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## SEASONAL OCCURRENCE AND RELATIVE ABUNDANCE OF TABANIDAE (DIPTERA) IN THREE LOCALITIES IN ALBERTA

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*A total of 4,010 female and 48 male tabanids was collected from three localities, each in a different ecological zone, in Alberta during the spring and summer of 1968 and 1969. Ten species were collected in the Canadian zone, north of Edmonton; 23 species in the Northern Central Rocky Mountain zone, at Nordegg; and 27 species in the Southern Foothills of the Rocky Mountains, southwest of Calgary. Twenty-nine species in six genera were collected: Atylotus 2 species, Chrysops 6 sp., Glaucops 1 sp., Haematopota 1 sp., Hybomitra 18 sp., Tabanus 1 sp. Flies were rarely active at temperatures below 65 F.*

Little has been published on the tabanids of Alberta since Strickland (1938, 1946) reported on the regional and seasonal distributions of 35 species or subspecies. McAlpine (1961) reported on the distribution of three species and Shamsuddin (1966) listed four localities where the larvae of three species were collected. Philip (1965) records 51 species or subspecies for Alberta. However, Pechuman (*in litt*) suggests that only 46 species are found in the province.

The regional and seasonal distributions of tabanids in Alberta are still imperfectly known. This paper describes the seasonal distribution of tabanids in two localities and lists the species collected during an eleven-day period in another.

### LOCALITIES AND METHODS

In 1968 two localities were sampled, one at George Lake (53° 57' N, 114° 06' W; 2,000 feet) 50 miles northwest of Edmonton and one at Nordegg (52° 28' N, 116° 04' W; 4,500 feet) 60 miles west of Rocky Mountain House.

In 1969, areas in the vicinity of the R. B. Miller Biological Station (50° 38' N, 114° 39' W; 5,000 feet) in the Bow River Forest Reserve 50 miles southwest of Calgary were sampled.

The George Lake locality has been described by Graham (1969). Four habitats in this locality were sampled from early June until late July when tabanids became scarce. Two Manitoba fly traps (Thorsteinson, Bracken and Hanec, 1965) were placed in a *Carex* meadow bordered on the west by a forest of *Populus tremuloides* Michx. and *Populus balsamifera* L. and on the east by a floating *Typha* mat adjacent to a lake. One Manitoba fly trap and a Malaise trap (Townes, 1962) were in an open *Carex* and *Typha* habitat alongside a stream flowing out of the lake. Another Manitoba fly trap was alongside this stream, but in the forest. Two Manitoba fly traps were in a bog consisting of *Sphagnum* moss covered with a dense growth of *Ledum groenlandicum* Oeder. This bog was surrounded by a forest of *Populus* and *Picea glauca* (Maench).

The Nordegg locality was sampled from July 31 until August 10. One Manitoba fly trap was erected in an open area alongside Shunda Creek. The ground cover was composed of mosses and *Carex* and the surrounding forest was spruce (*Picea* sp.). Collections were also made by netting females attracted to horses in a nearby meadow.

The Bow River Forest Reserve was sampled from June 9 until August 21. One Manitoba fly trap was erected in an open area in a white spruce forest (*Picea glauca* (Moench)) alongside Macabee Creek at 4,500 feet. Two Manitoba fly traps were in a partially flooded meadow at the edge of a beaver pond at 5,000 feet. One Manitoba fly trap was in a

*Sphagnum* bog at 5,200 feet, and two others were in a muskeg and *Carex* marsh at 5,200 feet. One Manitoba fly trap was in a meadow adjacent to a horse corral at 5,000 feet. Also, all flies entering the buildings of the research station were collected.

Except for the period July 30 – August 3, 1969, when the traps were not working, all traps in each locality were emptied daily.

### RESULTS

A total of 4,010 females and 48 males representing six genera and 29 species was collected.

The distribution of the 10 species collected at George Lake is shown in Table 1. *Hybomitra illota* (Osten Sacken) was the dominant species, accounting for 83% of the females. The total daily number of females collected is shown in Fig. 1. Daily maximum temperatures are plotted in the same figure to show the influence of temperature upon activity. Except for June 14 when the maximum was 58 F and two flies were collected, no flies were collected on any days when the daily maximum temperature was less than 64 F.

Table 1. Number of female and male (in parentheses) tabanids collected at George Lake, Alberta in 1968; with first and last dates of capture.

	Man & Vehicles	<i>Carex</i> Meadow	<i>Carex</i> & <i>Typha</i> Marsh		Forest	<i>Sphagnum</i> Bog
			A	B		
<i>Hybomitra affinis</i> (Kirby) 19.VI – 3.VII	1	1	2			1
<i>Hybomitra epistates</i> (Osten Sacken) 26.VI – 12.VII		9	1		2	11
<i>Hybomitra frontalis</i> (Walker) 25.VI – 26.VII	6	31	3	4	1	14
<i>Hybomitra illota</i> (Osten Sacken) 7.VI – 26.VII	23	160	157 (3)	63 (10)	87	374 (10)
<i>Hybomitra lasiophthalma</i> (Macquart) 14.VI – 11.VII	4	8	7		2	12
<i>Hybomitra nuda</i> (McDunnough) 7.VI – 3.VII	5 (1)	1		3 (2)		1 (1)
<i>Chrysops frigidus</i> Osten Sacken 23.VII – 26.VII				2		1
<i>Chrysops furcatus</i> Walker 18.VI – 26.VII	4			11 (2)		3
<i>Chrysops nubiapex</i> Philip 5.VII	1					
<i>Haematopota americana</i> (Osten Sacken) 22.VI – 25.VII	1		2 (1)	22 (4)		2 (1)

A = Manitoba fly trap

B = Malaise trap.

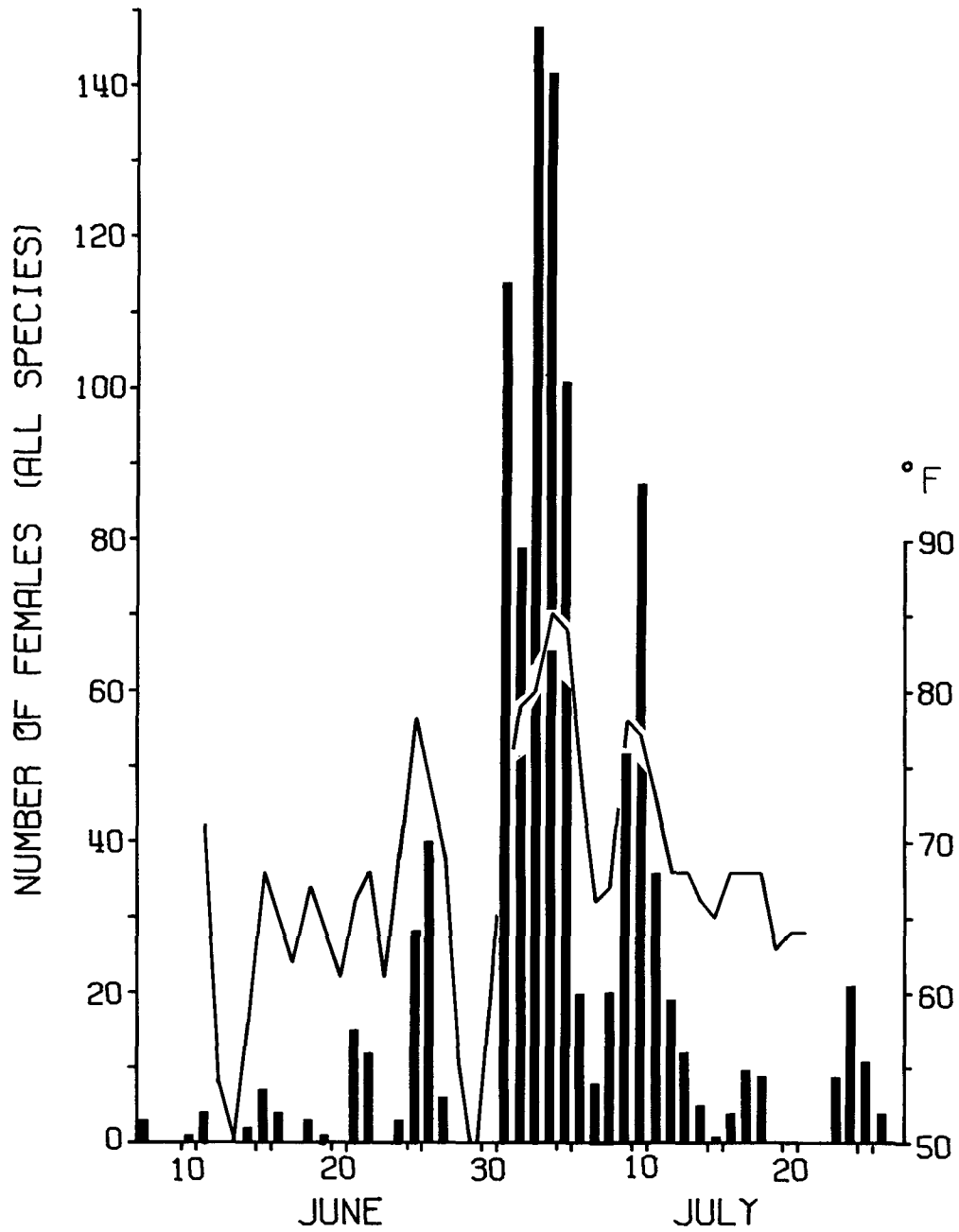


Fig. 1. Total daily catches of tabanid females (bars) and daily maximum temperatures (line) at George Lake, Alberta, 1968.

The distribution of the 23 species collected at Nordegg is shown in Table 2. *Hybomitra frontalis* (Walker) and *Hybomitra typhus* (Whitney) were the dominant species, accounting for 62% of the catch.

Table 2. Female tabanids collected at Nordegg, Alberta, July 31 – August 10, 1968.

	Stream edge (Manitoba fly trap)	Meadow (Horses)
<i>Hybomitra affinis</i> (Kirby)	10	47
<i>Hybomitra arpadí</i> (Szilády)	3	4
<i>Hybomitra frontalis</i> (Walker)	38	275
<i>Hybomitra illota</i> (Osten Sacken)	1	2
<i>Hybomitra lasiophthalma</i> (Macquart)	6	61
<i>Hybomitra liorhina</i> (Philip)		1
<i>Hybomitra melanorhina</i> (Bigot)		5
<i>Hybomitra metabola</i> (McDunnough)	3	
<i>Hybomitra opaca</i> (Coquillett)		2
<i>Hybomitra osburni</i> (Hine)		15
<i>Hybomitra rupestris</i> (McDunnough)	8	7
<i>Hybomitra tetrica hirtula</i> (Bigot)	1	1
<i>Hybomitra typhus</i> (Whitney)	37	195
<i>Hybomitra zonalis</i> (Kirby)		3
<i>Chrysops excitans</i> Walker	10	2
<i>Chrysops frigidus</i> Osten Sacken	3	3
<i>Chrysops furcatus</i> Walker	25	50
<i>Chrysops mitis</i> Osten Sacken	6	2
<i>Chrysops nigripes</i> Zetterstedt	1	
<i>Chrysops nubiapex</i> Philip	2	
<i>Haematopota americana</i> Osten Sacken	5	30
<i>Atylotus incisuralis</i> (Macquart)	1	1
<i>Tabanus marginalis</i> Fabricius	1	

The habitat distribution of the 27 species collected in the Bow River Forest is shown in Table 3, and the seasonal distribution (of 26 species) in Fig. 2 and 3; *Hybomitra astuta* (Osten Sacken) was collected on August 9, 10 and 11. The total daily catches and the maximum temperatures are shown in Fig. 4. Except for July 5 when the maximum was 54 F and one fly was collected, no flies were collected on any days when the daily maximum temperature was less than 62 F.

Table 3. Habitat distribution of female and male (in parentheses) tabanids collected in the Bow River Forest Reserve, Alberta, June – August, 1969.

	White Spruce Forest	Beaver Pond	<i>Sphagnum</i> Bog	Muskeg & <i>Carex</i> Marsh	Meadow	Buildings
<i>Hybomitra affinis</i> (Kirby)	2	51 (1)	60	33	58 (1)	26 (1)
<i>Hybomitra arpadi</i> (Szilády)	66 (2)	4	9	1	1	4
<i>Hybomitra astuta</i> (Osten Sacken)		3				1
<i>Hybomitra epistates</i> (Osten Sacken)	5			1	1	
<i>Hybomitra frontalis</i> (Walker)	2	12	6	51	13	58
<i>Hybomitra illota</i> (Osten Sacken)	22 (1)	4	6	2	1	
<i>Hybomitra itasca</i> (Philip)		1		49		
<i>Hybomitra lasiophthalma</i> (Macquart)	52 (1)	46 (2)	21 (1)	9	19	13 (1)
<i>Hybomitra liorhina</i> (Philip)		10	10	136	2	11
<i>Hybomitra melanorhina</i> (Bigot)			1		1	1
<i>Hybomitra metabola</i> (McDunnough)	3	20	41	20	2	
<i>Hybomitra nuda</i> (McDunnough)	18 (1)	24	24	4	1	2
<i>Hybomitra opaca</i> (Coquillett)						2
<i>Hybomitra osburni</i> (Hine)	59	23	3	73	483	135
<i>Hybomitra rupestris</i> (McDunnough)		29		32	3	45
<i>Hybomitra tetrica hirtula</i> (Bigot)	6			2	10	1
<i>Hybomitra typhus</i> (Whitney)	3	15	4	10	12	1
<i>Hybomitra zonalis</i> (Kirby)	3			2	4	
<i>Chrysops excitans</i> Walker	1					
<i>Chrysops frigidus</i> Osten Sacken	2	1		7		
<i>Chrysops furcatus</i> Walker	2		5	18 (1)		1
<i>Chrysops mitis</i> Osten Sacken	1	2				
<i>Chrysops nubiapex</i> Philip	5					
<i>Haematopota americana</i> Osten Sacken		2			1	2
<i>Atylotus incisuralis</i> (Macquart)	1	9		20		8
<i>Atylotus duplex</i> (Walker)				1		
<i>Glaucops fratellus</i> Williston		4		3		

## DISCUSSION

The George Lake locality is included in Strickland's (1938) ecological zone 10 from which he listed 13 species of tabanids. The few species at George Lake is probably a consequence of the limited larval habitats in the area. The Nordegg area is in zone 20 from which Strickland (1938) listed nine species. Considering the limited period I spent there, this locality seems especially rich in tabanids. The Bow River Forest is in Strickland's (1938) ecological zone 17; the 27 species collected form 59% of the Albertan fauna.

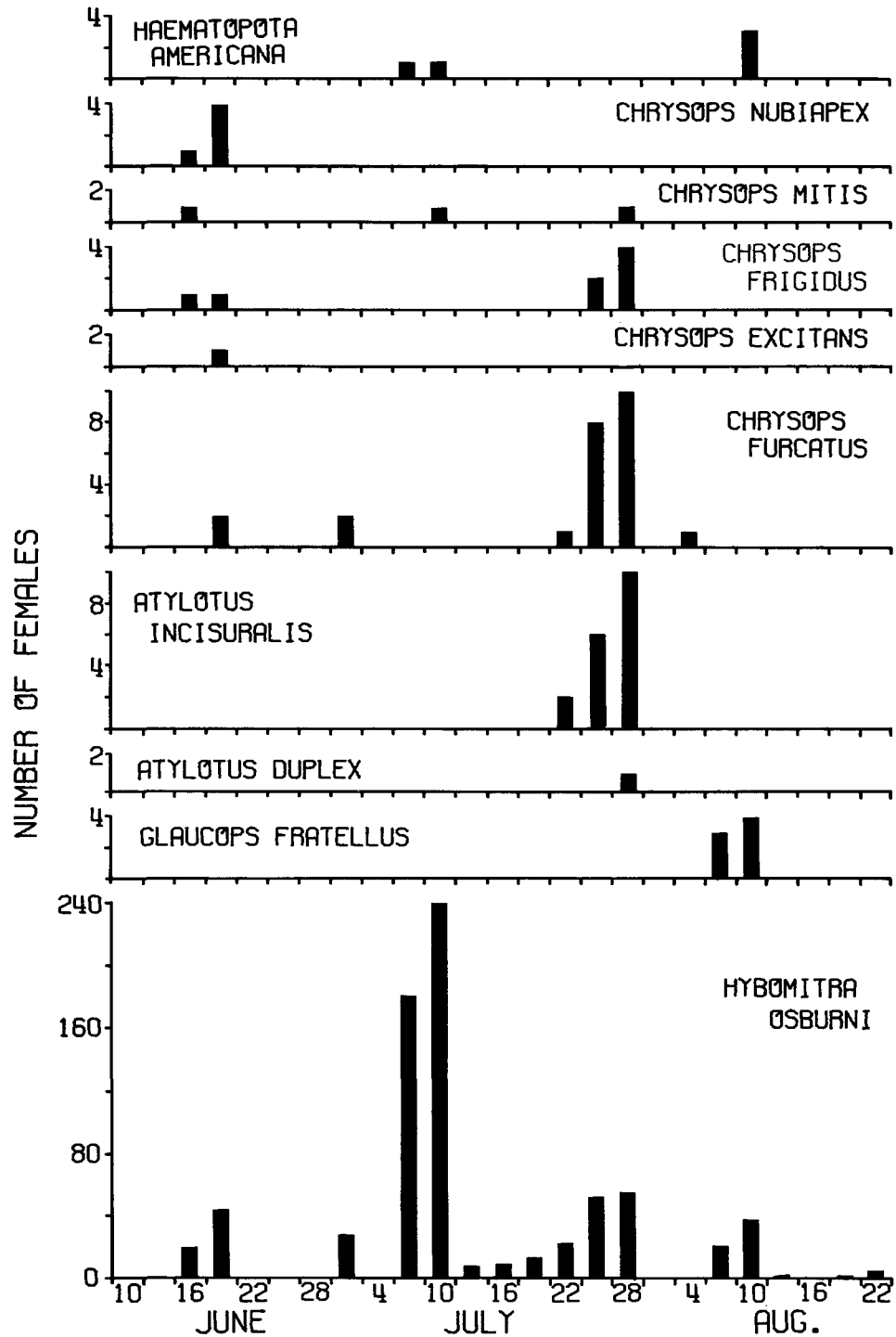


Fig. 2. Three day totals of catches by species of tabanid females in the Bow River Forest Reserve, Alberta, 1969.

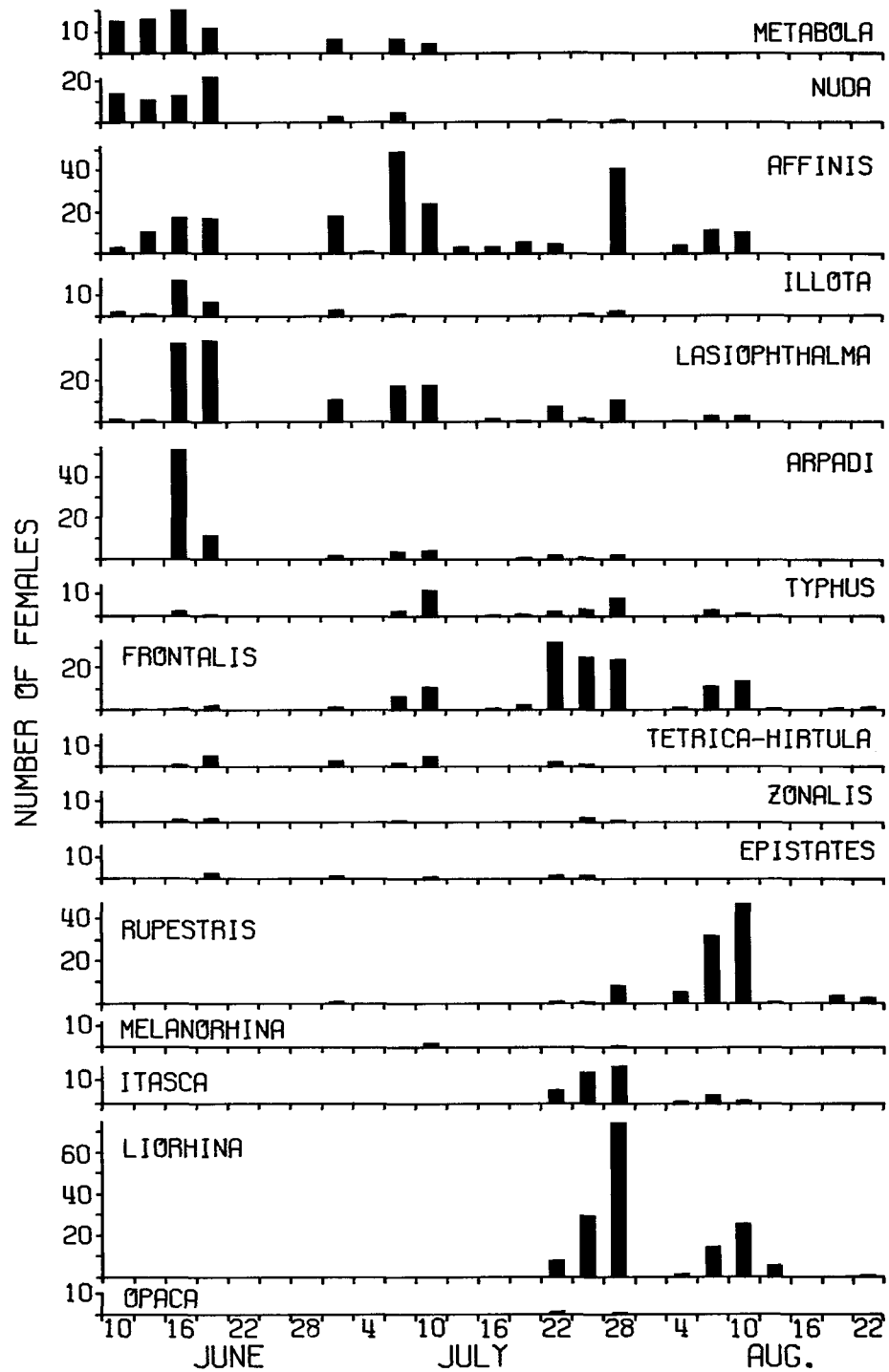


Fig. 3. Three day totals of catches by species of female *Hybomitra* species collected in the Bow River Forest Reserve, Alberta, 1969.



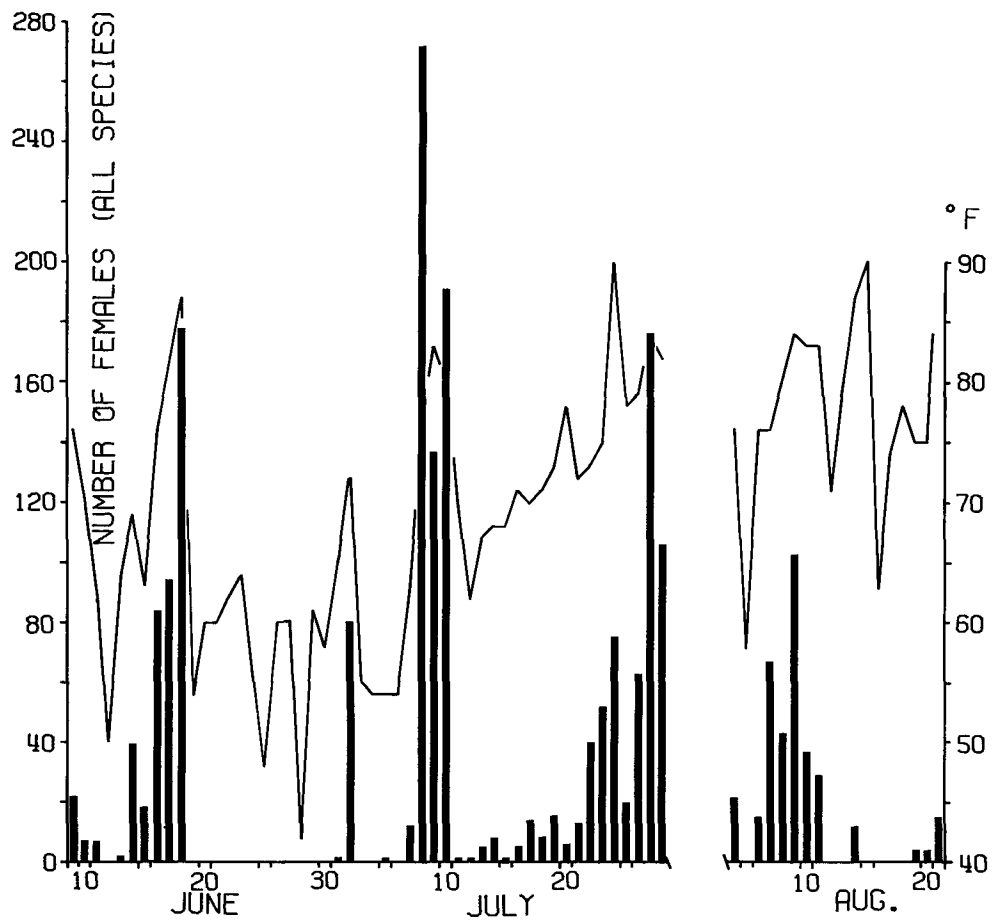


Fig. 4. Total daily catches of tabanid females (bars) and daily maximum temperatures (line) in the Bow River Forest Reserve, Alberta, 1969.

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