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Abstract

Rationale: Because of the important role played by various pollens in the development of allergies and asthma, knowledge of their presence, distribution and local relevance is essential; however, most assessments either take specific localities out of the context of their respective regions, or they oversimplify by considering large land areas, such as an entire state or group of states, as if they were discrete units of nature. We selected individual states and divided them into subregions more appropriate and useful for understanding the biogeography of pollinosis.

Methods: Each state was divided into subregions based upon a combination of natural geography (physiographic or vegetational units) and artificial geography (*i.e.*, metropolitan areas) to facilitate putting each allergenic species into perspective. Distributional data for the important antigens were obtained from published botanical literature, online distributional data and personal field observations, and then presented in the appropriate column or row for the state.

Results: Each state or region is presented on a separate chart, with the presence or absence of a given species noted for each selected representative locality. If the presence of a species is either marginal (*i.e.*, at the edge of its range) or occasional (due to the species' being relatively uncommon throughout that particular area), this has been indicated by a lighter shade of color in the chart.

Conclusions: This method of portraying the distributions of allergenic species may aid in selecting appropriate testing items for patients who travel extensively, or for practitioners having multiple practices or whose patients come from a wide geographic area.

The plant data charts may be viewed left-to-right (same plant species, variable locations) or up-and-down (same location, variable plant species). Changes in the presence or abundance of pollen species vary considerably from one species to another.

Dark colors indicate that the taxon grows in the area; light colors represent marginal or occasional presence; white indicates absence of the taxon listed. Where a taxon occurs in two or more states, scoring has been done independently, and genera shown for different states may include different species where individual species have not been listed.

Texas

Dallas/
Fort Worth
(Metropole)
Lubbock/Elmer
(East Texas
Pineywoods)
Houston
(Gulf Prairies)
McAllen/Corpus
Christi (S Texas/
Rio Valley)
Austin/San
Antonio
(Blackland)
San Angelo
(Strling Plains)
Amarillo/Lubbock
(High Plains)
Odessa/
Midland
(Plains Border)
El Paso
(Trans-Pecos)

TREES	El Paso (Trans-Pecos)	Odessa/Midland (Plains Border)	Amarillo/Lubbock (High Plains)	San Angelo (Strling Plains)	Austin/San Antonio (Blackland)	McAllen/Corpus Christi (S Texas/Rio Valley)	Houston (Gulf Prairies)	Dallas/Fort Worth (Metropole)	Lubbock/Elmer (East Texas Pineywoods)
Acacia (<i>Acacia</i>)									
Ash (<i>Fraxinus</i>)									
Bald Cypress (<i>Tax. distichum</i>) Bayberry (<i>Myrica cerifera</i>)									
Beech (<i>Fagus grandifolia</i>)									
Birch, River (<i>Betula nigra</i>) Privet (<i>Ligustrum</i>) Walnut (<i>Juglans</i>)									
Cedar, Red (<i>Jun. virginiana</i>) Sweet Gum (<i>Liquidambar</i>)									
Cedar, Mountain (<i>Juniperus ashe</i>)									
Cottonwood/Poplar (<i>Populus</i>) Elm (<i>Ulmus</i>) Hackberry (<i>Celtis</i>)									
Hickory/Pecan (<i>Carya</i>) Mulberry (<i>Morus</i>)									
Juniper, Pinchot (<i>Juniperus pinchotii</i>)									
Maple/Box Elder (<i>Acer</i>) Mulberry, Paper (<i>Broussonetia</i>) Willow (<i>Salix</i>)									
Mesquite (<i>Prosopis</i>) Sweet Gum (<i>Liquidambar</i>)									
Oak (<i>Quercus</i>)									
Palm (<i>Arecastrom</i>)									
Pine (<i>Pinus</i>)									
Sycamore (<i>Platanus occidentalis</i>)									

GRASSES	El Paso (Trans-Pecos)	Odessa/Midland (Plains Border)	Amarillo/Lubbock (High Plains)	San Angelo (Strling Plains)	Austin/San Antonio (Blackland)	McAllen/Corpus Christi (S Texas/Rio Valley)	Houston (Gulf Prairies)	Dallas/Fort Worth (Metropole)	Lubbock/Elmer (East Texas Pineywoods)
Bahia (<i>Paspalum notatum</i>)									
Bermuda (<i>Cynodon dactylon</i>) Johnson (<i>Sorghum</i>) Pasture Grasses (<i>Poa, Lolium</i> , etc.)									

WEEDS	El Paso (Trans-Pecos)	Odessa/Midland (Plains Border)	Amarillo/Lubbock (High Plains)	San Angelo (Strling Plains)	Austin/San Antonio (Blackland)	McAllen/Corpus Christi (S Texas/Rio Valley)	Houston (Gulf Prairies)	Dallas/Fort Worth (Metropole)	Lubbock/Elmer (East Texas Pineywoods)
Cocklebur (<i>Xanthium strumarium</i>) Dock/Sorrel (<i>Rumex</i>) Pigweed (<i>Amaranthus</i>) Ragweed, Western (<i>A. psilostachya</i>)									
Lamb's Quarter (<i>Chenopodium album</i>)									
Plantain, English (<i>Plantago lanceolata</i>)									
Ragweed, Giant (<i>Ambrosia trifida</i>)									
Ragweed, Short (<i>A. artemisiifolia</i>)									
Ragweed, False (<i>A. acanthicarpa</i>)									
Russian Thistle (<i>Salsola kal</i>)									
Scale (<i>Atriplex</i>)									

Illinois

Caro
(S Mississippi
Alluvial Plain)
Mount Vernon
(S Illinois
Till Plains)
Danville
(Glaciated Washburn
Lowlands)
Springfield
(Grand Prairie
Quaternary
Chicago Lake
Plain)
Quad Cities
(On Mississippi
River Valley)

TREES	Caro (S Mississippi Alluvial Plain)	Mount Vernon (S Illinois Till Plains)	Danville (Glaciated Washburn Lowlands)	Springfield (Grand Prairie Quaternary Chicago Lake Plain)	Quad Cities (On Mississippi River Valley)
Alder (<i>Alnus</i>)					
Ash (<i>Fraxinus</i>) Cottonwood/Poplar (<i>Populus</i>) Elm (<i>Ulmus</i>) Hackberry (<i>Celtis</i>) Hickory (<i>Carya</i>) Maple/Box Elder (<i>Acer</i>) Mulberry (<i>Morus</i>) Oak (<i>Quercus</i>) Walnut (<i>Juglans</i>) Willow (<i>Salix</i>)					
Aspen (<i>Populus tremuloides</i>)					
Bald Cypress (<i>Taxodium</i>)					
Beech (<i>Fagus grandifolia</i>)					
Birch (<i>Betula</i>)					
Cedar/Red (<i>Juniperus virginiana</i>)					
Mulberry, Paper (<i>Broussonetia</i>)					
Pecan (<i>Carya illinoensis</i>)					
Pine (<i>Pinus</i>)					
Privet (<i>Ligustrum</i>)					
Sweet Gum (<i>Liquidambar styraciflua</i>)					
Sycamore (<i>Platanus occidentalis</i>)					

GRASSES	Caro (S Mississippi Alluvial Plain)	Mount Vernon (S Illinois Till Plains)	Danville (Glaciated Washburn Lowlands)	Springfield (Grand Prairie Quaternary Chicago Lake Plain)	Quad Cities (On Mississippi River Valley)
Bermuda (<i>Cynodon dactylon</i>)					
Johnson (<i>Sorghum halepense</i>)					
Pasture Grasses (<i>Poa, Lolium</i> , etc.)					

WEEDS	Caro (S Mississippi Alluvial Plain)	Mount Vernon (S Illinois Till Plains)	Danville (Glaciated Washburn Lowlands)	Springfield (Grand Prairie Quaternary Chicago Lake Plain)	Quad Cities (On Mississippi River Valley)
Cocklebur (<i>Xanthium strumarium</i>) Dock/Sorrel (<i>Rumex</i>) Lamb's Quarter (<i>Chenopodium album</i>) Pigweed (<i>Amaranthus</i>) Plantain, English (<i>Plantago lanceolata</i>)					
Firebush/Kochia (<i>Kochia scopariua</i>)					
Ragweed, Giant (<i>Ambrosia trifida</i>) Ragweed, Short (<i>A. artemisiifolia</i>)					
Ragweed, Western (<i>A. psilostachya</i>)					

Maryland

(Eastern Shore Uplands)
 Waldorf
 (S Maryland Coastal Plain)
 Rockville
 (Piedmont Uplands)
 Baltimore
 (Fall Line)
 Hagerstown
 (Ridge and Valley)
 Grantsville
 (Allegheny Plateau)

TREES

Alder (<i>Alnus</i>)			
Ash (<i>Fraxinus</i>)			
Beech (<i>Fagus grandifolia</i>)			
Birch (<i>Betula</i>)			
Elm (<i>Ulmus</i>)			
Hickory (<i>Carya</i>)			
Maple/Box Elder (<i>Acer</i>)			
Mulberry (<i>Morus</i>)			
Oak White (<i>Quercus alba</i>)			
Sycamore (<i>Platanus</i>)			
Walnut (<i>Juglans nigra</i>)			
Willow (<i>Salix</i>)			
Bald Cypress (<i>Taxodium</i>)			
Oak, Water (<i>Quercus nigra</i>)			
Bayberry/Wax Myrtle (<i>Myrica cerifera</i>)			
Sweet Gum (<i>Liquidambar styraciflua</i>)			
Cedar, Red (<i>Juniperus virginiana</i>)			
Privet (<i>Ligustrum</i>)			
Cottonwood, Eastern (<i>Populus deltoides</i>)			
Hackberry (<i>Celtis occidentalis</i>)			
Pine, Loblolly (<i>Pinus taeda</i>)			
Pine, Virginia Scrub (<i>Pinus virginiana</i>)			
Pine, White (<i>Pinus strobus</i>)			

GRASSES

Bermuda (<i>Cynodon dactylon</i>)			
Johnson (<i>Sorghum halepense</i>)			
Pasture Grasses (<i>Poa</i> , <i>Lolium</i> , etc.)			

WEEDS

Baccharis (<i>Baccharis halimifolia</i>)			
Cocklebur (<i>Xanthium strumarium</i>)			
Dock/Sorrel (<i>Rumex</i>)			
Lamb's Quarter (<i>Chenopodium album</i>)			
Pigweed (<i>Amaranthus</i>)			
Plantain, English (<i>Plantago lanceolata</i>)			
Mugwort, Common (<i>Artemisia vulgaris</i>)			
Ragweed, Giant (<i>Ambrosia trifida</i>)			
Ragweed, Short (<i>A. artemisiifolia</i>)			
Russian Thistle (<i>Salsola kali</i>)			

California

Needles/Blythe
 (SE Hot Desert/
 Colorado R Valley)
 LA/San Diego
 (S Coast Oak
 Woodlands/Chaparral)
 San Francisco Bay
 (N Central Coast Oak
 Woodlands)
 Sacramento
 (Central Valley)
 Alhambra
 (Mediterranean/
 Great Basin)
 Eureka/Arcata
 (NW Coastal
 Douglas fir
 hills)

TREES

Acacia (<i>Acacia</i>)			
Alder (<i>Alnus</i>)			
Ash (<i>Fraxinus</i>)			
Birch (<i>Betula</i>)			
Cottonwood/Aspen (<i>Populus</i>)			
Elm (<i>Ulmus</i>)			
Eucalyptus (<i>Eucalyptus</i>)			
Juniper (<i>Juniperus</i>)			
Maple/Box Elder (<i>Acer</i>)			
Mulberry, White (<i>Morus alba</i>)			
Oak (<i>Quercus</i>)			
Olive (<i>Olea europaea</i>)			
Pine (<i>Pinus</i>)			
Russian Olive (<i>Elaeagnus angustifolia</i>)			
Sycamore (<i>Platanus racemosa</i>)			
Walnut (<i>Juglans</i>)			
Willow (<i>Salix</i>)			

GRASSES

Bermuda (<i>Cynodon dactylon</i>)			
Johnson (<i>Sorghum halepense</i>)			
Pasture Grasses (<i>Poa</i> , <i>Lolium</i> , etc.)			

WEEDS

Baccharis (<i>Baccharis</i>)			
Cocklebur (<i>Xanthium strumarium</i>)			
Lamb's Quarter (<i>Chenopodium album</i>)			
Dock/Sorrel (<i>Rumex</i>)			
Pigweed (<i>Amaranthus</i>)			
Scale (<i>Atriplex</i>)			
Plantain, English (<i>Plantago lanceolata</i>)			
Ragweed, Desert (<i>Ambrosia dumosa</i>)			
Ragweed, False (<i>Ambrosia acanthicarpa</i>)			
Ragweed, Western (<i>A. psikostachya</i>)			
Russian Thistle (<i>Salsola kali</i>)			
Sagebrush, Coastal (<i>Artemisia californica</i>)			
Sagebrush, Common (<i>A. tridentata</i>)			

Concluding Remarks

Native, naturalized and cultivated populations were considered in scoring the respective taxa. Data were obtained from literature sources, online databases and personal observations. The accompanying charts are intended to be illustrative rather than comprehensive.

The four states selected for this presentation represent different sections of the United States and each of these encompasses considerable physiographic and floristic diversity. In particular, two of them (Texas and California) are very large and exhibit a multitude of natural regions and considerable intrastate variation in allergenic species.

It is hoped that this study will provide a greater appreciation of intrastate diversity, and the authors emphasize that selected cities represent larger regions within a state (and often extending into other states) that are similar allergenically. Allergists are encouraged to consider the needs of patients whose routines take them into areas where other allergenic species are important.

Other states will be subjected to similar analysis in the future. Requests for further information and area-specific charts should be sent to bjacobson@greerlabs.com.

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