

COMPARATIVE FLORISTIC AND ECOLOGICAL STUDIES ON THE TEMPERATE ELEMENTS IN NORTH AMERICA

Report of the 1989-1991 North America Project

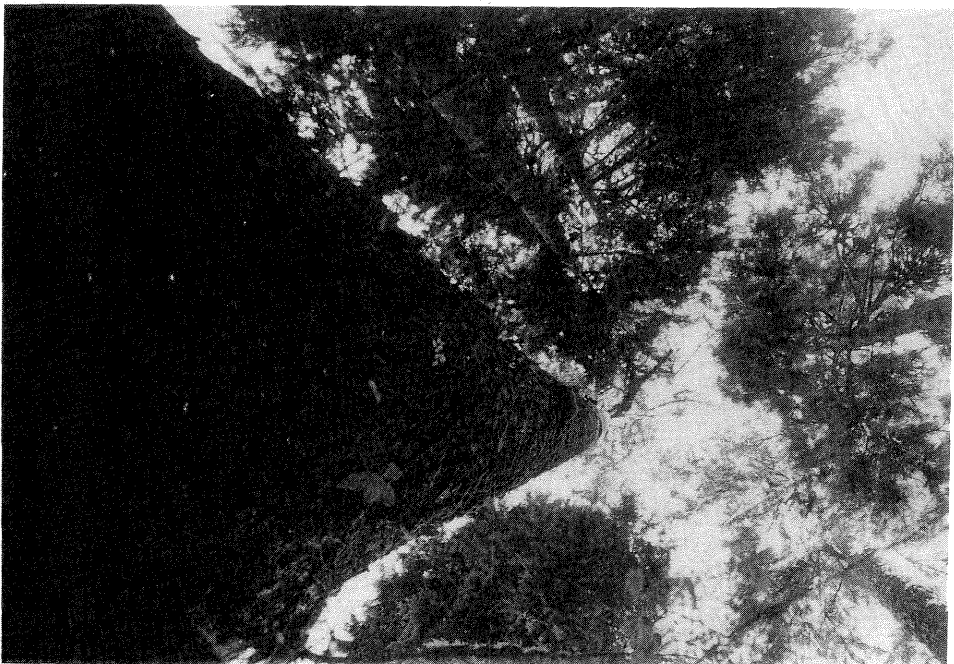
edited by Shoichi Kawano

(Head Investigator Number: 361430019244)

Department of Botany, Faculty of Science, Kyoto University, Kyoto

(Research Institute Number: 14301)

Institute of Genetic Ecology, Tohoku University, Sendai



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XV. LIFE HISTORY CHARACTERISTICS OF *UVULARIA* SPECIES

Hideki Takasu¹⁾, Shoichi Kawano²⁾, Hidetoshi Kato²⁾, Toshiyuki, Sato³⁾, Frederick H.Utech⁴⁾, and Dennis Whigham⁵⁾

¹⁾Department of Biology, College of Education, Wakayama, University, Wakayama, Japan

²⁾Department of Botany, Faculty of science, Kyoto, University, Kyoto 601-01, and Institute of Genetic Ecology, Tohoku University, Sendai 980, Japan

³⁾Institute of Low Temperature Science, Hokkaido University, Sapporo 061, Japan.

⁴⁾Carnegie Museum of Natural History, Pittsburgh, Penn. 15213, U.S.A.

⁵⁾Smithsonian Environmental Research Center, Edgewater, Md. 21037, U.S.A.

Population structures, several growth and reproductive characters of *Uvularia sessilifolia*, *U. perfoliata*, and *U. grandiflora* were investigated. In Powder Mill Nature Reserve, Westmoreland Co., Penn., four permanent plots of *U. sessilifolia* were established, and all individuals within each plot were mapped. Based upon the size-classes (acc. to leaf number per plant), population structures were analyzed. The relationships between leaf number per plant and total leaf areas were also analyzed.

All these data are compiled in this chapter.

***Uvularia sessilifolia* Sampling Plots in Forbes State Forest, Raoring Run Natural Area, Westmoreland Co., Penn., U.S.A.**

Established 11 July, 1991.

Plot I (Aerial shoots only) 1x1 m²

Trees: *Acer saccharum* (sugar maple) 10m

Hamamelis virginiana 4m

Quercus alba 6m

Shrubs/Herbs:

Sassafras albidum (seedlings)

Medeola virginiana

Hamamelis virginiana (seedlings)

Quercus velutina (seedlings)

Salix glauca

Plot II (Aerial shoots only) 1x1 m²

Trees: *Acer saccharum* (sugar maple) 15m

Quercus velutina 6m

Nyssa sylvatica 4m

Shrubs/Herbs:

Sassafras albidum (seedlings)

Acer pensylvanica (seedlings)

Maianthemum canadense

Vaccinium sp.

Quercus velutina (seedlings)

Quercus alba (seedlings)

Plot III (Aerial shoot only) 1x1 m²

Trees: *Acer saccharum* (sugar maple) 10-15m

Prunus serotina 7m

Hamamelis virginiana 4m

Shrubs/Herbs:

Medeola virginiana

Sassafras albidum(seedlings)

Smilax glauca (new shoot)

Moss sp (12cm circle in diameter)

Plot IV (Aerial shoot and underground organs) 1x1 m²

Trees: *Acer saccharum* (sugar maple) 10m

Hamamelis virginiana 4-8m

Fagus grandifolia (sapling) 3m

Shrubs/Herbs

Medeola virginiana

Smilax glauca

Sassafras albidum (seedlings)

Quercus alba (seedlings)

Quercus velutina (seedlings)

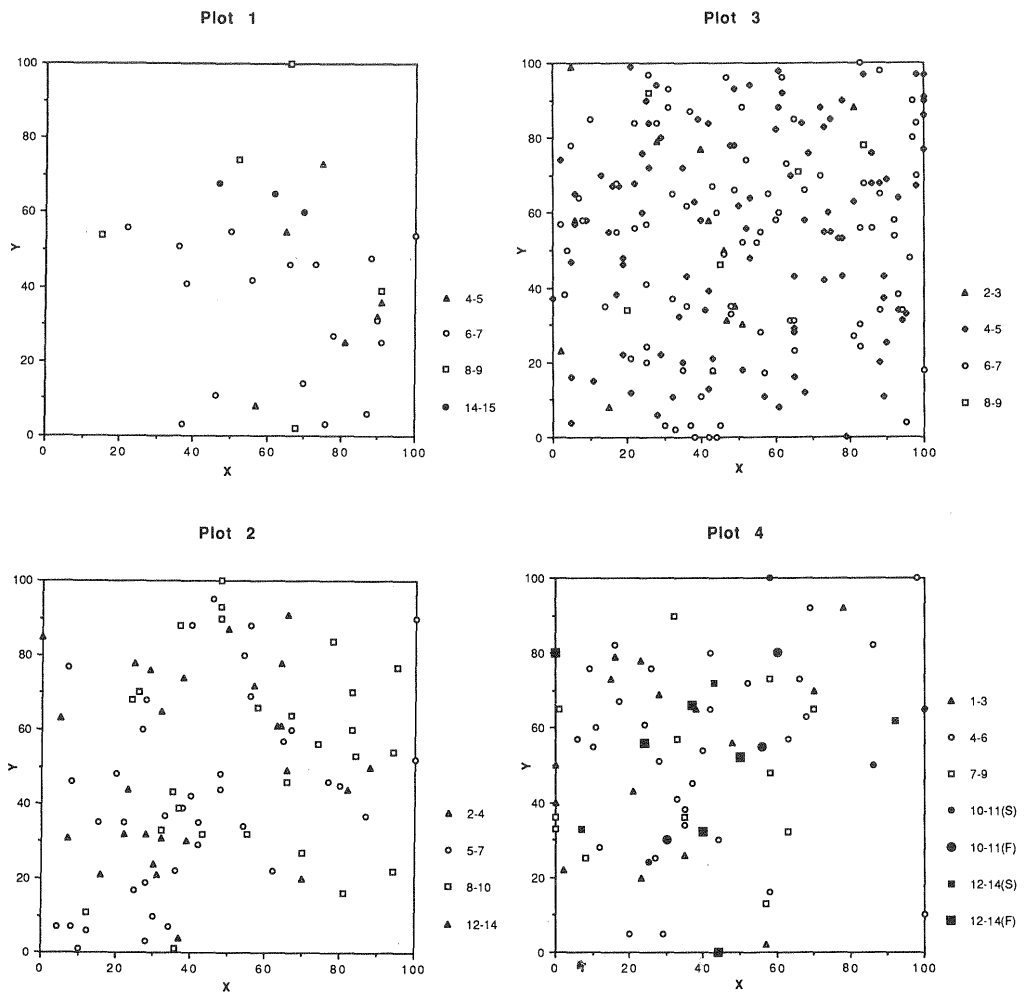
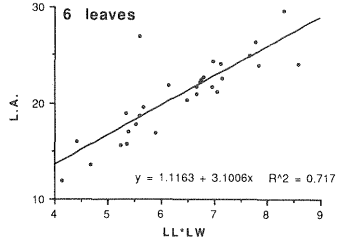
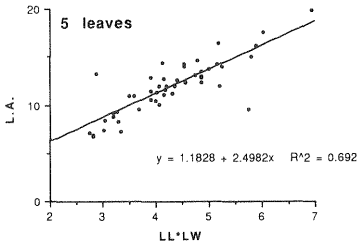
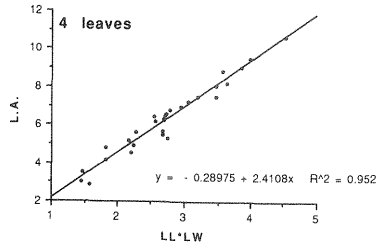
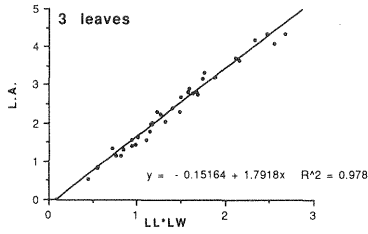


Fig. 1. Special distribution of *Uvularia sessilifolia*(at Powder Mill, Westmoreland Co., Penn.)

PSF-1



PSF-2

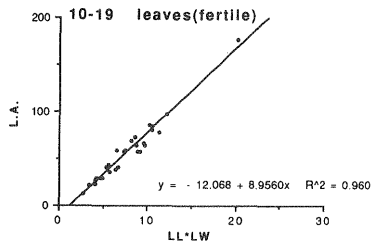
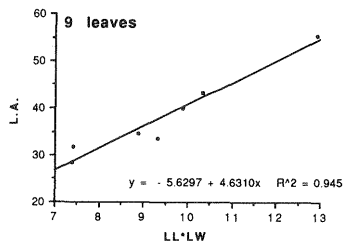
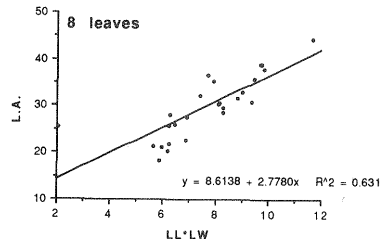
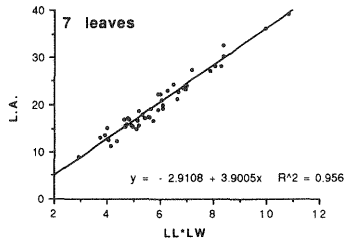
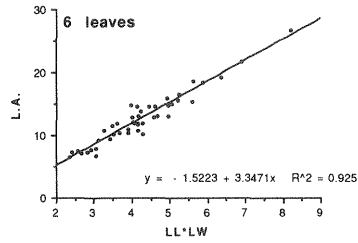
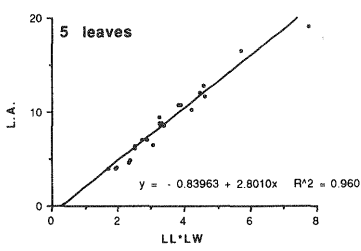


Fig. 2. Relationships between the largest leaf size (LLxLW) and Leaf area per plant(L.A.) of *Uvularia sessilifolia*. Correlations for different size-classes(band on leaf numbers per plant) are shown. PSF-1, 2=Pachaug State Forest, New London Co., Conn.

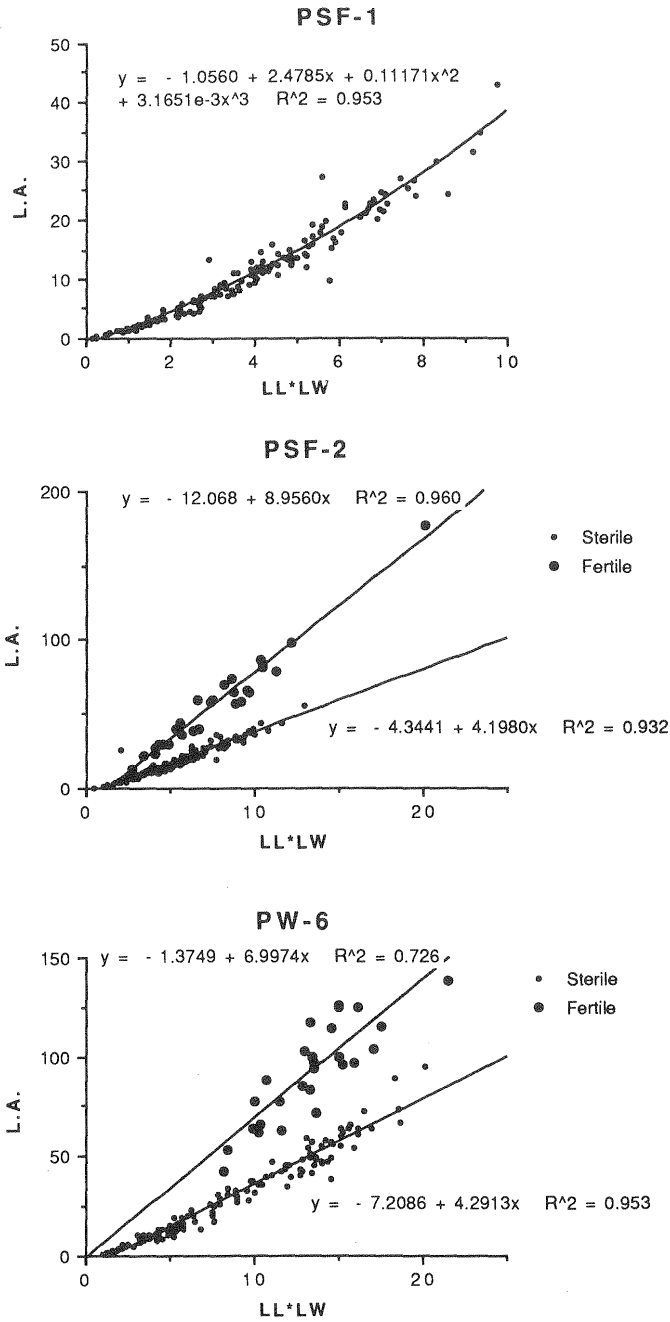


Fig. 3. Relationships between the largest leaf size (LLxLW) and leaf area per plant(L.A.) of *Uvularia sessilifolia*. PSF-1, 2=Pachaug State Forest, New London Co., Conn.; PW-6=Powder Mill, Westmoreland Co., Penn.

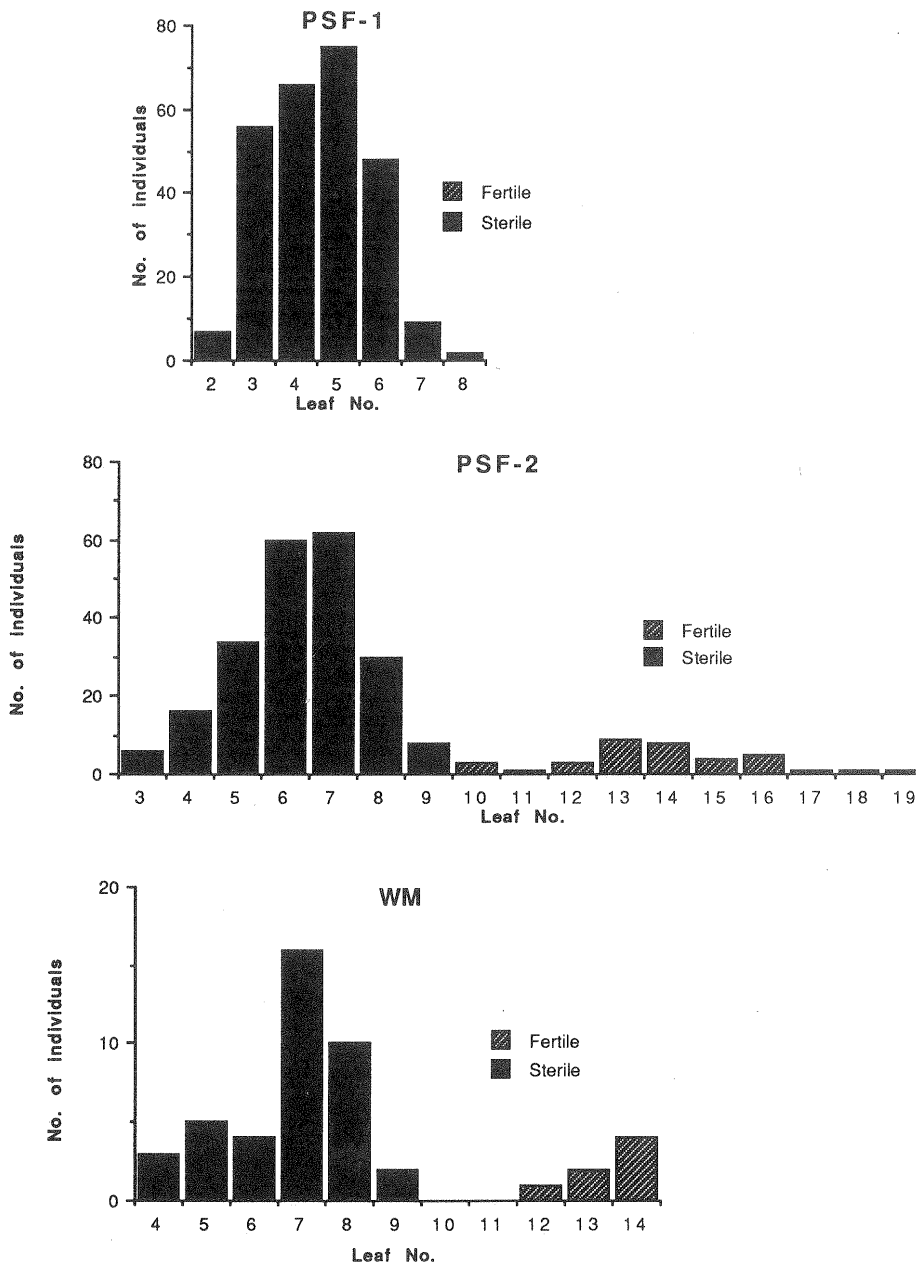


Fig. 4. Size-class structures of leaf numbers per plant. PSF-1, 2=Pachaug State Forest, New London Co., Conn.; WM=White Mts., Crafton Co., New Hamp.;

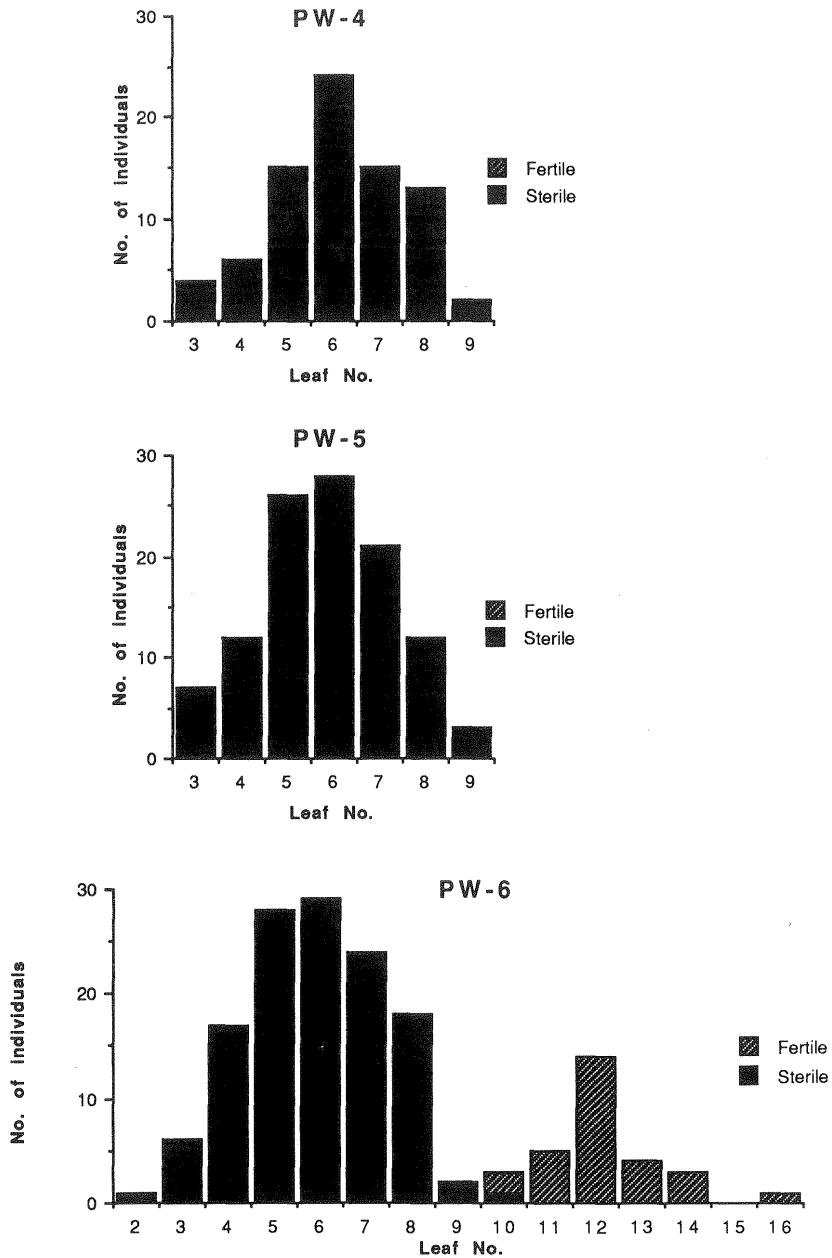


Fig. 5. Size-class structures of leaf numbers per plant. PW-4, 5, 6=Powder Mill, Westmoreland Co., Penn.

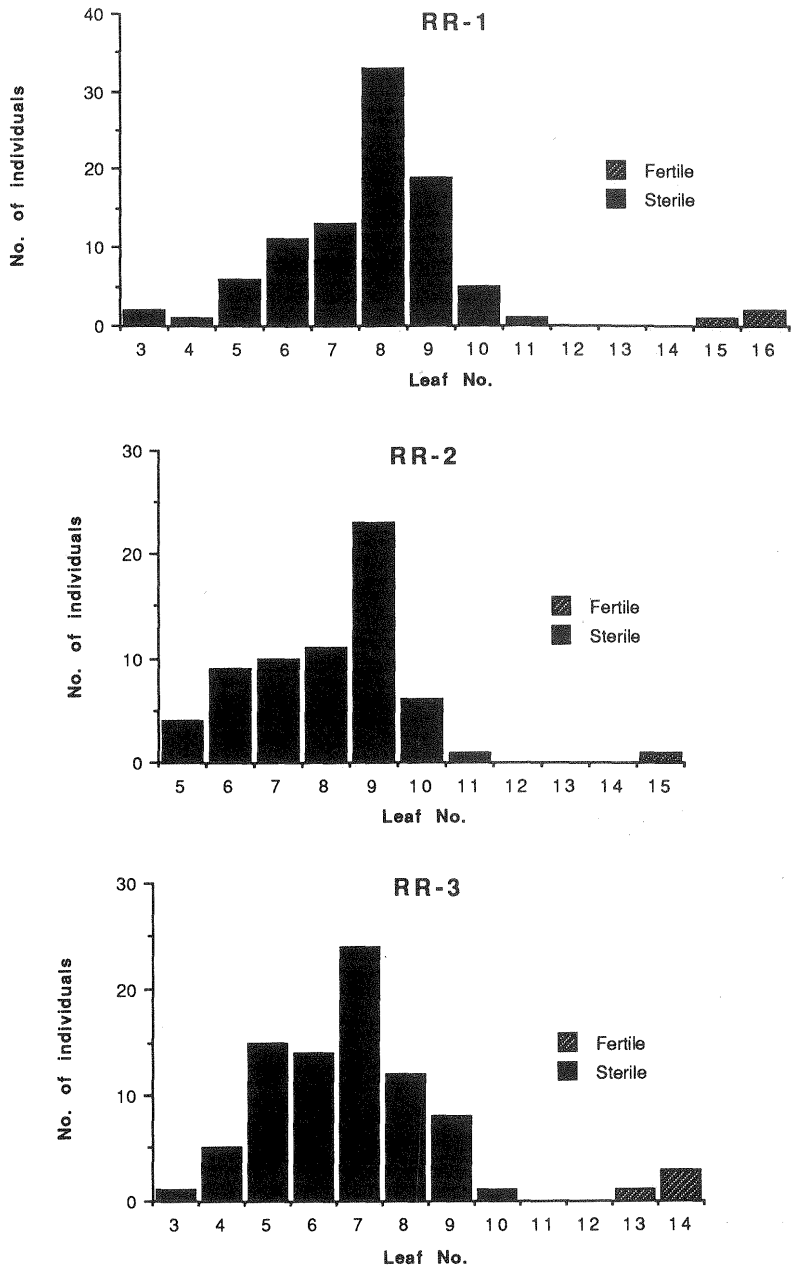


Fig. 6. Size-class structures of leaf numbers per plant. RR-1, 2, 3=Roaring Run Natural Area, Westmoreland Co., Penn.

As to *Uvularia perfoliata* and *U. grandiflora* mass collections were made at several localities, and their root systems and some reproductive traits were preliminarily examined. Further detailed examinations are now in progress.

The collection site data of the above two species are as follows, and all the plants collected were transplanted into the experimental bed of Smithsonian Environmental Research Center at Edgewater.

Collection Site Data

Uvularia grandiflora:

On Route 107 from Merrill to Tomahawk, Lincoln Co., WISCONSIN

Uvularia perfoliata:

- A) Hibernia County Park, Chester Co., PA.
- B) Brightman Hill, Washington Co., RHODE ISLANDS
- C) Lantern Hill, New London Co., CONN.
- F) Schawnee State Forest, Lampblack Run, Scio CO., OHIO

Uvularia sessilifolia:

- D) Winnisook, Catskill Mts., Ulster Co., NEW YORK
- E) Mt. Grace State Forest, Franklin Co., MASS.
- G) Powder Mill, West Moreland Co., PA.

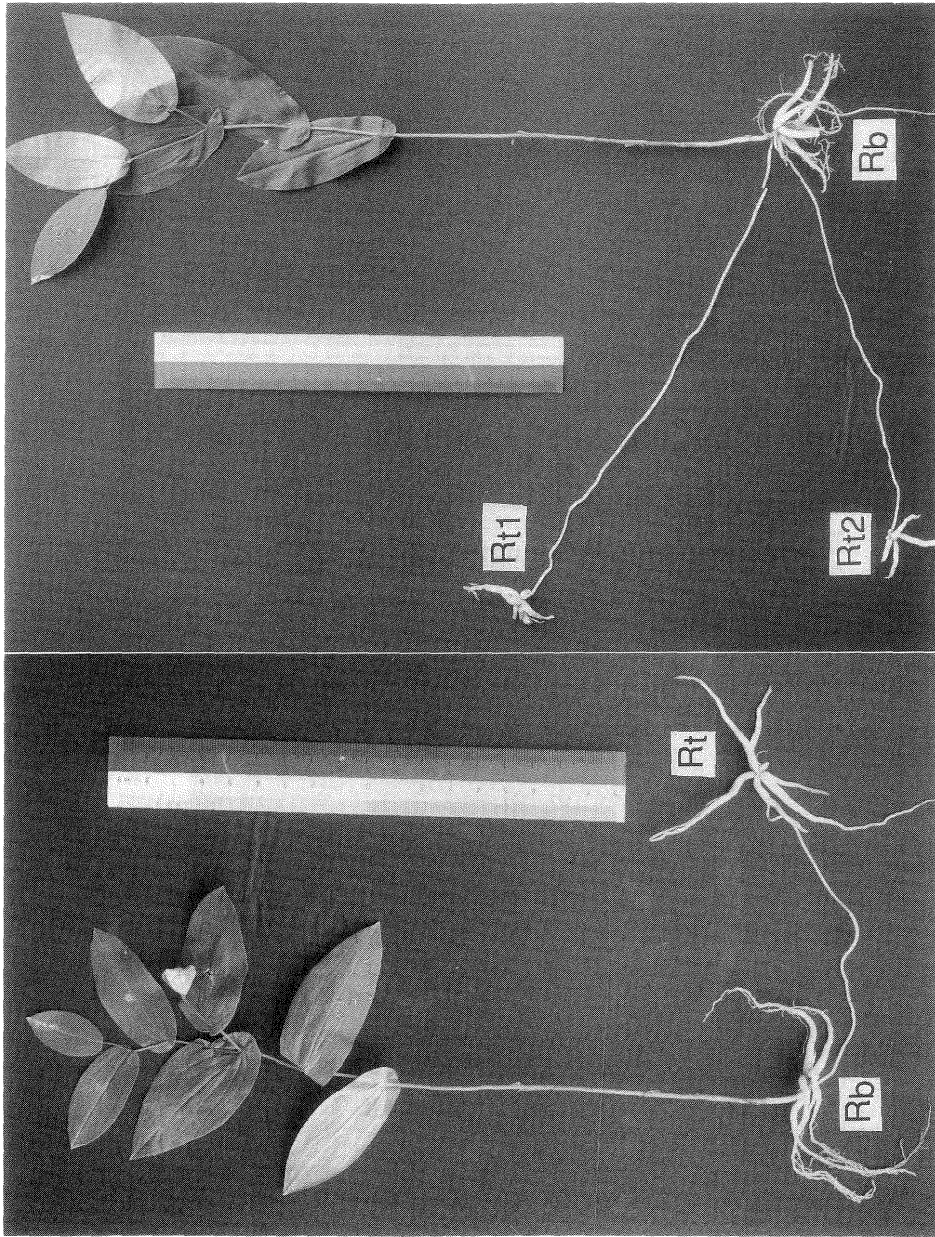


Fig. 7. Root systems of *Uvularia perfoliata*.

A. *Uvularia perfoliata*
 (Hibernia County Park, Chester Co., PA)

Individuals	Structures	
1	1S+6L-R _b +R _t	(36.0mm)*
2	1S+5L-R _b	(27.2mm)
3	1S+6L-R _b	(22.4mm)
4	1S+5L-R _b	(28.3mm)
5	3S+9L-R _b +R _t	(38.1mm)

B. *Uvularia perfoliata*
 (Brightman Hill, Washington Co., R. I.)

Individuals	Structures	
6	1S+7L-R _b +R _t	(31.7mm)*
7	3S+8L-R _b +R _t	(23.0mm)
8	1S+8L-R _b +R _t	(28.3mm)
9	1S+5L-R _b	(26.3mm)
10	1S+5L-R _b +R _t	(28.0mm)
11	1S+7L-R _b +R _{t1} +R _{t2}	(29.2mm)
12	1S+5L-R _b	(19.9mm)
13	1S+6L-R _b	(25.0mm)
14	1S+5L-R _b +R _t	(25.2mm)
15	1S+7L-R _b +R _t	(27.1mm)

*Width of the largest leaf.

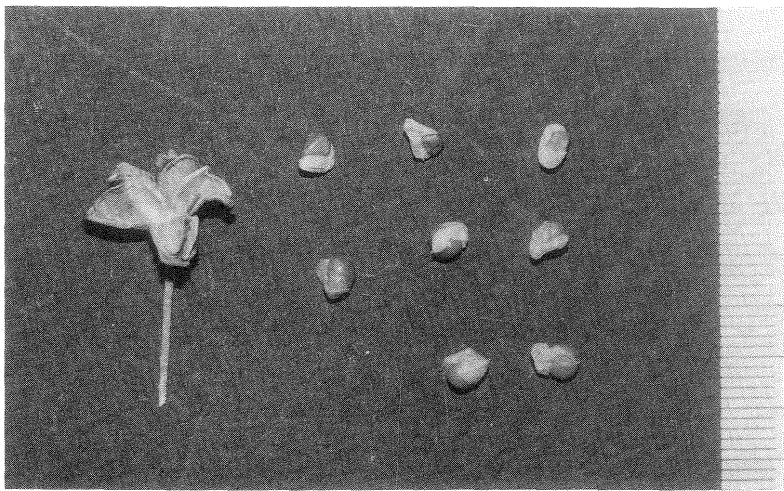
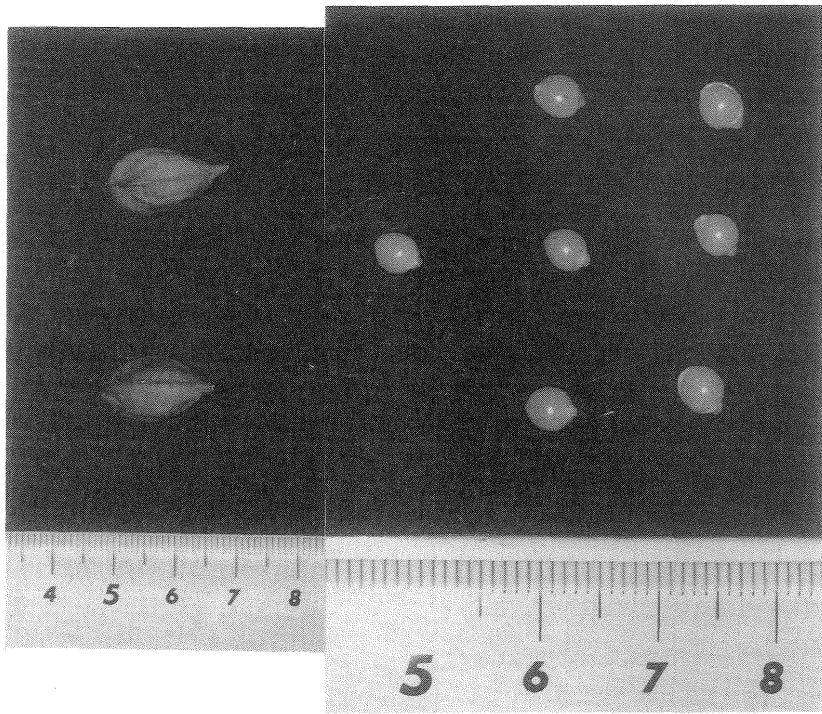


Fig. 8. Capsules and seeds of *Uvularia sessilifolia*(upper) and *U. perfoliata*(lower).

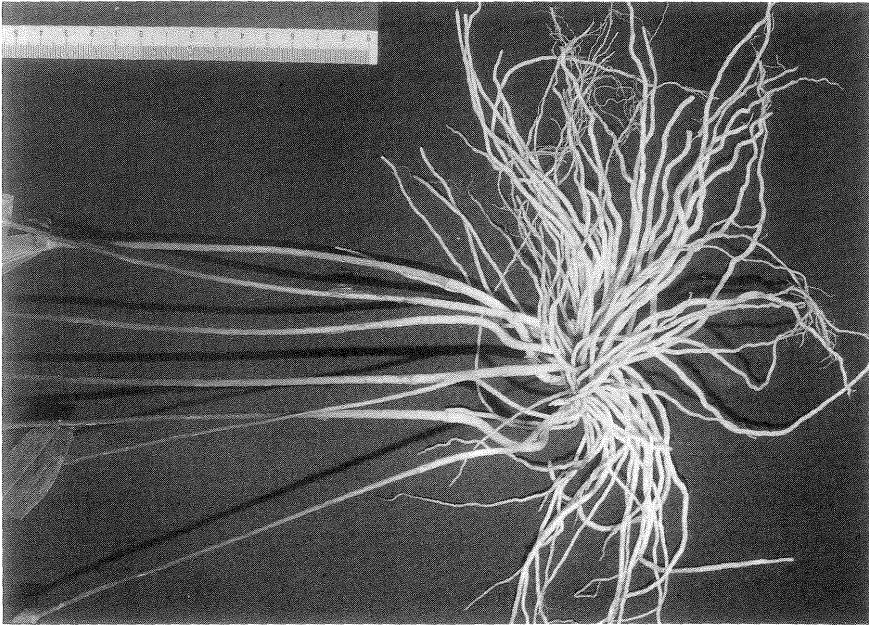
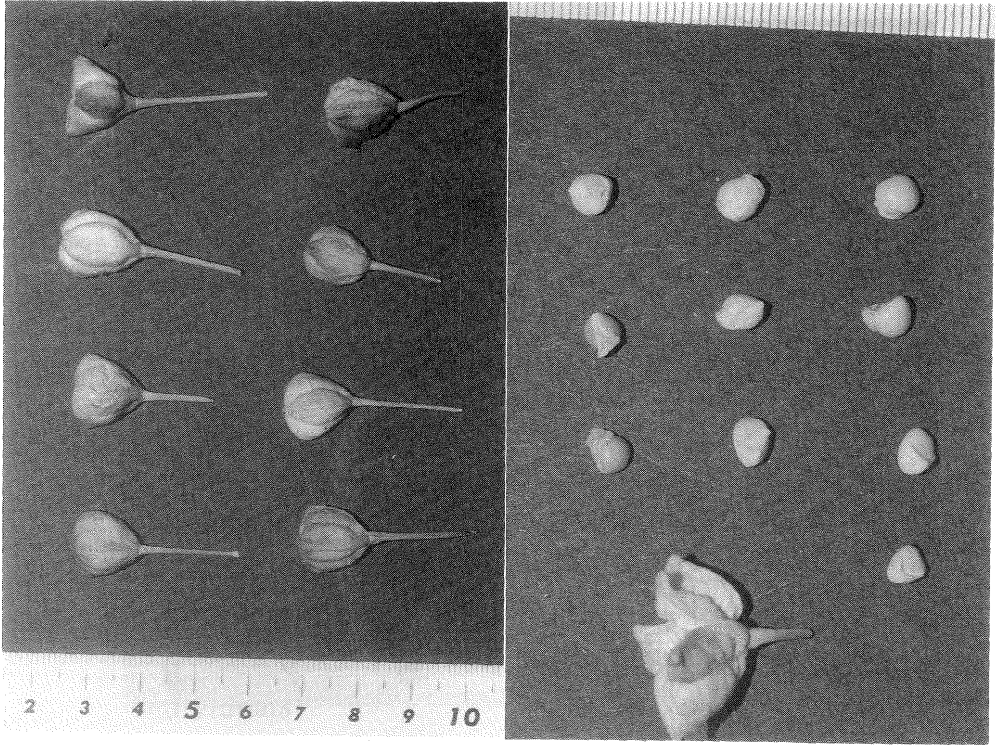


Fig. 9. Root system, capsules and seeds of *Uvularia grandiflora*.