Studies of Hemi-parasitic and Parasitic Flowering Plants

Martin A. Piehl
University of Wisconsin-Milwaukee
Project Number 147

The purpose of this study was to investigate the parasitic behavior of several species of hemiparasites (containing chlorophyll) and "complete" (non-green) parasites of the angiospermous families Scrophulariaceae and Orobanchaceae. Among the points considered were the development and longevity of the parasitic attachments, the morphology of the host-parasite union, correlations of parasitism with morphological or ecological adaptations, the determination of the taxonomic range in hosts, and the frequency of attachment to a host when more than a single host was involved. The species involved and the types of data collected for each are summarized in the table below. All species were observed in as great a range of habitats and elevations as could be studied in the time available. Distributional data for the species concerned were obtained for a wide area in the middle Rocky Mountain region from herbaria in Wyoming, Idaho, and Montana.

In conjunction with this study a few species of flowering plants were collected which had not previously been recorded for Grand Teton National Park, including some parasites belonging to the genera Cordylanthus and Orobanche.

A seminar on parasitic plants from both the Jackson Hole region and from other parts of the county was given at the Station August 3rd, which was quite helpful to the writer as it invoked a discussion of parasitism, saprophytism in both the plant and animal kingdoms.

Species	Area; Approximate Elevation	No. of Study Sites	Seeds for Cultures	Voucher Specimens	Anatomical Material	Host Range
Castilleja exilis	Yellowstone N. P.; 5000	2	x	x	x	x
C. lauta	" ; 8700			x		
C. cf. cusickii	Jackson Hole area; 7-9000			x		
C. flava	" "			x		
C. linariaefolia	" "			x		
C. longispica	" "			x		
C. miniata	" "			x		

(Table cont.)

Species	Area; Approximate Elevation	No. of Study Sites	Seeds for Cultures	Voucher Specimens	Anatomical Material	Host Range
C. rhexifolia	Jackson Hole area; 7-9000			x		
C. septentrionalis	" "			x		
Cordylanthus ramosus	" "	9	x	x	x	x
Orthocarpus luteus	" "	15	x	x	x	x
O. tolmiei	Teton Mts; 8400	1		x	x	x
Pedicularis bracteosa	Jackson Hole area; 7-9000		x	x		
P. groenlandica	" "		x	x		
P. racemosa	Teton Mts; 8400			x		
P. contorta	" "	1	x	x	x	x
P. cystopteridifolia	Yellowstone; Beartooth Mts; 9-10,000	2	x	x	x	x
P. oederi	Beartooth Mts; 10-11,000	4	x	x	x	x
P. parryi	Wind River Mts; 8300	1	x	x	x	x
P. parryi var. purpurea	" ;8-9000	3	x	x	x	x
P. grayi	" ; 8000	2	x	x	x	x
Orobanche fasciculata	Jackson Hole; 6700	10	x	x	x	x
O. fasciculata var. lutea	" "	5		x	x	x
Orobanche sp.	" "	3		x		x

Assisted by Susan Noble, Student Conservation Program.
Supported by New York Zoological Society.