The Pteridophytes of Sleeping Bear Dunes, Ml

The varied habitats of the Sleeping Dunes National Lakeshore in the northwest portion of the Lower Peninsula of Michigan will be explored in a series of natural history seminars presented by the Leelanau Center for Education in Glen Arbor, Michigan. The week-long programs, each on a different topic such as mushrooms, bryophytes, birds, vascular plants, reptiles, etc., take advantage of the close proximity of a wide diversity of habitats to provide a heavily field-oriented experience. These habitats, along the shore of Lake Michigan, include spectacular lakeshore dunes, beech-maple forests, acidic black spruce bogs, alkaline white-cedar swamps, jack-pine woods and crystalline rivers. The seminar on ferns and fern allies will be given the week of July 15–19 by Joseph Beitel. Emphasis will be on identification and natural history of the taxa studied in the field as well as related species, and characterization of the habitats visited, correlating this with the occurrence of the pteridophytes. Over 40 species and hybrids will be seen in the field, including many taxa in species complex in Dryopteris, Lycopodium and Dryopteris.

Costs for each seminar are $130 for enrollment, $80 for cabin housing and meals (or $140 for meals and shared dorm housing, or $200 for meals and single dorm housing). Transportation for daily field trips will be provided. College credit is available. For a complete list of seminars (the series starts June 10) and registration information, contact Rob Harner, Outdoor Classroom '85, The Leelanau Center for Education, Glen Arbor, MI 49636. Telephone: (616) 324-3072.

From Pennsylvania

I have been monitoring the life histories of a group of grape ferns (Botrychium dissectum) for the last seven years. I would be interested in corresponding with anyone else who is studying the life spans of ferns, especially grape ferns.

Sincerely,

Janet Ebert

Editor's Note: Please address all correspondence directly to Ms. Ebert. Thank you.

As in Adiantum caudatum L. of Tropical Africa, Tropical Asia, and the New Hebrides and Doodia caudata (Cav.) R.Br. of New Zealand, Australia, and New Caledonia.

For Children

The Cornell Cooperative Extension publishes a series of Science Leaflets for "young people from 9 to 14 years and older." For 25¢ you can order the leaflet Ferns and Their Allies, filled with "22 pages of bright, clear text with abundant illustrations and photographs, experiments, and activities." Send check or money order to: Distribution Center C, 7 Research Park, Cornell University, Ithaca, NY 14850.
The Fern That Wasn’t

In early classifications, the cycads were often placed in or near the palms and ferns. This is reflected today in the common name Sago Palm for the genus Cycas or, in previous times by generic names such as Palmacyparissus or Linneus considered the cycads to be allied with the palms, whereas Rettenbach thought they were nearer to Ononi. Today, the cycads are known to be cone bearing plants that are part of a morphological group known as gymnosperms, and are no longer considered to be flowering plants or ferns.

One of the more interesting cases of mistaken identity concerns the monotypic cycad genus Stangeria T. Moore. In 1834, Kunze received specimens in Leipzig that had been collected by Dege and Von Gelnzus near Port Natal, South Africa. Amongst these specimens were leaves which Kunze identified as sterile fronds of Lomaria cordifolia O. Froel. (Linn. 1: 356. 1835). A few years later, Kunze considered these specimens to be sufficiently different from L. cordifolia to describe them as belonging to a new species, L. eriopus Kunze (Linn. 13: 152. 1839 and Linn. 18: 116. 1844).

In 1853, Thomas Moore (Hooker’s J. Bot. 5: 228-229. 1853), after observing similar plants which had been collected near Port Natal, South Africa by Dr. Stanger in 1831 and subsequently cultivated in the Chelsea Physic Garden in London, had doubts about their identity as a species of Lomaria. In fact, he referred to these plants as "either a fern-like Zamiaceae, or a zamia-like fern." Moore goes on to state "It's affinity appears to be however rather with Cycads than with Ferns" and "Whatever its affinity, there seems no doubt that it is perfectly unique as a genus". Thus, Moore concludes the article with a description of a new genus named for Dr. Stanger, Stangeria, with the only species appropriately named S. paradoxos T. Moore. However, one must bear in mind that Moore's description, as Kunze's, was based upon sterile material. For Stangeria to be a cycad, its reproductive structures would have to consist of ovary bearing megasporophylls and pollen bearing microsporophylls aggregated into a cone, whereas if it were a true fern similar to Lomaria it would be homosporous and leptosporangiate. In the same year following Moore's article, the fruits of Stangeria were exhibited for the first time at a meeting of the Linnæan Society of London as reported by J. Smith (Hooker’s J. Bot. 6: 20. 1854) and subsequently illustrated (Curtis’ Bot. Mag. t. 5121. 1859). Thus, it was not until some 19 years after the original descriptions of Kunze, that the true identity of Stangeria, which Moore had suspected and anticipated, was firmly established without question. Because Lomaria eriopus Kunze and Stangeria paradoxos T. Moore are one and the same, and because Moore considered the former to be a synonym of the latter, Nash (Jour. New York Bot. Gard. 10: 164. 1909) properly made the correct combination S. eriopus (Kunze) Nash. Thus, S. paradoxos which so nicely reflects the history of the species must be set aside in favor of S. eriopus.

One pursuing aspect to me is that the leaves of Stangeria were originally identified as leaves of Lomaria, when in reality they more closely resemble those of Dacnea in the Marattiaceae. That is, both Dacnea and Stangeria have pinnately compound fronds with each pinna having vasculature consisting of a midrib with dichotomous lateral venation and the base of the petiole having prominent leafy stipules. The latter feature, in particular, is completely lacking in Lomaria and Blechnum, a genus in which Lomaria is often places.

As a final note, Stangeria, which is known only as a South African endemic, is now considered to be so unique among the cycads, that it is generally regarded as a monotypic family - the Stangeriaceae L. Johnson (Proc. Linn. Soc. N. S. W. 84: 68-69. 1959) within the Cycadales. Plants of Stangeria can be seen in the living collections of most botanic gardens. -- DBS

Stangeria eriopus (Kunze) Nash

News and Notes

The 36th Annual AIBS Meetings will be held at the University of Florida, Gainesville, 11-13 August, 1985. The American Fern Society will host a Fern Foray to Central and North Florida on Sunday, 11 August 1985. Cost: $21.50 per person includes box lunch. Depart by bus at 8:00 A.M. from south parking lot of J. Wayne Reitz Union on campus. Visit various habitats in Central and North Florida (e.g., Homosassa Springs) to observe and study a wide variety of ferns and fern allies of biological and geographical interests. Return to campus about 3:00 P.M. For further information contact trip leader: Michael Cousins, Faculty of Biology, University of North Florida, Pensacola, FL 32504. Tel: 904/474-2746. Other leaders are W. H. Wagner and C. E. Nauman. Note: If there is enough demand, another fern foray will be held Friday, 16 August.
Hardy Ferns: Part 2
Notes and Possibilities, with Observations and Comments
Chuck Anderson, Tom Delendick, Gordon Foster, Carol Johnston, and Eth Williams
Edited by Tom Delendick

FERN CANDIDATES FOR HARDINESS TESTING:

CAMPTOSORUS rhizophyllus. E. U.S. on mossy shaded
Timestone or sandstone rocks (Mickel, 1979a).
Fairy successful in Bklyn.
C. sibiricus. Siberia, Ussuri, etc. (Fomin, 1968).
Apparently hardy in s. Mich. (Boydstun, 1980); it failed in its
second year in Sparta, N.J. (G. Foster). It’s hard to say whether its
failure at B.B.S. was innate or due to squirrels’
activities.
CETERACH dalhouisi. No. Mexico, s. Arizona, Himalayas
(Mickel, 1979a). Hardy in cent. Mass. (Otto,
1979).
C. officinalis. Europe n. to Scotland & Sweden
(Lawrence, 1964). Hardy in White Plains
(Williams, 1982); failed after two years in
Sparta, N.J. (G. Foster).
(Boydstun, 1979).
C. argentea (Aleuroperis l.). Assam to Korea, Japan,
Manchuria, Siberia (Nakaike, 1975).
C. austrotenuifolia. Tasmania, Victoria, n. New South
Wales, sw. Australia (Duthie et al., 1983).
C. chusonia. Philippines to Japan, Korea (Nakaike,
1975).
C. dealbata. Cent. U.S.: Timestone cliffs (Mickel,
1979a).
cliffs (Mickel, 1979a).
C. intertexta. N. Calif., s. Ore., nw. Nev. (Mickel,
1979a).
C. kuhneli. Manchuria, Korea, Japan, Far Eastern USSR
(Fomin, 1968); var. brandstti (Aleuroperis k.
var. b.). Central Honshu (Ohwi, 1965; Nakaike,
1975).
(Mickel, 1979a).
C. marantae. S. Europe to cent. France, Austria & Crimea
(Jenny & Fuchs, 1964).
C. pterioides. Caucasus & cent. Asia to Turkestan &
Iran (Fomin, 1968).
C. siluquosa. W. North America, Gaspe Peninsula of e.
Canada (Mickel, 1979a).
CHRISTELLA dentata (Cyclosorus nymphaeae). Queensland,
New South Wales, Victoria, New Zealand (Best,
COLEYSIS elliptica (Polypondium e.). Indochine, China,
Japan, Korea (Nakaike, 1975).
C. wrightii (Polypondium w.). China, Taiwan, Japan, Korea
(Nakaike, 1975).
CONIODEUM fraxines. Japan, China, Sakhalin, Ussuri
(Fomin, 1968).
C. intermedia. Indochine to Japan, Korea, Manchuria,
Kurile Is. (Nakaike, 1975).
C. japonica. Taiwan to Japan, Korea (Nakaike, 1975).
Hardy? (Hoshizaki, 1975). "Cristata" & "Flavo-
maculata" are recorded from Japan (Nakaike,
CRYPTODON synorci (Polypondium o.). Taiwan, Japan, Korea,
China (Nakaike, 1975).
C. hastatus. Philippines, Japan, Korea, Manchuria, China
(Ohwi, 1965; Nakaike, 1975). "Cristatus" & "Incisus" are listed from Japan (Nakaike,
1975).
C. veitchii (Polypondium p.). Philippines & Japan, Korea,
China (Nakaike, 1975).
C. yakushimensis (Polypondium y.). Japan, Taiwan, Korea
(Nakaike, 1975).
CRYPTODON acrostichoides (C. crispa var. a.). N.
North America (Mickel, 1979a) & Kamchatka
(Fomin, 1968).
C. crispa. Europe, n. to Ireland, Britain, Germany &
C. stelleri. N. America, Europe, Asia: on
Timestone ledges (Mickel, 1979a).
CYCLODORUS (see also: CHRISTELLA, PYRROSDA).
C. acuminatus. Tropics to Japan, Korea. "Cristatus",
"Opustus" & "Yamawaki" are listed from Japan
(Nakaike, 1975).
CYRTOMIMUM falcatum. Indochine to Korea & Manchuria
(Nakaike, 1975). Escaped or naturalized in the sw.
U.S., n. to So. Car.: hardy n. to N.Y.
(Mickel, 1979a); it has not succeeded as yet at
B.B.S.; hardy in White Plains (Williams, 1982),
Cyclostomum falcatum "Rochefordianum" hardy at
Planting Fields Arboretum, Nassau Co. for 5
years in 1976 (Johnston, 1976) & still going.
Less hardy than C. fortunei.
C. fortunei. Japan, Hardy in Hanover, Germany (Maatsch,
(MacDougal, 1976) & the Italian Alps (Pignatti
et al., 1963).
C. macrophyllum. Japan, China, Himalayas (Nakaike,
1975). Hardy in Hanover, Germany (Maatsch,
1977).
CYSTOPTERIS alpina. (C. regia). Cent. Europe, Caucasus
(Fomin, 1958; Dyce, 1944a).
There is also a variety, "Crispa" (Boydstun,
1979).
C. dickieana. Europe, n. to Norway & Sweden (Crabb,
1964a) & Siberia (Fomin, 1968). On calcareous &
schistose rocks (Fomin, 1968).
C. formosana. Formosan cristata, cristata (Swindells,
1971; Mickel, 1979a) & sempervirens (Kaye,
1968) are recorded.
C. montana. N. North America, Europe, Asia (Fomin, 1968; Mickel, 1979a), usually on basic rocks (Crabbe, 1964a).


DAVALLIA mariesii. CENT. Europe (Nakaïke, 1975; Kaye, 1978; Oh, 1982). Reported hardy on Long Island; Kaye (1968) says it is reported to be quite hardy in England.

DENNSTAEDTIA hirsuta. Taiwan to Japan, Korea, Manchuria (Nakaïke, 1975); 'Cristata' & 'Laciniiata' are known in Japan (Nakaïke, 1975).

D. punctilobula. NE North America (Mickel, 1979a). Several forms have been described: f. cristata & f. nana (Fernald, 1950).

D. willfordii. China to Manchuria, Korea (Nakaïke, 1975; Oh, 1982).

DICKSONIA antarctica. Australia. Often found growing near glaciers.

DIGONANTHUS pedata. Indo-China to Korea (Nakaïke, 1975); also 'Shingansawa' in Japan.

DIPLAZIUM subinflatum (a combination in Athyrium is not included in Nakaïke's synonymy). Tropical Asia, Japan, Korea (Nakaïke, 1975). A crested form is known (Dyce, 1973).


D. amurenensis. Japan, Sakhalin, Korea, Amur, Manchuria (Fomin, 1968; Nakaïke, 1975); trial in White Plains (E. Williams).


D. atrata. Ceylon to Taiwan, Japan & Korea (Nakaïke, 1975); hardy in Hanover, Germany (Maetzsch, 1977). Hoshizaki (1975) describes this as hardy in Mahwah, N.J. (Anderson, 1979).


D. barbellata. Sakhalin & Usuri (Far Eastern USSR) (Fomin, 1968).


D. buschtiana. Usuri (Far Eastern USSR) (Fomin, 1968).


D. caucasia. NE Turkey to the Caucasus (Fraser-Jenkins, 1976).

D. celsa. E (mainly s.) North America (Mickel, 1979a).


D. clintoniana. NE North America (Mickel, 1979a).


D. continentalis. Eastern Siberia (Fomin, 1968) (perhaps is a species of Phegopteris?).


D. crossirhizoma. Korea, Japan, Siberia, Manchuria, Sakhalin (Nakaïke, 1975; Oh, 1982).

D. cristata. N. & NE North America; Europe (Heldreich, 1964; Mickel, 1979a).

D. dickinsii. Japan, Hokkaido, China (Nakaïke, 1975).


D. fusipes. Taiwan, Indo-China, China, Japan, Korea (Nakaïke, 1975).

D. goldiana. NE North America (Mickel, 1979a).

D. gymnomyylla. Japan, Korea, China (Nakaïke, 1975).


D. intermediata. E. North America (Mickel, 1979a).

D. kantschatka (= Thelypteris sp.). Kamchatka (Fomin, 1968).

D. komarovi. Central Asia (Fomin, 1968).

D. linckii. Japan, Korea, China (Nakaïke, 1975).

D. linckii-susuki. Japan, Korea, China (Nakaïke, 1975; Oh, 1982).


D. marginalis. NE North America (Mickel, 1979a), a crested form, f. davenportii is listed in Fernald (1950). Kaye (1968) lists 3 varieties. 2 varieties.


D. taviella. Plant from Zurich, Switzerland, is possibly hardy in White Plains (E. Williams).


D. varia. Philippines, India, Japan, Korea, etc. (Nakaike, 1975). Oh (1982). Survived only 2 years in the rock garden at B.B.G., Tangerine, in the fern area (with better shade). Several varieties are recognized: var. hikomensis, sacrosancto & setosa from Japan, Korea, China; & var. Kitazaki from Japan & Korea (Nakaike, 1975).


D. wladzisiewskii. USSR: around Vladivostock (Fomin, 1968).


EQUISETUM. Many of the species are difficult to successfully transplant.


E. fluviatile. N. North America (Mickel, 1979a).


E. Isospora. W. North America (Mickel, 1979a).

E. palustris. Circumboreal (Mickel, 1979a).

E. pratense. Circumboreal (Mickel, 1979a).


E. sylvaticum. N. North America, Europe (Mickel, 1979a). Perhaps the most elegant of the horsetails.


E. variegatum. Circumboreal (Mickel, 1979a).


G. japonica. Malaysia to Korea, Japan (Nakaike, 1975).


H. glanduloso-glossus. Japan, Korea, China (Nakaike, 1975).


ISOTIETA. Several species, difficult to identify and requires a marsh or aquatic habitat. Among the natives which are undoubtedly hardy are: I. eatonii, I. echinospora, I. engelmannii, I. macrosperma, I. melanopoda, I. piperaria, I. tuckermanii, & T. virgatum.

LEMPHYLLUM micropogon (Peyrollosus m.). Japan, Taiwan, Korea, China (Nakaike, 1975).


L. ciliatissimus (P. & Th.) W. S. North America, Japan, China, Siberia, Afghanistan (Nakaike, 1975).


LEPTOPHYLLUM mossop ssp. mollissima. Ceylon & Taiwan to Japan, Korea, Japan (Nakaike, 1975); also 'Crispatum' (Nakaike).

LEPTORHICHA micheliana (Archichladi m.). Japan, Korea (Ohwi, 1965; Nakaike, 1975).

LINOSAEAE odorata. Australia & Ceylon to Japan & Korea (Nakaike, 1975).


LOXOGYMNOSSEAE graminoides. Taiwan to Japan & Korea (Nakaike, 1975).

L. salicifolia. Taiwan to Japan & Korea (Nakaike, 1975).

LUNARPHYLLUM angustatum. (The proper combination in Althyrium seems not to have been made). Korea, Japan (Nakaike, 1975).

LYCOPPODIES. Most species are difficult to cultivate (Hoshizaki, 1975). & are in any case protected as endangered. Among the natives are: (Mickel, 1979a).

L. aggremsatus. & s. cent. states, Ky., West Indies.

L. agebrocoides. E. & s. coastal states, West Indies, South America.


L. selago. N. North America, E. Europe. Fair potential for success in cultivation?


L. tristachyum. NE. North America, Europe.

LYCOPODIUM japonicum. E. Asia. Marginally hardy to Conn. (With heavy winter mulch); naturalized in se, states (Mickel, 1979a).


MARSILEA aquatica. Egypt & S. USSR (Moldavia & Volga delta) (Crabb, 1964b).


MICROHYLLA marginitata. Indochina to Japan & Korea (Nakaike, 1973).

M. pflodera. Japan, China, USSR (Far Eastern USSR) (Fomin, 1968).

M. strigosissima. Tropics to Japan & Korea (Nakaike, 1975).

M. wittrodtii. Japan, China, USSR (Fomin, 1968).


M. subhastata. Japan, China (Nakaike, 1975).


ONOCLEA sensibilis. E. North America (Mickel, 1979a).

OPHYRHYNCHUS vulgaris. Much of North America (Mickel, 1979a).


O. cinnamonae. E. North America (Mickel, 1979a). Forma
incisa is recorded (Mickel, 1979a).


D. japonica. Central Honshu (Ohwi, 1965); also f. divisa
(Ohwi, 1965).


Named forms include f. ana & f. biculata
(Fernald, 1950); "Undulata" & "Purpurascens"
(Swindels, 1971). "Undulatifolia" is given as a
synonym of "Crissa" in Kaye (1968).

D. x ruggii (D. claytoniana X D. regalis). Exceedingly rare, spectacular hybrid (Mickel, 1979a).

PELLAEA andromediifolia. Hardy to semi-hardy (Hoshizaki, 1975).

P. atropurpurea. North America: calcareous rocks
(Mickel, 1979a). Forma cristata is recorded
(Fernald, 1950).

P. breweri. W. North America, n. to e. Wash. & s. Mont.;
calcareous & non-calcareous rocks (Mickel, 1979a).

P. bridgesii. W. North America, n. to Ore. & Idaho
(Mickel, 1979a).

P. glabellla. Most of North America, mostly on calcareous
rocks (Mickel, 1979a). Pellaea occidentalis & P. suksdorffii (both of W. North America) are
sometimes distinguished at the specific or varietal level. (Brunner, 1979).

P. mucronata. Hardy to semi-hardy (Hoshizaki, 1975).

P. rotundifolia. Semi-hardy (Hoshizaki, 1975); failed
consistently in Queens.

PHYLITIS scolopendrium (P. vulgaris). Europe, Asia, rare
in n.e. U.S. (Mickel, 1979a). There are many
cultivated forms from Europe listed in Kaye
(1968) & Swindells (1971). Several have proven
hardy in Brooklyn, Westchester & New Jersey.
"Kay's Var.", "Cristatum" & "Crissa" are hardy
in s. Mich., but not "Ramo-cristatum" (Boydston,
1980); "Cristatum" is hardy in Locust Valley,
N.Y. (L. Johnston).

To be continued...

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