The Flora of Oklahoma Project: A Committee Writes Keys & Descriptions

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THE VASCULAR FLORA OF OKLAHOMA

173 families

~868 genera

~2540 species

TREATMENTS OF THE FLORA OF OKLAHOMA

Stevens	1916
Stemen & Meyers	1937
Goodman	1958
McCoy	1968
Waterfall	1969

THE FLORA OF OKLAHOMA PROJECT (1ST ATTEMPT)

1983

established an editorial committee
formed a non-profit corporation
developed an editorial format
solicited contributors
searched for funding

THE FLORA OF OKLAHOMA PROJECT (2ND ATTEMPT)

1992

fourth Saturday
of every month

Susan Barber
Paul Buck
Wayne Elisens
Jim Estes
Patricia Folley
Larry Magrath
Connie Murray
Bruce Smith
Connie Taylor
Rahmona Thompson
Ron Tyrl

THE FLORA OF OKLAHOMA PROJECT (2ND ATTEMPT)

1992

fourth Saturday of every month

key to families

family descriptions

keys to genera of each family

keys to species of each genus

RESULTS

Key to the Vascular Plant Families of Oklahoma
1994

Key and Descriptions for the Vascular Plant Families of Oklahoma
1997

RESULTS

Key and Descriptions for the Vascular Plant Families of Oklahoma
1998—2006

updated version each semester

Identification of Oklahoma Plants

CRITERIA FOR KEY CONSTRUCTION

all couplet leads absolutely parallel
all couplet leads mutually exclusive
vegetative, floral, & fruit characters
no dependent characters
uniform terminology
account for common misinterpretations
always remember ability of users

Cornus C. Linnaeus Dogwood

1. Inflorescences glomerules. Bracts 4; large; white; petaloid. Petals greenish yellow. Drupes red. ……..…….. *C. florida*

1. Inflorescences open cymes. Bracts absent. Petals white to creamy white. Drupes white or blue.

    2. Youngest twigs pubescent. Styles abruptly dilated about 1 mm below apices. Drupes dark blue. ……. *C. amomum*

    2. Youngest twigs scabrous-strigose or glabrate to glabrous. Styles uniform in diameter. Drupes white or pale blue.

        3. Youngest twigs scabrous-strigose. Adaxial surfaces of leaves scabrous. Abaxial surfaces of leaves pilose or tomentose. Secondary veins mostly arising from lower half of midribs. Cymes flat or slightly convex. Drupes white. …….. *C. drummondii*

        3. Youngest twigs glabrate to glabrous. Adaxial surfaces of leaves smooth. Abaxial surfaces of leaves glabrate to glabrous. Secondary veins arising from both upper and lower half of midribs. Cymes pyramidal or conspicuously convex. Drupes pale blue. ……... *C. foemina*

GROUP V: PLANTS CAULESCENT HERBS. PERIANTH PARTS IN 2-SERIES. PETALS 2 OR 4 OR 5. COROLLAS RADIALLY SYMMETRICAL OR ASYMMETRICAL. PETALS FUSED AT LEAST AT BASE OR APEX. OVARIES WHOLLY OR PARTIALLY INFERIOR.

1. Stems trailing or prostrate.

    2. Tendrils present. Leaves alternate. Flowers imperfect. Fruits pepos. …… CUCURBITACEAE

    2. Tendrils absent. Leaves opposite or whorled. Flowers perfect. Fruits drupes or schizocarps. …… RUBIACEAE

1. Stems erect or ascending.

    3. Flowers with hypanthium-tube elongated beyond ovary **[thus falsely giving the appearance of fused petals].** …… (Onagraceae) GROUP S

    3. Flowers without an elongated hypanthium-tube.

        4. Anthers connivent or fused.

38. Leaves pinnatifid.

39. Anthers dehiscing poricidally, terminal.
Fruits berries. Seeds 12 or more. Placentation axile. …….. **SOLANACEAE**

39. Anthers dehiscing longitudinally. Fruits capsules.
Seeds 1-4. Placentation parietal. …… **HYDROPHYLLACEAE**

38. Leaves entire or variously lobed, but not pinnatifid.

40. Sepals fused more than half their length.

41. Styles 2. Seeds 1-4. …….. **CONVOLVULACEAE**

41. Styles 1. Seeds 12 or more. …… **SOLANACEAE**

40. Sepals fused less than half their length or free.
42. Anthers dehiscing poricidally, terminal. Fruits berries. ……**SOLANACEAE**
42. Anthers dehiscing longitudinally. Fruits capsules.

43. Corollas 5-9 cm long. …….. **CONVOLVULACEAE**

43. Corollas 0.5-2 cm long. …… **HYDROPHYLLACEAE**

CRITERIA FOR DESCRIPTION CONSTRUCTION

all descriptions absolutely parallel

uniform terminology

PARALLEL DESCRIPTIONS & UNIFORM TERMINOLOGY

ACANTHACEAE A.L. de Jussieu
Acanthus Family

Plants herbs; perennials or annuals; from caudices or crowns or rhizomes. **Leaves** cauline; simple; opposite; venation pinnate; stipules absent. **Inflorescences** solitary flowers or simple cymes or spikes; terminal or axillary; bracts present; bracteoles present or absent. **Flowers** perfect; chasmogamous or cleistogamous; perianths in 2-series. **Sepals** 5; fused. **Corollas** bilaterally or nearly radially symmetrical; bilabiate or salverform to funnelform. **Petals** 5; fused; white or pink or purple. **Stamens** 4 or 2 (but appearing to be 4 due to separation of thecae); of equal length or didynamous; epipetalous**;** staminodia 2 or 1 or 0. **Pistils** 1; compound, carpels 2; stigmas 2; styles 1; ovaries superior; locules 2; placentation axile. **Fruits** capsules; loculicidal. **Seeds** 2 to 10.

The family is represented in Oklahoma by 4 genera and 7 species, all native.

SCROPHULARIACEAE A.L. de Jussieu
Figwort Family

Plants herbs; annuals or perennials or biennials; autophytic or semiparasitic; terrestrial or emergent or floating aquatics; caulescent or acaulescent. **Leaves** cauline or forming a basal rosette or basal; simple; alternate or opposite or whorled, or alternate above and opposite below; venation pinnate; stipules absent. **Inflorescences** of various types; axillary or terminal; bracts absent or rarely present; bracteoles absent or rarely present. **Flowers** perfect; perianths in 2-series. **Calyces** bilaterally symmetrical. **Sepals** 4 or 5; fused. **Corollas** strongly or weakly bilaterally symmetrical. **Petals** 5; fused, 5- or 4-lobed; spurred or not spurred; of various colors. **Stamens** 2 or 4 or rarely 5; of equal lengths or didynamous; epipetalous; staminodia absent or present, 1 or 2, filamentous or reduced to a scale. **Pistils** 1; compound, carpels 2; stigmas 1, not lobed or 2-lobed; styles 1; ovaries superior; locules 2; placentation axile. nectaries absent or present; receptacular; annular. **Fruits** capsules. **Seeds** numerous.

The family is represented in Oklahoma by 23 genera and 66 species.

DELTA

DEscription Language for TAxonomy

database

retrieve data
write descriptions
generate keys
identify unknowns

DELTA

CHARS

SPECS

ITEMS

DELTA CHARS

***SHOW: Vascular Plant Families of Oklahoma - character list.**
Revised 3 March 1998.
***CHARACTER LIST**

#1. plants < distinctive, general descriptors that serve to characterize the taxon >/
#2. plants <habit> <MANDATORY>/
- **1. trees/**
- **2. small trees/**
- **3. shrubs/**
- **4. subshrubs < suffrutescent or lateral branches deciduous> /**
- **5.succulents/**
- **6. woody vines/**
- **7. herbaceous vines/**
- **8. woody epiphytes < Phoradendron > /**
- **9. herbaceous epiphytes < Polypodium > /**
- **10. woody canes/**
- **11. herbs/**
- **12, thalloid, not differentiated into stems and leaves/**

#3. plants < longevity of non-woody plants> < MANDATORY IF APPLICABLE> /
- **1. annuals/**
- **2. biennials/**
- **3. perennials/**

DELTA CHARS

#699. <perfect flowers> petals <persistence>/

1. persistent <implicit>/
2. caducous/
3. deciduous/

#702. <perfect flowers> petals <fusion> <MANDATORY IF APPLICABLE>/

1. free/
2. fused/

#703. <perfect flowers> petals <shape>/

1. filiform/
2. linear/
3. lanceolate/
4. oblanceolate/
5. ovate/
6. obovate/
7. elliptic/
8. oblong/
9. spathulate/
10. triangular/
11. rhombic/
12. orbicular/
13. obcordate/
14. obdeltoid/
15. ensiform/
16. bristle-like/
17. scale-like/
18. subulate/
19. suborbicular/

#704. <perfect flowers> petals <clawed>/

1. clawed/
2. not clawed/

DELTA SPECS

*SHOW: Genera & Species of Oklahoma - specifications. Revised 3 March 1998.

*NUMBER OF CHARACTERS 1516
*MAXIMUM NUMBER OF STATES 28
*MAXIMUM NUMBER OF ITEMS 200

*CHARACTER TYPES 3,TE 17,TE 19,TE 21,RN 22,TE 24,RN 25,TE 27,TE 31,TE 34,TE 40,TE 42,TE 48,TE 51,TE 52-53,RN 58,TE 63,TE 67,TE 69-70,TE 72-73,TE 77,TE 84,TE 86,TE 91-92,TE 101,TE 109-110,TE 122,TE 130-131,IN 134-135,TE 138-141,RN 158-159,TE 160,IN 165-166,TE 168-171,RN 186-187,TE 191,RN 195,TE 196,RN 199,RN

DELTA ITEMS

***SHOW: Vascular Plant Families of Oklahoma – Items**
Revised 3 March 1998.

***ITEM DESCRIPTIONS**

BETULACEAE <S.F. Gray Birch Family>/

2,1/2/315,2 24<slender and zig-zag> 76,1 77,1 89,392,7 109,1 110,2 125,13 126<flowers grouped in 3's and subtended by bracts> 127,2 135,13 136<flowers grouped in 3's and subtended by bracts> 137,2/1 <rarely> 146,1 <or with leaf expansion> 149,2 152,2278,2/1 296,2/4/14 298<minute> 326,1-4 357,1/2 371,2/1 389,1-6/14 417,2 420,1 428,2 430,2 436,2 443,2 447,2 448,2 449,2 451,1/2 464,10/2 471,1 497<In Oklahoma the family is represented by 5 genera and 6 species.> 499< Eaten as nuts or ground into flour, the hazlenut, Corylus americana, was an important food source for Native Americans.>

DELTA TRANSLATION INTO NATURAL LANGUAGE

BETULACEAE S.F. Gray Birch Family

Plants trees, or small trees, or shrubs; monoecious. Stems slender and zig-zag. Leaves simple; alternate. Venation pinnate. Margins serrate. Stipules present; caducous. Staminate inflorescences catkins; flowers grouped in 3's and subtended by bracts; axillary. Pistillate inflorescences catkins; flowers grouped in 3's and subtended by bracts; axillary, or terminal (rarely). Flowers produced before leaves (or with leaf expansion); imperfect; staminate and pistillate different. Perianths in I-series, or absent. Sepals 2, or 4, or 0; minute. Stamens 1 to 4. Gynoecial rudiments present, or absent. Perianths in I-series, or absent. Sepals 1 to 6, or O. Androecial rudiments absent. Pistils 1; compound. Stigmas 2. Styles 2. Ovaries inferior. Carpels 2. Locules 2. Placentation axile. Ovules 1 per locule, or 2 per locule. Fruits nuts, or samaras. Seeds 1. In Oklahoma the family is represented by 5 genera and 6 species. Eaten as nuts or ground into flour, the hazlenut, Corylus americana, was an important food source for Native Americans.

DESCRIPTION EDITED BY FLORA COMMITTEE

BETULACEAE S.F. Gray Birch Family

Plants trees or small trees or shrubs; monoecious. **Stems** slender and zig-zag. **Leaves** simple; alternate; venation pinnate; margins serrate; stipules present, caducous. **Inflorescences** catkins; staminate and pistillate different; axillary or terminal; staminate catkins pendulous, elongate, flowers solitary or grouped in 3' s, bracts scaly; pistillate catkins pendulous or erect, elongate to globose, resembling cones in some genera, flowers grouped in 2' s or 3' s , bracts herbaceous or indurate or papery and inflated. **Flowers** produced before or simultaneously with leaves; imperfect; staminate and pistillate different; perianths in I-series or absent. **Staminate Flowers**. Sepals 2 or 4 or 0; minute. Petals absent. Stamens 1 to 4. Gynoecial Rudiments present or absent. **Pistillate Flowers**. Sepals 1 to 6 or o. Petals absent. Androecial Rudiments absent. Pistils 1; compound; stigmas 2; styles 2; ovaries inferior; carpels 2; locules 2; placentation axile; ovules 1 or 2 per locule. **Fruits** nuts or samaras. **Seeds** 1.

The family is represented in Oklahoma by 5 genera and 6 species. Eaten as nuts or ground into flour, *Corylus americana,* hazelnut, was an important food source for Native Americans.

DELTA CHARS

families	499
genera & species	1517
Asteraceae	1511
Poaceae	1957
Ferns & allies	1053

FUTURE OF THE FLORA OF OKLAHOMA PROJECT

completion of keys to species

writing of genus and species descriptions

revision and refinement

completion of illustrations