Lab2

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02/02/2020

## Introduction

In this lab we will look at herbarium specimen data and use dplyr to perform data processing. Picture data is the URL link to the herbarium specimens. Occ data contains information on how the specimen was collected. We will be using “cuts” or sections of this data for labs for the rest of the semester. Herbarium specimens are collections of dried plant material overtime that aid botanists in the study of phenology or how species differe from each other. Always print your output for each section of your R markdown. Only user dplyr functions besides loading data and packages.

## Load Data

occ = read.csv("occdata.csv")  
pic = read.csv("picdata.csv")

## Load Packages

library('dplyr')

##   
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':  
##   
## filter, lag

## The following objects are masked from 'package:base':  
##   
## intersect, setdiff, setequal, union

## Print the head of the data sets, and use the R base package to calculate the number of rows and columns in each data frame

## filenum coreid institutionCode collectionCode ownerInstitutionCode  
## 1 14 6763299 GMUF Plants NA  
## 2 14 6763300 GMUF Plants NA  
## 3 14 6763352 GMUF Plants NA  
## 4 14 6763375 GMUF Plants NA  
## 5 14 6763419 GMUF Plants NA  
## 6 14 6763478 GMUF Plants NA  
## collectionID basisOfRecord  
## 1 2e430955-77d0-4aa4-a16f-e2d3c5ff4493 PreservedSpecimen  
## 2 2e430955-77d0-4aa4-a16f-e2d3c5ff4493 PreservedSpecimen  
## 3 2e430955-77d0-4aa4-a16f-e2d3c5ff4493 PreservedSpecimen  
## 4 2e430955-77d0-4aa4-a16f-e2d3c5ff4493 PreservedSpecimen  
## 5 2e430955-77d0-4aa4-a16f-e2d3c5ff4493 PreservedSpecimen  
## 6 2e430955-77d0-4aa4-a16f-e2d3c5ff4493 PreservedSpecimen  
## occurrenceID catalogNumber otherCatalogNumbers  
## 1 56cd503f-f6c1-4a3d-9429-a238ee7bd159 GMUF-0000592   
## 2 a41e5e63-0374-4fa4-aa02-b817703d1407 GMUF-0000591   
## 3 1c5f7085-fe91-484d-a096-06afce2beb57 GMUF-0000677   
## 4 02ebf5fd-03aa-4e29-9ec5-e322f5d54ab9 GMUF-0000654   
## 5 ac299619-35ac-4d7a-a0ff-fd5af0eeaf3d GMUF-0001343 17050  
## 6 c9d34663-d1e9-4480-9e58-c7442246ab21 GMUF-0027246   
## kingdom phylum class order family scientificName  
## 1 Plantae Magnoliophyta Fagales Betulaceae Alnus serrulata  
## 2 Plantae Magnoliophyta Fagales Betulaceae Alnus serrulata  
## 3 Plantae Magnoliophyta Fagales Betulaceae Betula pendula  
## 4 Plantae Magnoliophyta Fagales Betulaceae Betula nigra  
## 5 Plantae Magnoliophyta Rosales Moraceae Broussonetia papyrifera  
## 6 Plantae Magnoliophyta Fagales Juglandaceae Carya alba  
## taxonID scientificNameAuthorship genus specificEpithet taxonRank  
## 1 71602 (Aiton) Willd. Alnus serrulata   
## 2 71602 (Aiton) Willd. Alnus serrulata   
## 3 74637 Roth Betula pendula   
## 4 74633 L. Betula nigra   
## 5 34605 (L.) L'HÃ©r. ex Vent. Broussonetia papyrifera   
## 6 57046 Nutt. Carya alba   
## infraspecificEpithet identifiedBy dateIdentified identificationReferences  
## 1 NA  
## 2 NA  
## 3 NA  
## 4 NA  
## 5 NA  
## 6 NA  
## identificationRemarks taxonRemarks identificationQualifier typeStatus  
## 1 NA NA NA  
## 2 NA NA NA  
## 3 NA NA NA  
## 4 NA NA NA  
## 5 NA NA NA  
## 6 NA NA NA  
## recordedBy recordNumber eventDate year month day  
## 1 Gary P. Fleming, Allen Belden 11740 1996-06-12 1996 6 12  
## 2 Cliff Hupp 98 1972-08-20 1972 8 20  
## 3 Ted Bradley 11691C 1977-03-18 1977 3 18  
## 4 Ted Bradley, Andrykovitch 18227 1982-07-05 1982 7 5  
## 5 Ted Bradley 19838 1983-08-11 1983 8 11  
## 6 Ted Bradley, Ian Ward 23782 1990-07-07 1990 7 7  
## startDayOfYear endDayOfYear verbatimEventDate occurrenceRemarks  
## 1 164 NA 12 June 1996   
## 2 233 NA 20 August 1972   
## 3 77 NA 18 March 1977   
## 4 186 NA 5 July 1982   
## 5 223 NA   
## 6 188 NA 7 July 1990   
## habitat  
## 1 On hummocks under bald cypress and tupelo along north shore of the Northwest River; Frequent  
## 2 Streamside  
## 3 Roadside.  
## 4   
## 5   
## 6 roadside. Fruit separate.  
## fieldNumber informationWithheld dataGeneralizations dynamicProperties  
## 1 NA NA NA NA  
## 2 NA NA NA NA  
## 3 NA NA NA NA  
## 4 NA NA NA NA  
## 5 NA NA NA NA  
## 6 NA NA NA NA  
## associatedTaxa reproductiveCondition establishmentMeans lifeStage sex  
## 1 NA NA NA  
## 2 NA NA NA  
## 3 NA NA NA  
## 4 NA NA NA  
## 5 NA NA NA  
## 6 NA NA NA  
## individualCount preparations country stateProvince county  
## 1 NA NA United States Virginia Chesapeake City  
## 2 NA NA United States Virginia Frederick  
## 3 NA NA United States Virginia Fairfax  
## 4 NA NA United States Virginia Madison  
## 5 NA NA United States Virginia Accomack  
## 6 NA NA United States Virginia Westmoreland  
## municipality  
## 1 NA  
## 2 NA  
## 3 NA  
## 4 NA  
## 5 NA  
## 6 NA  
## locality  
## 1 Along north shore of the Northwest River, ca. 1.0 mile NW of Northwest.  
## 2 Pembrook Springs  
## 3 S. side of Va. 123 between Potomac School Rd. and Ballantrae Lane. Most western, road entrance.  
## 4 Near jct. of U.S. 29 and Rte. 636 at the Robinson River.  
## 5 In Onancock  
## 6 2 mi. ne. of rte. 626 on rte. 612, se. of Hague.  
## locationRemarks decimalLatitude decimalLongitude geodeticDatum  
## 1 NA NA NA NA  
## 2 NA NA NA NA  
## 3 NA NA NA NA  
## 4 NA NA NA NA  
## 5 NA NA NA NA  
## 6 NA NA NA NA  
## coordinateUncertaintyInMeters verbatimCoordinates georeferencedBy  
## 1 NA NA  
## 2 NA NA  
## 3 NA NA  
## 4 NA NA  
## 5 NA NA  
## 6 NA NA  
## georeferenceProtocol georeferenceSources georeferenceVerificationStatus  
## 1 NA NA  
## 2 NA NA  
## 3 NA NA  
## 4 NA NA  
## 5 NA NA  
## 6 NA NA  
## georeferenceRemarks minimumElevationInMeters maximumElevationInMeters  
## 1 NA NA NA  
## 2 NA NA NA  
## 3 NA NA NA  
## 4 NA NA NA  
## 5 NA NA NA  
## 6 NA NA NA  
## minimumDepthInMeters maximumDepthInMeters verbatimDepth verbatimElevation  
## 1 NA NA NA   
## 2 NA NA NA   
## 3 NA NA NA   
## 4 NA NA NA   
## 5 NA NA NA   
## 6 NA NA NA   
## disposition language recordEnteredBy modified  
## 1 NA 2017-09-28 14:51:10  
## 2 NA 2017-09-28 14:51:10  
## 3 NA 2017-11-14 14:36:22  
## 4 NA 2017-11-14 14:36:22  
## 5 NA 2017-06-02 18:00:36  
## 6 NA 2017-09-28 14:51:10  
## rights rightsHolder accessRights  
## 1 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 2 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 3 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 4 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 5 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 6 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## recordId  
## 1 urn:uuid:56cd503f-f6c1-4a3d-9429-a238ee7bd159  
## 2 urn:uuid:a41e5e63-0374-4fa4-aa02-b817703d1407  
## 3 urn:uuid:1c5f7085-fe91-484d-a096-06afce2beb57  
## 4 urn:uuid:02ebf5fd-03aa-4e29-9ec5-e322f5d54ab9  
## 5 urn:uuid:ac299619-35ac-4d7a-a0ff-fd5af0eeaf3d  
## 6 urn:uuid:c9d34663-d1e9-4480-9e58-c7442246ab21  
## references  
## 1 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763299  
## 2 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763300  
## 3 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763352  
## 4 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763375  
## 5 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763419  
## 6 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763478

## id coreid  
## 1 15 7453510  
## 2 15 7962893  
## 3 15 7941303  
## 4 15 6816246  
## 5 15 8065784  
## 6 15 7973098  
## identifier  
## 1 https://bisque.cyverse.org/image\_service/image/00-8tykgWK6GN9fT46DGNt5Dc/resize:4000/format:jpeg  
## 2 https://bisque.cyverse.org/image\_service/image/00-u5LwfKSyndwuidQCcerqcF/resize:4000/format:jpeg  
## 3 https://bisque.cyverse.org/image\_service/image/00-tXKGkeigRmYhxTMtfWKYii/resize:4000/format:jpeg  
## 4 https://bisque.cyverse.org/image\_service/image/00-FrS2eY25s8xWbhYeAN2x6d/resize:4000/format:jpeg  
## 5 https://bisque.cyverse.org/image\_service/image/00-TXHCg6bqvJv3CkAXRRqzr5/resize:4000/format:jpeg  
## 6 https://bisque.cyverse.org/image\_service/image/00-rJjKZfChefSxciE6MRTMCo/resize:4000/format:jpeg  
## accessURI  
## 1 https://bisque.cyverse.org/image\_service/image/00-8tykgWK6GN9fT46DGNt5Dc/resize:4000/format:jpeg  
## 2 https://bisque.cyverse.org/image\_service/image/00-u5LwfKSyndwuidQCcerqcF/resize:4000/format:jpeg  
## 3 https://bisque.cyverse.org/image\_service/image/00-tXKGkeigRmYhxTMtfWKYii/resize:4000/format:jpeg  
## 4 https://bisque.cyverse.org/image\_service/image/00-FrS2eY25s8xWbhYeAN2x6d/resize:4000/format:jpeg  
## 5 https://bisque.cyverse.org/image\_service/image/00-TXHCg6bqvJv3CkAXRRqzr5/resize:4000/format:jpeg  
## 6 https://bisque.cyverse.org/image\_service/image/00-rJjKZfChefSxciE6MRTMCo/resize:4000/format:jpeg  
## thumbnailAccessURI  
## 1 https://bisque.cyverse.org/image\_service/image/00-8tykgWK6GN9fT46DGNt5Dc/thumbnail:200,200  
## 2 https://bisque.cyverse.org/image\_service/image/00-u5LwfKSyndwuidQCcerqcF/thumbnail:200,200  
## 3 https://bisque.cyverse.org/image\_service/image/00-tXKGkeigRmYhxTMtfWKYii/thumbnail:200,200  
## 4 https://bisque.cyverse.org/image\_service/image/00-FrS2eY25s8xWbhYeAN2x6d/thumbnail:200,200  
## 5 https://bisque.cyverse.org/image\_service/image/00-TXHCg6bqvJv3CkAXRRqzr5/thumbnail:200,200  
## 6 https://bisque.cyverse.org/image\_service/image/00-rJjKZfChefSxciE6MRTMCo/thumbnail:200,200  
## goodQualityAccessURI  
## 1 https://bisque.cyverse.org/image\_service/image/00-8tykgWK6GN9fT46DGNt5Dc/resize:1250/format:jpeg  
## 2 https://bisque.cyverse.org/image\_service/image/00-u5LwfKSyndwuidQCcerqcF/resize:1250/format:jpeg  
## 3 https://bisque.cyverse.org/image\_service/image/00-tXKGkeigRmYhxTMtfWKYii/resize:1250/format:jpeg  
## 4 https://bisque.cyverse.org/image\_service/image/00-FrS2eY25s8xWbhYeAN2x6d/resize:1250/format:jpeg  
## 5 https://bisque.cyverse.org/image\_service/image/00-TXHCg6bqvJv3CkAXRRqzr5/resize:1250/format:jpeg  
## 6 https://bisque.cyverse.org/image\_service/image/00-rJjKZfChefSxciE6MRTMCo/resize:1250/format:jpeg  
## rights Owner  
## 1 NA George Mason University, Ted R. Bradley Herbarium (GMUF-Plants)  
## 2 NA George Mason University, Ted R. Bradley Herbarium (GMUF-Plants)  
## 3 NA George Mason University, Ted R. Bradley Herbarium (GMUF-Plants)  
## 4 NA George Mason University, Ted R. Bradley Herbarium (GMUF-Plants)  
## 5 NA George Mason University, Ted R. Bradley Herbarium (GMUF-Plants)  
## 6 NA George Mason University, Ted R. Bradley Herbarium (GMUF-Plants)  
## UsageTerms  
## 1 CC BY-NC (Attribution-Non-Commercial)  
## 2 CC BY-NC (Attribution-Non-Commercial)  
## 3 CC BY-NC (Attribution-Non-Commercial)  
## 4 CC BY-NC (Attribution-Non-Commercial)  
## 5 CC BY-NC (Attribution-Non-Commercial)  
## 6 CC BY-NC (Attribution-Non-Commercial)  
## WebStatement caption comments  
## 1 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 2 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 3 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 4 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 5 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 6 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## providerManagedID MetadataDate format  
## 1 urn:uuid:db276c2b-d57f-4a4b-a49a-6f56d78e1135 2019-01-09 11:29:02 image/jpeg  
## 2 urn:uuid:d28cc960-f066-4275-9f62-a6220250a9dd 2019-01-09 11:29:38 image/jpeg  
## 3 urn:uuid:3c3e259b-844c-4044-8c40-ce8e9c702c54 2019-01-09 11:29:49 image/jpeg  
## 4 urn:uuid:120a2668-bf43-4b4e-af01-def977f51109 2019-01-09 11:27:36 image/jpeg  
## 5 urn:uuid:c12fa468-35c2-41fd-88e6-d85834749e7c 2019-01-09 11:30:01 image/jpeg  
## 6 urn:uuid:05561c0c-4127-45c2-bb11-eb3975f33fc3 2019-01-09 11:29:56 image/jpeg  
## associatedSpecimenReference  
## 1 http://www.sernecportal.org/portal/collections/individual/index.php?occid=7453510  
## 2 http://www.sernecportal.org/portal/collections/individual/index.php?occid=7962893  
## 3 http://www.sernecportal.org/portal/collections/individual/index.php?occid=7941303  
## 4 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6816246  
## 5 http://www.sernecportal.org/portal/collections/individual/index.php?occid=8065784  
## 6 http://www.sernecportal.org/portal/collections/individual/index.php?occid=7973098  
## type subtype metadataLanguage  
## 1 StillImage Photograph en  
## 2 StillImage Photograph en  
## 3 StillImage Photograph en  
## 4 StillImage Photograph en  
## 5 StillImage Photograph en  
## 6 StillImage Photograph en

## User an inner join between the two data sets using the commands in dplyr

## filenum coreid institutionCode collectionCode ownerInstitutionCode  
## 1 14 6763299 GMUF Plants NA  
## 2 14 6763300 GMUF Plants NA  
## 3 14 6763352 GMUF Plants NA  
## 4 14 6763375 GMUF Plants NA  
## 5 14 6763419 GMUF Plants NA  
## 6 14 6763478 GMUF Plants NA  
## collectionID basisOfRecord  
## 1 2e430955-77d0-4aa4-a16f-e2d3c5ff4493 PreservedSpecimen  
## 2 2e430955-77d0-4aa4-a16f-e2d3c5ff4493 PreservedSpecimen  
## 3 2e430955-77d0-4aa4-a16f-e2d3c5ff4493 PreservedSpecimen  
## 4 2e430955-77d0-4aa4-a16f-e2d3c5ff4493 PreservedSpecimen  
## 5 2e430955-77d0-4aa4-a16f-e2d3c5ff4493 PreservedSpecimen  
## 6 2e430955-77d0-4aa4-a16f-e2d3c5ff4493 PreservedSpecimen  
## occurrenceID catalogNumber otherCatalogNumbers  
## 1 56cd503f-f6c1-4a3d-9429-a238ee7bd159 GMUF-0000592   
## 2 a41e5e63-0374-4fa4-aa02-b817703d1407 GMUF-0000591   
## 3 1c5f7085-fe91-484d-a096-06afce2beb57 GMUF-0000677   
## 4 02ebf5fd-03aa-4e29-9ec5-e322f5d54ab9 GMUF-0000654   
## 5 ac299619-35ac-4d7a-a0ff-fd5af0eeaf3d GMUF-0001343 17050  
## 6 c9d34663-d1e9-4480-9e58-c7442246ab21 GMUF-0027246   
## kingdom phylum class order family scientificName  
## 1 Plantae Magnoliophyta Fagales Betulaceae Alnus serrulata  
## 2 Plantae Magnoliophyta Fagales Betulaceae Alnus serrulata  
## 3 Plantae Magnoliophyta Fagales Betulaceae Betula pendula  
## 4 Plantae Magnoliophyta Fagales Betulaceae Betula nigra  
## 5 Plantae Magnoliophyta Rosales Moraceae Broussonetia papyrifera  
## 6 Plantae Magnoliophyta Fagales Juglandaceae Carya alba  
## taxonID scientificNameAuthorship genus specificEpithet taxonRank  
## 1 71602 (Aiton) Willd. Alnus serrulata   
## 2 71602 (Aiton) Willd. Alnus serrulata   
## 3 74637 Roth Betula pendula   
## 4 74633 L. Betula nigra   
## 5 34605 (L.) L'HÃ©r. ex Vent. Broussonetia papyrifera   
## 6 57046 Nutt. Carya alba   
## infraspecificEpithet identifiedBy dateIdentified identificationReferences  
## 1 NA  
## 2 NA  
## 3 NA  
## 4 NA  
## 5 NA  
## 6 NA  
## identificationRemarks taxonRemarks identificationQualifier typeStatus  
## 1 NA NA NA  
## 2 NA NA NA  
## 3 NA NA NA  
## 4 NA NA NA  
## 5 NA NA NA  
## 6 NA NA NA  
## recordedBy recordNumber eventDate year month day  
## 1 Gary P. Fleming, Allen Belden 11740 1996-06-12 1996 6 12  
## 2 Cliff Hupp 98 1972-08-20 1972 8 20  
## 3 Ted Bradley 11691C 1977-03-18 1977 3 18  
## 4 Ted Bradley, Andrykovitch 18227 1982-07-05 1982 7 5  
## 5 Ted Bradley 19838 1983-08-11 1983 8 11  
## 6 Ted Bradley, Ian Ward 23782 1990-07-07 1990 7 7  
## startDayOfYear endDayOfYear verbatimEventDate occurrenceRemarks  
## 1 164 NA 12 June 1996   
## 2 233 NA 20 August 1972   
## 3 77 NA 18 March 1977   
## 4 186 NA 5 July 1982   
## 5 223 NA   
## 6 188 NA 7 July 1990   
## habitat  
## 1 On hummocks under bald cypress and tupelo along north shore of the Northwest River; Frequent  
## 2 Streamside  
## 3 Roadside.  
## 4   
## 5   
## 6 roadside. Fruit separate.  
## fieldNumber informationWithheld dataGeneralizations dynamicProperties  
## 1 NA NA NA NA  
## 2 NA NA NA NA  
## 3 NA NA NA NA  
## 4 NA NA NA NA  
## 5 NA NA NA NA  
## 6 NA NA NA NA  
## associatedTaxa reproductiveCondition establishmentMeans lifeStage sex  
## 1 NA NA NA  
## 2 NA NA NA  
## 3 NA NA NA  
## 4 NA NA NA  
## 5 NA NA NA  
## 6 NA NA NA  
## individualCount preparations country stateProvince county  
## 1 NA NA United States Virginia Chesapeake City  
## 2 NA NA United States Virginia Frederick  
## 3 NA NA United States Virginia Fairfax  
## 4 NA NA United States Virginia Madison  
## 5 NA NA United States Virginia Accomack  
## 6 NA NA United States Virginia Westmoreland  
## municipality  
## 1 NA  
## 2 NA  
## 3 NA  
## 4 NA  
## 5 NA  
## 6 NA  
## locality  
## 1 Along north shore of the Northwest River, ca. 1.0 mile NW of Northwest.  
## 2 Pembrook Springs  
## 3 S. side of Va. 123 between Potomac School Rd. and Ballantrae Lane. Most western, road entrance.  
## 4 Near jct. of U.S. 29 and Rte. 636 at the Robinson River.  
## 5 In Onancock  
## 6 2 mi. ne. of rte. 626 on rte. 612, se. of Hague.  
## locationRemarks decimalLatitude decimalLongitude geodeticDatum  
## 1 NA NA NA NA  
## 2 NA NA NA NA  
## 3 NA NA NA NA  
## 4 NA NA NA NA  
## 5 NA NA NA NA  
## 6 NA NA NA NA  
## coordinateUncertaintyInMeters verbatimCoordinates georeferencedBy  
## 1 NA NA  
## 2 NA NA  
## 3 NA NA  
## 4 NA NA  
## 5 NA NA  
## 6 NA NA  
## georeferenceProtocol georeferenceSources georeferenceVerificationStatus  
## 1 NA NA  
## 2 NA NA  
## 3 NA NA  
## 4 NA NA  
## 5 NA NA  
## 6 NA NA  
## georeferenceRemarks minimumElevationInMeters maximumElevationInMeters  
## 1 NA NA NA  
## 2 NA NA NA  
## 3 NA NA NA  
## 4 NA NA NA  
## 5 NA NA NA  
## 6 NA NA NA  
## minimumDepthInMeters maximumDepthInMeters verbatimDepth verbatimElevation  
## 1 NA NA NA   
## 2 NA NA NA   
## 3 NA NA NA   
## 4 NA NA NA   
## 5 NA NA NA   
## 6 NA NA NA   
## disposition language recordEnteredBy modified  
## 1 NA 2017-09-28 14:51:10  
## 2 NA 2017-09-28 14:51:10  
## 3 NA 2017-11-14 14:36:22  
## 4 NA 2017-11-14 14:36:22  
## 5 NA 2017-06-02 18:00:36  
## 6 NA 2017-09-28 14:51:10  
## rights.x rightsHolder accessRights  
## 1 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 2 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 3 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 4 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 5 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 6 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## recordId  
## 1 urn:uuid:56cd503f-f6c1-4a3d-9429-a238ee7bd159  
## 2 urn:uuid:a41e5e63-0374-4fa4-aa02-b817703d1407  
## 3 urn:uuid:1c5f7085-fe91-484d-a096-06afce2beb57  
## 4 urn:uuid:02ebf5fd-03aa-4e29-9ec5-e322f5d54ab9  
## 5 urn:uuid:ac299619-35ac-4d7a-a0ff-fd5af0eeaf3d  
## 6 urn:uuid:c9d34663-d1e9-4480-9e58-c7442246ab21  
## references  
## 1 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763299  
## 2 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763300  
## 3 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763352  
## 4 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763375  
## 5 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763419  
## 6 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763478  
## id  
## 1 15  
## 2 15  
## 3 15  
## 4 15  
## 5 15  
## 6 15  
## identifier  
## 1 https://bisque.cyverse.org/image\_service/image/00-VXs246BLmjCdsND6xfPw4F/resize:4000/format:jpeg  
## 2 https://bisque.cyverse.org/image\_service/image/00-8pkqRaesRCU53d3qrrasJH/resize:4000/format:jpeg  
## 3 https://bisque.cyverse.org/image\_service/image/00-WLhgJScuxaEgqaSHKmkbAi/resize:4000/format:jpeg  
## 4 https://bisque.cyverse.org/image\_service/image/00-5xXCwNAaVDR3LGLnrcygZL/resize:4000/format:jpeg  
## 5 https://bisque.cyverse.org/image\_service/image/00-XCJQqHA5TL5Zfhzen3aMHH/resize:4000/format:jpeg  
## 6 https://bisque.cyverse.org/image\_service/image/00-MppvACDyHSAZDXcyYWw4tj/resize:4000/format:jpeg  
## accessURI  
## 1 https://bisque.cyverse.org/image\_service/image/00-VXs246BLmjCdsND6xfPw4F/resize:4000/format:jpeg  
## 2 https://bisque.cyverse.org/image\_service/image/00-8pkqRaesRCU53d3qrrasJH/resize:4000/format:jpeg  
## 3 https://bisque.cyverse.org/image\_service/image/00-WLhgJScuxaEgqaSHKmkbAi/resize:4000/format:jpeg  
## 4 https://bisque.cyverse.org/image\_service/image/00-5xXCwNAaVDR3LGLnrcygZL/resize:4000/format:jpeg  
## 5 https://bisque.cyverse.org/image\_service/image/00-XCJQqHA5TL5Zfhzen3aMHH/resize:4000/format:jpeg  
## 6 https://bisque.cyverse.org/image\_service/image/00-MppvACDyHSAZDXcyYWw4tj/resize:4000/format:jpeg  
## thumbnailAccessURI  
## 1 https://bisque.cyverse.org/image\_service/image/00-VXs246BLmjCdsND6xfPw4F/thumbnail:200,200  
## 2 https://bisque.cyverse.org/image\_service/image/00-8pkqRaesRCU53d3qrrasJH/thumbnail:200,200  
## 3 https://bisque.cyverse.org/image\_service/image/00-WLhgJScuxaEgqaSHKmkbAi/thumbnail:200,200  
## 4 https://bisque.cyverse.org/image\_service/image/00-5xXCwNAaVDR3LGLnrcygZL/thumbnail:200,200  
## 5 https://bisque.cyverse.org/image\_service/image/00-XCJQqHA5TL5Zfhzen3aMHH/thumbnail:200,200  
## 6 https://bisque.cyverse.org/image\_service/image/00-MppvACDyHSAZDXcyYWw4tj/thumbnail:200,200  
## goodQualityAccessURI  
## 1 https://bisque.cyverse.org/image\_service/image/00-VXs246BLmjCdsND6xfPw4F/resize:1250/format:jpeg  
## 2 https://bisque.cyverse.org/image\_service/image/00-8pkqRaesRCU53d3qrrasJH/resize:1250/format:jpeg  
## 3 https://bisque.cyverse.org/image\_service/image/00-WLhgJScuxaEgqaSHKmkbAi/resize:1250/format:jpeg  
## 4 https://bisque.cyverse.org/image\_service/image/00-5xXCwNAaVDR3LGLnrcygZL/resize:1250/format:jpeg  
## 5 https://bisque.cyverse.org/image\_service/image/00-XCJQqHA5TL5Zfhzen3aMHH/resize:1250/format:jpeg  
## 6 https://bisque.cyverse.org/image\_service/image/00-MppvACDyHSAZDXcyYWw4tj/resize:1250/format:jpeg  
## rights.y Owner  
## 1 NA George Mason University, Ted R. Bradley Herbarium (GMUF-Plants)  
## 2 NA George Mason University, Ted R. Bradley Herbarium (GMUF-Plants)  
## 3 NA George Mason University, Ted R. Bradley Herbarium (GMUF-Plants)  
## 4 NA George Mason University, Ted R. Bradley Herbarium (GMUF-Plants)  
## 5 NA George Mason University, Ted R. Bradley Herbarium (GMUF-Plants)  
## 6 NA George Mason University, Ted R. Bradley Herbarium (GMUF-Plants)  
## UsageTerms  
## 1 CC BY-NC (Attribution-Non-Commercial)  
## 2 CC BY-NC (Attribution-Non-Commercial)  
## 3 CC BY-NC (Attribution-Non-Commercial)  
## 4 CC BY-NC (Attribution-Non-Commercial)  
## 5 CC BY-NC (Attribution-Non-Commercial)  
## 6 CC BY-NC (Attribution-Non-Commercial)  
## WebStatement caption comments  
## 1 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 2 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 3 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 4 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 5 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 6 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## providerManagedID MetadataDate format  
## 1 urn:uuid:e5737178-330d-406a-a1fe-e6a233cae42b 2019-01-09 11:27:09 image/jpeg  
## 2 urn:uuid:bcb65297-c3c6-41a1-9189-c1ae9cd633e4 2019-01-09 11:27:09 image/jpeg  
## 3 urn:uuid:5433152b-1da0-4ad4-acde-a2d3065d86b1 2019-01-09 11:27:10 image/jpeg  
## 4 urn:uuid:abd443b8-1d9e-495f-a446-96429695de74 2019-01-09 11:27:09 image/jpeg  
## 5 urn:uuid:e208045e-8b44-4f12-b780-45dc0239960d 2019-01-09 11:27:11 image/jpeg  
## 6 urn:uuid:2c261138-3533-4694-a142-10168bf64ab7 2019-01-09 11:27:11 image/jpeg  
## associatedSpecimenReference  
## 1 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763299  
## 2 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763300  
## 3 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763352  
## 4 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763375  
## 5 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763419  
## 6 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763478  
## type subtype metadataLanguage  
## 1 StillImage Photograph en  
## 2 StillImage Photograph en  
## 3 StillImage Photograph en  
## 4 StillImage Photograph en  
## 5 StillImage Photograph en  
## 6 StillImage Photograph en

## Missing Data of Year of Collection(year), Count the number of missing data collection years.

## [1] 371

## Based on our lecture and if I told you herbarium specimens have only been recorded for the last 100 years. Please fix the missingness of that column.

## filenum coreid institutionCode collectionCode ownerInstitutionCode  
## 1 14 6763299 GMUF Plants NA  
## 2 14 6763300 GMUF Plants NA  
## 3 14 6763352 GMUF Plants NA  
## 4 14 6763375 GMUF Plants NA  
## 5 14 6763419 GMUF Plants NA  
## 6 14 6763478 GMUF Plants NA  
## collectionID basisOfRecord  
## 1 2e430955-77d0-4aa4-a16f-e2d3c5ff4493 PreservedSpecimen  
## 2 2e430955-77d0-4aa4-a16f-e2d3c5ff4493 PreservedSpecimen  
## 3 2e430955-77d0-4aa4-a16f-e2d3c5ff4493 PreservedSpecimen  
## 4 2e430955-77d0-4aa4-a16f-e2d3c5ff4493 PreservedSpecimen  
## 5 2e430955-77d0-4aa4-a16f-e2d3c5ff4493 PreservedSpecimen  
## 6 2e430955-77d0-4aa4-a16f-e2d3c5ff4493 PreservedSpecimen  
## occurrenceID catalogNumber otherCatalogNumbers  
## 1 56cd503f-f6c1-4a3d-9429-a238ee7bd159 GMUF-0000592   
## 2 a41e5e63-0374-4fa4-aa02-b817703d1407 GMUF-0000591   
## 3 1c5f7085-fe91-484d-a096-06afce2beb57 GMUF-0000677   
## 4 02ebf5fd-03aa-4e29-9ec5-e322f5d54ab9 GMUF-0000654   
## 5 ac299619-35ac-4d7a-a0ff-fd5af0eeaf3d GMUF-0001343 17050  
## 6 c9d34663-d1e9-4480-9e58-c7442246ab21 GMUF-0027246   
## kingdom phylum class order family scientificName  
## 1 Plantae Magnoliophyta Fagales Betulaceae Alnus serrulata  
## 2 Plantae Magnoliophyta Fagales Betulaceae Alnus serrulata  
## 3 Plantae Magnoliophyta Fagales Betulaceae Betula pendula  
## 4 Plantae Magnoliophyta Fagales Betulaceae Betula nigra  
## 5 Plantae Magnoliophyta Rosales Moraceae Broussonetia papyrifera  
## 6 Plantae Magnoliophyta Fagales Juglandaceae Carya alba  
## taxonID scientificNameAuthorship genus specificEpithet taxonRank  
## 1 71602 (Aiton) Willd. Alnus serrulata   
## 2 71602 (Aiton) Willd. Alnus serrulata   
## 3 74637 Roth Betula pendula   
## 4 74633 L. Betula nigra   
## 5 34605 (L.) L'HÃ©r. ex Vent. Broussonetia papyrifera   
## 6 57046 Nutt. Carya alba   
## infraspecificEpithet identifiedBy dateIdentified identificationReferences  
## 1 NA  
## 2 NA  
## 3 NA  
## 4 NA  
## 5 NA  
## 6 NA  
## identificationRemarks taxonRemarks identificationQualifier typeStatus  
## 1 NA NA NA  
## 2 NA NA NA  
## 3 NA NA NA  
## 4 NA NA NA  
## 5 NA NA NA  
## 6 NA NA NA  
## recordedBy recordNumber eventDate year month day  
## 1 Gary P. Fleming, Allen Belden 11740 1996-06-12 1996 6 12  
## 2 Cliff Hupp 98 1972-08-20 1972 8 20  
## 3 Ted Bradley 11691C 1977-03-18 1977 3 18  
## 4 Ted Bradley, Andrykovitch 18227 1982-07-05 1982 7 5  
## 5 Ted Bradley 19838 1983-08-11 1983 8 11  
## 6 Ted Bradley, Ian Ward 23782 1990-07-07 1990 7 7  
## startDayOfYear endDayOfYear verbatimEventDate occurrenceRemarks  
## 1 164 NA 12 June 1996   
## 2 233 NA 20 August 1972   
## 3 77 NA 18 March 1977   
## 4 186 NA 5 July 1982   
## 5 223 NA   
## 6 188 NA 7 July 1990   
## habitat  
## 1 On hummocks under bald cypress and tupelo along north shore of the Northwest River; Frequent  
## 2 Streamside  
## 3 Roadside.  
## 4   
## 5   
## 6 roadside. Fruit separate.  
## fieldNumber informationWithheld dataGeneralizations dynamicProperties  
## 1 NA NA NA NA  
## 2 NA NA NA NA  
## 3 NA NA NA NA  
## 4 NA NA NA NA  
## 5 NA NA NA NA  
## 6 NA NA NA NA  
## associatedTaxa reproductiveCondition establishmentMeans lifeStage sex  
## 1 NA NA NA  
## 2 NA NA NA  
## 3 NA NA NA  
## 4 NA NA NA  
## 5 NA NA NA  
## 6 NA NA NA  
## individualCount preparations country stateProvince county  
## 1 NA NA United States Virginia Chesapeake City  
## 2 NA NA United States Virginia Frederick  
## 3 NA NA United States Virginia Fairfax  
## 4 NA NA United States Virginia Madison  
## 5 NA NA United States Virginia Accomack  
## 6 NA NA United States Virginia Westmoreland  
## municipality  
## 1 NA  
## 2 NA  
## 3 NA  
## 4 NA  
## 5 NA  
## 6 NA  
## locality  
## 1 Along north shore of the Northwest River, ca. 1.0 mile NW of Northwest.  
## 2 Pembrook Springs  
## 3 S. side of Va. 123 between Potomac School Rd. and Ballantrae Lane. Most western, road entrance.  
## 4 Near jct. of U.S. 29 and Rte. 636 at the Robinson River.  
## 5 In Onancock  
## 6 2 mi. ne. of rte. 626 on rte. 612, se. of Hague.  
## locationRemarks decimalLatitude decimalLongitude geodeticDatum  
## 1 NA NA NA NA  
## 2 NA NA NA NA  
## 3 NA NA NA NA  
## 4 NA NA NA NA  
## 5 NA NA NA NA  
## 6 NA NA NA NA  
## coordinateUncertaintyInMeters verbatimCoordinates georeferencedBy  
## 1 NA NA  
## 2 NA NA  
## 3 NA NA  
## 4 NA NA  
## 5 NA NA  
## 6 NA NA  
## georeferenceProtocol georeferenceSources georeferenceVerificationStatus  
## 1 NA NA  
## 2 NA NA  
## 3 NA NA  
## 4 NA NA  
## 5 NA NA  
## 6 NA NA  
## georeferenceRemarks minimumElevationInMeters maximumElevationInMeters  
## 1 NA NA NA  
## 2 NA NA NA  
## 3 NA NA NA  
## 4 NA NA NA  
## 5 NA NA NA  
## 6 NA NA NA  
## minimumDepthInMeters maximumDepthInMeters verbatimDepth verbatimElevation  
## 1 NA NA NA   
## 2 NA NA NA   
## 3 NA NA NA   
## 4 NA NA NA   
## 5 NA NA NA   
## 6 NA NA NA   
## disposition language recordEnteredBy modified  
## 1 NA 2017-09-28 14:51:10  
## 2 NA 2017-09-28 14:51:10  
## 3 NA 2017-11-14 14:36:22  
## 4 NA 2017-11-14 14:36:22  
## 5 NA 2017-06-02 18:00:36  
## 6 NA 2017-09-28 14:51:10  
## rights.x rightsHolder accessRights  
## 1 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 2 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 3 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 4 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 5 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 6 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## recordId  
## 1 urn:uuid:56cd503f-f6c1-4a3d-9429-a238ee7bd159  
## 2 urn:uuid:a41e5e63-0374-4fa4-aa02-b817703d1407  
## 3 urn:uuid:1c5f7085-fe91-484d-a096-06afce2beb57  
## 4 urn:uuid:02ebf5fd-03aa-4e29-9ec5-e322f5d54ab9  
## 5 urn:uuid:ac299619-35ac-4d7a-a0ff-fd5af0eeaf3d  
## 6 urn:uuid:c9d34663-d1e9-4480-9e58-c7442246ab21  
## references  
## 1 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763299  
## 2 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763300  
## 3 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763352  
## 4 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763375  
## 5 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763419  
## 6 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763478  
## id  
## 1 15  
## 2 15  
## 3 15  
## 4 15  
## 5 15  
## 6 15  
## identifier  
## 1 https://bisque.cyverse.org/image\_service/image/00-VXs246BLmjCdsND6xfPw4F/resize:4000/format:jpeg  
## 2 https://bisque.cyverse.org/image\_service/image/00-8pkqRaesRCU53d3qrrasJH/resize:4000/format:jpeg  
## 3 https://bisque.cyverse.org/image\_service/image/00-WLhgJScuxaEgqaSHKmkbAi/resize:4000/format:jpeg  
## 4 https://bisque.cyverse.org/image\_service/image/00-5xXCwNAaVDR3LGLnrcygZL/resize:4000/format:jpeg  
## 5 https://bisque.cyverse.org/image\_service/image/00-XCJQqHA5TL5Zfhzen3aMHH/resize:4000/format:jpeg  
## 6 https://bisque.cyverse.org/image\_service/image/00-MppvACDyHSAZDXcyYWw4tj/resize:4000/format:jpeg  
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## 2 https://bisque.cyverse.org/image\_service/image/00-8pkqRaesRCU53d3qrrasJH/resize:4000/format:jpeg  
## 3 https://bisque.cyverse.org/image\_service/image/00-WLhgJScuxaEgqaSHKmkbAi/resize:4000/format:jpeg  
## 4 https://bisque.cyverse.org/image\_service/image/00-5xXCwNAaVDR3LGLnrcygZL/resize:4000/format:jpeg  
## 5 https://bisque.cyverse.org/image\_service/image/00-XCJQqHA5TL5Zfhzen3aMHH/resize:4000/format:jpeg  
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## 2 https://bisque.cyverse.org/image\_service/image/00-8pkqRaesRCU53d3qrrasJH/thumbnail:200,200  
## 3 https://bisque.cyverse.org/image\_service/image/00-WLhgJScuxaEgqaSHKmkbAi/thumbnail:200,200  
## 4 https://bisque.cyverse.org/image\_service/image/00-5xXCwNAaVDR3LGLnrcygZL/thumbnail:200,200  
## 5 https://bisque.cyverse.org/image\_service/image/00-XCJQqHA5TL5Zfhzen3aMHH/thumbnail:200,200  
## 6 https://bisque.cyverse.org/image\_service/image/00-MppvACDyHSAZDXcyYWw4tj/thumbnail:200,200  
## goodQualityAccessURI  
## 1 https://bisque.cyverse.org/image\_service/image/00-VXs246BLmjCdsND6xfPw4F/resize:1250/format:jpeg  
## 2 https://bisque.cyverse.org/image\_service/image/00-8pkqRaesRCU53d3qrrasJH/resize:1250/format:jpeg  
## 3 https://bisque.cyverse.org/image\_service/image/00-WLhgJScuxaEgqaSHKmkbAi/resize:1250/format:jpeg  
## 4 https://bisque.cyverse.org/image\_service/image/00-5xXCwNAaVDR3LGLnrcygZL/resize:1250/format:jpeg  
## 5 https://bisque.cyverse.org/image\_service/image/00-XCJQqHA5TL5Zfhzen3aMHH/resize:1250/format:jpeg  
## 6 https://bisque.cyverse.org/image\_service/image/00-MppvACDyHSAZDXcyYWw4tj/resize:1250/format:jpeg  
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## 4 NA George Mason University, Ted R. Bradley Herbarium (GMUF-Plants)  
## 5 NA George Mason University, Ted R. Bradley Herbarium (GMUF-Plants)  
## 6 NA George Mason University, Ted R. Bradley Herbarium (GMUF-Plants)  
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## 4 CC BY-NC (Attribution-Non-Commercial)  
## 5 CC BY-NC (Attribution-Non-Commercial)  
## 6 CC BY-NC (Attribution-Non-Commercial)  
## WebStatement caption comments  
## 1 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 2 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 3 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 4 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 5 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## 6 http://creativecommons.org/licenses/by-nc/3.0/ NA NA  
## providerManagedID MetadataDate format  
## 1 urn:uuid:e5737178-330d-406a-a1fe-e6a233cae42b 2019-01-09 11:27:09 image/jpeg  
## 2 urn:uuid:bcb65297-c3c6-41a1-9189-c1ae9cd633e4 2019-01-09 11:27:09 image/jpeg  
## 3 urn:uuid:5433152b-1da0-4ad4-acde-a2d3065d86b1 2019-01-09 11:27:10 image/jpeg  
## 4 urn:uuid:abd443b8-1d9e-495f-a446-96429695de74 2019-01-09 11:27:09 image/jpeg  
## 5 urn:uuid:e208045e-8b44-4f12-b780-45dc0239960d 2019-01-09 11:27:11 image/jpeg  
## 6 urn:uuid:2c261138-3533-4694-a142-10168bf64ab7 2019-01-09 11:27:11 image/jpeg  
## associatedSpecimenReference  
## 1 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763299  
## 2 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763300  
## 3 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763352  
## 4 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763375  
## 5 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763419  
## 6 http://www.sernecportal.org/portal/collections/individual/index.php?occid=6763478  
## type subtype metadataLanguage  
## 1 StillImage Photograph en  
## 2 StillImage Photograph en  
## 3 StillImage Photograph en  
## 4 StillImage Photograph en  
## 5 StillImage Photograph en  
## 6 StillImage Photograph en

## By phylum please take the average startDayOfYear which is when day of the year that it was collected

## # A tibble: 4 x 2  
## phylum avg  
## <fct> <dbl>  
## 1 Coniferophyta 160.  
## 2 Lycopodiophyta 178.  
## 3 Magnoliophyta 200.  
## 4 Pteridophyta 221

## Subset the phylum to Coniferophyta and print the dim of the data frame

## [1] 6

## [1] 100