- CRASSULACEAE- *Sedum nuttallianum* Raf.
- CYPERACEAE- *Carex albolutescens* Schwein., *Carex caroliniana* Schwein., *Carex crinita* Lam.,
Cyperus esculentus L.*, *Cyperus flavescens* L., *Cyperus flavicomus* Michx., *Cyperus iria* L.*,
Cyperus retrorsus Chapm., *Cyperus rotundus* L.*, *Eleocharis obtusa* (Willd.) Schultes,
Eleocharis cf. torilis (Link) Schult., *Fimbristylis vahlii* (Lam.) Link, *Fimbristylis miliacea*
(L.) Vahl.*, *Kyllinga brevifolia* Rottb.
- EUPHORBIACEAE- *Acalypha gracilens* A. Gray., *Acalypha virginica* L., *Chamaescybe maculata* L.,
Chamaescybe nutans (Lag.) Small, *Chamaescybe prostrata* (Ait.) Small, *Croton monanthogynus* Michx.,
Euphorbia corollata L., *Triadica sebifera* (L.) Small*
- FABACEAE- *Albizia julibrissin* Durazz.*, *Cercis canadensis* L., *Desmodium paniculatum* (L.) DC.,
Galactia volubilis (L.) Britton, *Kummerowia striata* (Thunb.) Schindl.*, *Lespedeza repens*
(L.) W. Bart., *Medicago lupulina* L.*, *Mimosa strigillosa* Torr. & Gray, *Robinia hispida* L.,
Stylosanthes biflora (L.) B.S.P., *Trifolium dubium* Sibthorp*, *Trifolium lappaceum* L.*,
Trifolium repens L.*, *Vicia ludoviciana* Nutt., *Vicia sativa* L.*, *Wisteria sinensis* (Sims)
DC.*
- FAGACEAE- *Quercus falcata* Michx., *Quercus marilandica* Muench., *Quercus nigra* L., *Quercus stellata* Wangenh.
- GERANIACEAE- *Geranium carolinianum* L.
- IRIDACEAE- *Herbertia lahue* (Molina) Goldblatt, *Sisyrinchium rosulatum* Bicknell
- JUGLANDACEAE- *Carya illinoensis* (Wangenh.) K. Koch
- JUNCACEAE- *Juncus brachycarpus* Engelm., *Juncus bufonius* L., *Juncus diffusissimus* Buckl.,
Juncus tenuis Willd., *Luzula bulbosa* (Wood) Smyth & Smyth
- LAMIACEAE- *Lamium amplexicaule* L.*, *Lamium purpureum* L.*, *Prunella vulgaris* L., *Salvia lyrata* L.,
Scutellaria racemosa Pers.*

- LINDERNIACEAE- *Lindernia dubia* (L.) Pennell
- LYGODIACEAE- *Lygodium japonicum* (Thunb.) Sw.*
- MALVACEAE- *Modiola caroliniana* (L.) G. Don, *Sida spinosa* L.
- MAZACEAE- *Mazus pumilus* (Burm. f.) Steenis*
- MENISPERMACEAE- *Cocculus carolinus* (L.) DC.
- MOLLUGINACEAE- *Mollugo verticillata* L.*
- MORACEAE- *Maclura pomifera* (Raf.) Schneid., *Morus rubra* L.
- OLEACEAE- *Ligustrum sinense* Lour.*, *Ligustrum japonicum* Thunb.*
- ONAGRACEAE- *Ludwigia decurrens* Walt., *Ludwigia palustris* (L.) Elliott, *Oenothera speciosa* Nutt.
- ORCHIDACEAE- *Spiranthes* sp.
- OXALIDACEAE- *Oxalis corniculata* L., *Oxalis debilis* Kunth*
- PASSIFLORACEAE- *Passiflora lutea* L.
- PHYLLANTHACEAE- *Phyllanthus urinaria* L.*
- PHYTOLACCACEAE- *Phytolacca americana* L.
- PINACEAE- *Pinus echinata* P. Mill., *Pinus taeda* L.
- PLANTAGINACEAE- *Leucospora multifida* (Michx.) Nutt., *Mecardonia acuminata* (Walter) Small, *Mecardonia procumbens* (Mill.) Small, *Plantago lanceolata* L.*, *Plantago major* L.*, *Veronica polita* Fr.*
- POACEAE- *Andropogon glomeratus* (Walt.) B.S.P., *Briza minor* L.*, *Bromus catharticus* Vahl.*, *Cenchrus spinifex* Cav., *Chasmanthium sessiliflorum* (Poir.) Yates, *Cynodon dactylon* (L.) Pers.*, *Dichantherium aciculare* (Desv. ex Poir.) Gould & Clark, *Dichantherium acuminatum* (Sw.) Gould & Clark, *Digitaria ciliaris* (Retz.) Koel.*, *Digitaria ischaemum* (Shreb.) Shreb. ex Muhl.*, *Echinochloa colona* (L.) Link*, *Echinochloa crus-galli* (L.) Beauv.*, *Echinochloa muricata* (Beauv.) Fern., *Eleusine indica* (L.) Gaertn.*, *Leersia virginica* Willd., *Lolium perenne* L.*, *Paspalum dilatatum* Poir.*, *Paspalum distichum* L., *Paspalum notatum* Fluegge.*, *Paspalum pubiflorum* Rupr. ex Fourn., *Poa annua* L.*, *Polypogon viridis* (Gouan) Breistr.*, *Setaria parviflora* (Poir.) Kerg., *Setaria pumila* (Poir.) Roem. & Schult.*, *Sporobolus indicus* (L.) R. Br.*, *Stenotaphrum secundatum* (Walt.) Kuntze*, *Vulpia myuros* (L.) Gmel.*, *Vulpia octoflora* (Walt.) Rydb.
- POLYGONACEAE- *Brunnichia ovata* (Walt.) Shinnery, *Polygonum aviculare* L., *Polygonum hydropiperoides* L., *Rumex crispus* L.*, *Rumex pulcher* L.*
- POLYPODIACEAE- *Pleopeltis polypodioides* (L.) Andrews & Windham

PORTULACACEAE- *Portulaca oleracea* L.

PRIMULACEAE- *Anagallis arvensis* L.*, *Samolus valerandi* L.

RANUNCULACEAE- *Clematis terniflora* DC.*, *Ranunculus sarduous* Crantz*, *Ranunculus pusillus* Poir.

ROSACEAE- *Duchesnia indica* (Andrews) Teschem.*, *Porteranthus stipulatus* (Muhl. ex Willd.) Britt., *Potentilla simplex* Michx., *Rubus argutus* Link, *Rubus trivialis* Michx.

RUBIACEAE- *Diodia virginiana* L., *Galium aparine* L., *Galium obtusum* Bigelow, *Galium tinctorium* L., *Houstonia micrantha* (Shinners) Terrell, *Richardia scabra* L., *Sherardia arvensis* L.*, *Spermacoce glabra* Michx.

SALICACEAE- *Salix nigra* Marshall

SAPOTACEAE- *Acer rubrum* L.

SMILACACEAE- *Smilax bona-nox* L., *Smilax rotundifolia* L.

SOLANACEAE- *Solanum carolinense* L., *Solanum elaeagnifolium* Cav. , *Solanum ptychanthum* Dunal

THELYPTERIDACEAE- *Thelypteris kunthii* (Desv.) Morton

VERBENACEAE- *Verbena brasiliensis* Vell.*, *Phyla lanceolata* (Michx.) Greene

VIOLACEAE- *Viola rafinesquei* Greene, *Viola sororia* Willd.

VITACEAE- *Ampelopsis arborea* (L.) Koehne , *Ampelopsis cordata* Michx., *Parthenocissus quinquefolia* (L.) Planch., *Vitis riparia* Michx.