

A SURVEY OF THE TRICHOPTERA OF THE FORT CAMPBELL MILITARY RESERVATION, KENTUCKY AND TENNESSEE

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ABSTRACT—Fort Campbell Military Reservation includes 105,000 acres in Christian and Trigg counties, Kentucky and Montgomery and Stewart counties, Tennessee. The Reservation is located within the Highland Rim Section of the Interior Low Plateaus Province. The goal of the present investigation was to survey the accessible streams on the Reservation using light traps to capture adult insects and to assess the diversity of caddisflies present. A total of 106 species of caddisflies was identified during this study on the Reservation. Twenty-two species represent new records of caddisflies in Kentucky and 11 species represent new records in Tennessee. Fifteen species captured during this investigation represent new records for the Middle Tennessee region.

This study was conducted as part of a biodiversity initiative recently implemented at the Fort Campbell Military Reservation (FTC). The first phases of this initiative were implemented to investigate the aquatic faunal components of FTC. In addition to Trichoptera, one of the authors (B. H. Bauer) is also conducting studies on the diversity of adult Ephemeroptera and aquatic Coleoptera; as well as surveying FTC streams for fishes and aquatic snails.

The issue of managing FTC's natural resources to maintain or improve biodiversity is important because the Department of Defense (DoD) has management responsibility for more than 25 million acres of public land within the United States (Leslie et al., 1996). In 1996, the Army managed 50 percent of these 25 million acres. With regard to total acreage, DoD was the third largest federal departmental land manager, after the Department of the Interior and the United States Department of Agriculture.

In the late 1980s, DoD initiated a directive for development of an Integrated Natural Resources Management Plan (INRMP) for each installation (Department of Defense Directive 4700.4, January 24, 1989). These INRMPs were intended to coordinate competing land use requirements. The INRMPs have provided a new approach to resource management that includes balancing natural resource management with operational/training objectives. Development of the Integrated Training Area Management (ITAM) program has resulted in the application of geographic information system (GIS) technology to interrelate analyses of land condition and training requirements. This allows natural resources managers to alert operations/training planners to potential environmental issues and to obtain timely information on training and testing plans.

Leslie et al. (1996) provides a detailed analysis of the need to conserve the natural heritage of military lands. The principal conclusions presented in Leslie et al. (1996) point to the need to sustain natural landscapes that provide training

and testing opportunities for maintaining military readiness as well as a need to conduct ecosystem management to protect sensitive ecological communities and to mitigate for environmental impacts that may occur during training and testing operations on military lands.

Proper conservation of biological diversity in terrestrial and aquatic habitats on FTC is vital to sustaining the military mission. Goals of the FTC INRMP (Fort Campbell, 2003) include maintaining healthy ecosystems and restoring degraded ecosystems to their historic functions and values. Adherence to this conservation mandate requires sufficient data be available to determine the potential of an activity to cause an environmental disturbance affecting biological communities.

The present investigation provides valuable data that will be used by FTC personnel in furtherance of the INRMP goals noted above. The objective of this study was to survey FTC (excluding impact areas, firing ranges, and the highly populated and developed cantonment area) for adult aquatic insects, and to identify species of the order Trichoptera (caddisflies). Caddisflies are important components of the food chain at FTC. While the food chain involves the entirety of the faunal communities in an intricate and complex web of relationships, some key members of the FTC fauna include two endangered species, the Indiana bat (*Myotis sodalis* Miller and Allen) and the gray bat (*M. grisescens* Howell), that forage over streams and feed upon adult insects including caddisflies.

Brack and Laval (1985) in a study of the feeding preferences of Indiana bats in Missouri found that moths dominated the diet of Indiana bats. Beetles and caddisflies also were preyed upon, with the greatest numbers of beetles and caddisflies in samples from July on a date when moth consumption was at its lowest. Gray bats primarily consume flying insects emerging from aquatic life stages including flies (Diptera), beetles (Coleoptera), mayflies (Ephemeroptera),

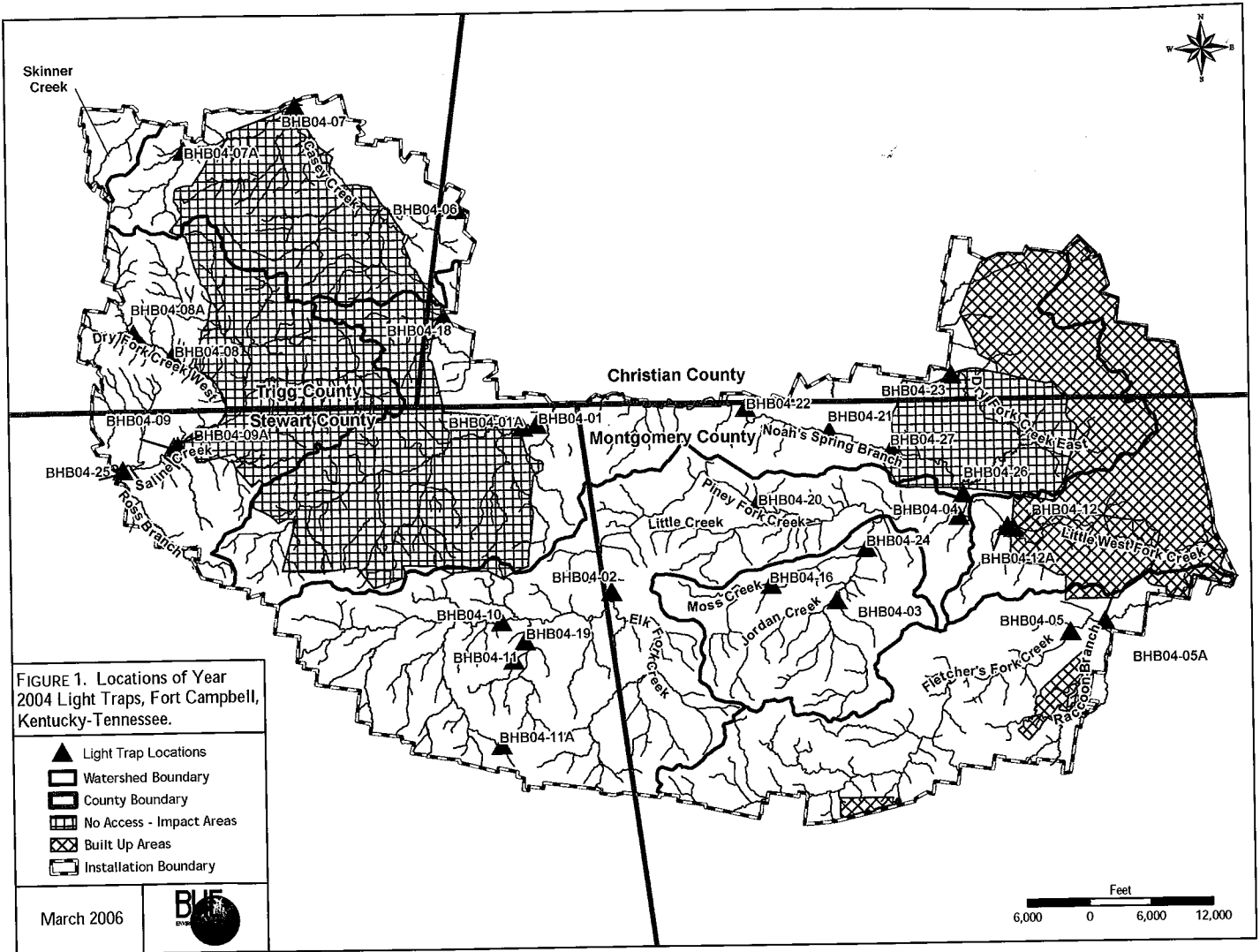


FIG. 1. Locations of Year 2004 light traps on Fort Campbell, Kentucky-Tennessee.

stoneflies (Plecoptera), and caddisflies (Clawson, 1984; Brady et al., 1982).

STUDY AREA

Fort Campbell is situated astride the Kentucky-Tennessee border between west longitudes 87°24' and 87°46' and north latitudes 36°31' and 36°44' (Fig. 1). At approximately 105,000 acres in area, FTC occupies portions of Christian and Trigg counties, Kentucky and Montgomery and Stewart counties, Tennessee. About two-thirds of the post is in Tennessee, with the remaining one-third in Kentucky.

Land use within installation boundaries includes approximately 26,000 acres of impact areas, approximately 11,772 acres of cantonment area and related development, and more than 47,600 acres of forest designated for multiple use including training and natural resources programs. Forest on the installation is primarily broadleaf deciduous forest and pine plantations, with dominant types including oak-hickory and loblolly-shortleaf pine in uplands, and elm-ash-cottonwood in bottomlands. There are approximately 420 miles of perennial and intermittent streams on the installation.

Stream systems located on FTC drain to the west (Dry Fork Creek flows into Saline Creek, which is a direct tributary to Cumberland River/Lake Barkley), north (Skinner and Casey creeks, tributaries to Little River, in turn a tributary to Lake Barkley), and east (Elk Fork, Piney Fork, Noahs Spring Branch, Moss Creek, Jordan Creek, Fletchers Fork, and Little West Fork all drain into the West Fork of the Red River and subsequently to Lake Barkley).

Physiographically, FTC includes portions of two subsections of the Highland Rim Section of the Interior Low Plateaus Province (Quarterman and Powell, 1978). The Western Highland Rim Subsection makes up a small area of the reservation near and along its western boundary, while the rest of the installation is within the Pennyroyal Plain Subsection. Numerous sinkholes occur in the Pennyroyal Plain. Surface-runoff drainage systems are poorly developed because of the extensive network of subsurface channels eroded in the soluble limestone. The karst topography is characterized by knobs and glades. In the glades, creeks disappear into sinkholes and reappear at lower elevations as springs in the glades. Extensive solution weathering of the limestone and dolomite geology has produced a mantle of

TABLE 1. Light trap locations (2004) on Fort Campbell Military Reservation, Kentucky and Tennessee.

Station ID ^a	Stream order	Lat. (north)	Long. (west)	Locality description (stream names are as found on USGS quadrangle maps)
BHB04-01	4	36.63995	87.65397	Noahs Spring Branch at Angels Road, 0.1 mi W of Killebrew Road, Christian Co., KY.
BHB04-01A	4	36.63923	87.65862	Noahs Spring Branch at Killebrew Road, Christian Co., KY.
BHB04-02	5	36.59584	87.62914	Piney Fork Creek at Jordan Springs Road, Montgomery Co., TN.
BHB04-03	3	36.59393	87.55462	Jordan Creek at Jordan Springs Road, Montgomery Co., TN.
BHB04-04	5	36.61632	87.51444	Piney Fork Cr. at Boiling Springs Rd, Montgomery Co., TN.
BHB04-05	4	36.58571	87.47744	Fletchers Fork at 11th Airborne Division Rd, below Lake Taal dam, Montgomery Co., TN.
BHB04-05A	4	36.58869	87.46632	Fletchers Fork at Woodlawn Rd, Montgomery Co., TN.
BHB04-06	2	36.69679	87.68033	Casey Creek at Patton Rd, Christian Co., KY.
BHB04-07	4	36.72385	87.73389	Tributary to Casey Creek at Patton Rd, Trigg Co., KY.
BHB04-07A	2	36.71175	87.77055	Tributary to Casey Creek at Perimeter Rd (upstream of BHB04-07), Trigg Co., KY.
BHB04-08	3	36.65738	87.77395	Dry Fork Creek, at West Perimeter Rd, Trigg Co., KY.
BHB04-08A	3	36.66347	87.78664	Dry Fork Creek, at Pryor Trail, Trigg Co., KY.
BHB04-09	4	36.63355	87.77319	Saline Creek at Buckner Trail low water ford, Stewart Co., TN.
BHB04-09A	1	36.63380	87.77187	Unnamed tributary at confluence with Saline Creek, Stewart Co., TN.
BHB04-10	5	36.59794	87.66512	Piney Fork Creek at Rendevous Rd, Stewart Co., TN.
BHB04-11	N/A	36.57768	87.66109	Lake Kyle along NW shoreline, Stewart Co., TN.
BHB04-11A	1	36.55529	87.66494	Piney Fork Creek tributary at Indian Mound Rd, Stewart Co., TN.
BHB04-12	5	36.61313	87.49647	Little West Fork at McNair Rd, Montgomery Co., TN.
BHB04-12A	5	36.61367	87.49844	Little West Fork ca. 0.45 mi downstream from Pumping Station, Montgomery Co., TN.
BHB04-16	3	36.59796	87.57659	Moss Creek at Palmyra Rd, Montgomery Co., TN.
BHB04-18	1	36.66812	87.68447	Noahs Spring headwater at Patton Rd, Christian Co., KY.
BHB04-19	3	36.58280	87.65748	Lake Kyle outlet stream at Destiny Trail, Stewart Co., TN.
BHB04-20	5	36.61920	87.58139	Piney Fork Creek at Palmyra Rd, Montgomery Co., TN.
BHB04-21	4	36.63861	87.55717	Noahs Spring at Palmyra Rd, Montgomery Co., TN/Christian Co., KY.
BHB04-22	4	36.64470	87.58517	Noahs Spring at Angels Rd (west of Palmyra Road), Christian Co., KY.
BHB04-23	3	36.65358	87.51721	Dry Fork Creek at Angels Rd, Christian Co., KY.
BHB04-24	4	36.60781	87.54502	Jordan Creek at Ghost Corps Trail, Montgomery Co., TN.
BHB04-25	4	36.62733	87.78990	Saline Creek at Jordan Springs Rd, Stewart Co., TN.
BHB04-26	4	36.62220	87.51306	Noahs Spring Branch at Mabry Rd., Montgomery Co., TN.
BHB04-27	4	36.63401	87.53672	Noahs Spring Branch at On The Line Rd, Montgomery Co., TN.

^a BHB = investigator's initials; 04 = year sampled; 01 = station number

insoluble residuum, including fragments of chert, which is locally tens of feet thick where transported and concentrated in sinkholes. Prior to modern agriculture, much of this terrain was known as the "Barrens", a pioneer term for grassland prairies.

SURVEY METHODS

Adult insects were captured using commercial light traps (Universal Black Light Traps) equipped with 12-watt U-shaped black lights. Traps were deployed at dusk and were left in place overnight. Sampling was initiated March 15, 2004 and the last samples were collected October 18, 2004. The sampling plan design was to conduct an inventory of the caddisfly species diversity at FTC and did not include sampling sites on a specified time interval or frequency. Therefore, some sites

were sampled more frequently than other sites. Sample frequency at a site was determined primarily based on the presence of water at a site as many of the streams at FTC are ephemeral in nature or flow underground at low flow conditions. In total, approximately 200 light trap samples from 30 different localities (Fig. 1, Table 1) on FTC were collected. Samples were preserved in the field in alcohol and returned to the University of Tennessee for sorting and caddisfly identification. Representative specimens of each identified species have been cataloged into the University of Tennessee Research Caddisfly Collection.

RESULTS

This study represents one of the most comprehensive surveys of Trichoptera in a large geographic area. In addition,

TABLE 2. List of families, genera, and species of Trichoptera and number of specimens collected on Fort Campbell Military Reservation in 2004.

Genus	Species	Number of specimens	Location where species was collected (collection numbers all begin with BHB04-)
	Family Dipseudopsidae	1	
<i>Phylocentropus</i>	<i>placidus</i> (Banks)	1	20
	Family Glossosomatidae	445	Includes 1 female to genus only
<i>Agapetus</i>	<i>avitus</i> Edwards ^a	27	03, 05A, 08A, 09, 09A, 12A
<i>A.</i>	<i>illini</i> Ross ^b	17	04
<i>Glossosoma</i>	<i>nigrrior</i> Banks	388	03, 04, 05, 05A, 07, 07A, 08, 08A, 09, 10, 12A, 21, 23, 24, 26, 27
<i>Protophila</i>	<i>maculata</i> (Hagen)	12	02, 20, 21, 23, 26
	Family Goeridae	4	
<i>Goera</i>	<i>calcarata</i> Banks	4	03, 16
	Family Hydropsychidae	3422 ^e	Includes 4 females to genus only
<i>Ceratopsyche</i>	<i>slossonae</i> (Banks) ^a	74	03, 07A, 08, 08A, 09, 09A, 10, 16, 20, 23, 24
<i>C.</i>	<i>sparna</i> (Ross)	48	02, 03, 05A, 07, 07A, 08A, 09, 11A, 12A, 16, 20, 21, 24, 26
<i>Cheumatopsyche</i>	<i>analisis</i> (Banks)	1572	01, 02, 03, 04, 05, 05A, 07, 07A, 08, 08A, 09, 10, 11, 12A, 16, 18, 19, 20, 21, 22, 23, 24, 26
<i>C.</i>	<i>burksi</i> Ross	29	02, 03, 05, 09, 10, 20, 22, 23, 24, 26
<i>C.</i>	<i>campyla</i> Ross	6	05, 07, 09
<i>C.</i>	<i>oxa</i> Ross	1306	02, 03, 04, 05, 05A, 07, 07A, 08, 08A, 09, 09A, 10, 12A, 16, 18, 20, 21, 24, 25, 26
<i>C.</i>	<i>pasella</i> Ross	1	02
<i>Diplectrona</i>	<i>modesta</i> Banks	3	05, 08, 08A
<i>Hydropsyche</i>	<i>betteni</i> Ross	3	05A
<i>H.</i>	<i>depravata</i> Hagen	296	03, 04, 05, 05A, 20, 21, 24, 26
<i>H.</i>	<i>orris</i> Ross	13	02, 05, 07, 07A, 08A, 09, 09A, 10, 20
<i>H.</i>	<i>rossi</i> Flint, Voshell, & Parker	26	03, 05, 07, 07A, 08A, 09, 20, 21, 23, 24, 26
<i>Potamyia</i>	<i>flava</i> (Hagen)	41	02, 05, 09, 09A, 11, 20, 23, 26
	Family Hydroptilidae	35,404	Includes 31,609 females to family only
<i>Dibusa</i>	<i>angata</i> Ross	86	04, 05, 05A, 12A
<i>Hydroptila</i>	<i>amoena</i> Ross ^b	21	02, 07A, 09, 10, 24
<i>H.</i>	<i>angusta</i> Ross ^b	3	02, 05A, 21
<i>H.</i>	<i>armata</i> Ross	1277	02, 04, 05, 05A, 07, 07A, 09, 10, 12A, 16, 20, 21, 22, 23, 24, 26, 27
<i>H.</i>	<i>consimilis</i> Morton	19	02, 05A, 07A, 08A, 09A, 21, 23, 24
<i>H.</i>	<i>gunda</i> Milne	105	02, 05, 05A, 07A, 08A, 09, 10, 18, 20, 21, 23, 26
<i>H.</i>	<i>hamata</i> Morton	866	02, 05, 07A, 09, 10, 20, 21, 24
<i>H.</i>	<i>jackmanni</i> Blickle ^{a, b}	113	03, 04, 07A, 08A, 09, 09A
<i>H.</i>	<i>oneili</i> Harris ^{a, c}	62	02, 03, 07A, 09, 10, 16, 20, 21
<i>H.</i>	<i>perdita</i> Morton ^d	11	20
<i>H.</i>	<i>spatulata</i> Morton ^c	2	08A, 24
<i>H.</i>	<i>vala</i> Ross	47	02, 04, 05A, 10
<i>H.</i>	<i>waubesiana</i> Betten	210	02, 03, 05, 05A, 07A, 08A, 09, 10, 16, 18, 20, 21, 22, 23, 26
<i>Neotrichia</i>	<i>vibrans</i> Ross ^{a, c}	1	07
<i>Ochrotrichia</i>	<i>eliaga</i> (Ross) ^a	37	05A
<i>O.</i>	<i>shawnee</i> (Ross)	769	02, 03, 05A, 07, 07A, 08A, 09, 20, 21
<i>O.</i>	<i>tarsalis</i> (Hagen) ^c	12	20
<i>O.</i>	<i>xena</i> (Ross)	1	04
<i>O.</i>	<i>aegerfasciella</i> (Chambers)	54	02, 03, 05, 05A, 08A, 09, 10, 16, 18, 20, 21, 23, 24
<i>O.</i>	<i>cristata</i> Morton ^c	4	05, 20, 24
<i>Oxyethira</i>	<i>forcipata</i> Mosely ^c	13	09, 11
<i>O.</i>	<i>pallida</i> (Banks) ^c	58	02, 05, 05A, 09, 10, 11, 20, 21, 23
<i>O.</i>	<i>pescadori</i> Harris & Keth ^{a, d}	3	02, 05
<i>O.</i>	<i>zeronia</i> Ross ^c	19	02, 05, 11, 19, 20, 26
<i>Stactobiella</i>	<i>martynovi</i> Blickle & Denning ^{a, c}	2	05A, 16

TABLE 2. Continued.

Genus	Species	Number of specimens	Location where species was collected (collection numbers all begin with BHB04-)
	Family Lepidostomatidae	18	Includes 9 females to genus only
<i>Lepidostoma</i>	<i>pictile</i> Banks ^c	9	07, 08, 09A
	Family Leptoceridae	10,303	Includes 3575 females to genus only
<i>Ceraclea</i>	<i>cancellata</i> (Betten)	3	02, 05
<i>C.</i>	<i>maculata</i> (Banks)	83	01A, 02, 03, 05, 05A, 07, 07A, 08A, 09, 10, 16, 20, 21, 24
<i>C.</i>	<i>nepha</i> (Ross)	61	02, 05A, 07A, 09, 10, 11, 12A, 18, 20
<i>C.</i>	<i>protonepha</i> Morse & Ross	49	02, 07A, 08A, 09, 09A, 10, 11, 18, 20
<i>C.</i>	<i>tarsipunctata</i> (Vorhies)	981	02, 03, 05A, 07, 07A, 08A, 09, 09A, 10, 11, 12A, 18, 20, 21, 22
<i>C.</i>	<i>transversa</i> (Hagen)	106	02, 03, 09A, 10, 20
<i>Leptocerus</i>	<i>americanus</i> (Banks) ^{a, c}	137	02, 03, 05, 05A, 07, 07A, 08A, 09, 09A, 10, 11, 12A, 18, 20
<i>Mystacides</i>	<i>sepulchralis</i> (Walker)	53	02, 07A, 09, 12A, 20, 21
<i>Nectopsyche</i>	<i>candida</i> (Hagen) ^c	2	09A
<i>N.</i>	<i>exquisita</i> (Walker)	5	09, 10, 21
<i>N.</i>	<i>pavida</i> (Hagen)	2	05, 20
<i>Oecetis</i>	<i>avara</i> (Banks)	4798	02, 08A, 09, 16, 20, 25
<i>O.</i>	<i>cinerascens</i> (Hagen)	59	02, 05, 07, 07A, 08, 08A, 09, 10, 11, 18, 20, 21, 23
<i>O.</i>	<i>ditissa</i> Ross	36	02, 05, 05A, 07A, 08, 08A, 09, 16, 18, 20, 21, 22, 23, 24
<i>O.</i>	<i>inconspicua</i> (Walker)	264	01A, 02, 03, 04, 05, 05A, 07, 07A, 08, 08A, 09, 09A, 10, 11, 16, 18, 20, 21, 23, 24, 26
<i>O.</i>	<i>nocturna</i> Ross	21	02, 05, 05A, 08A, 09, 16, 20, 21, 24
<i>O.</i>	<i>persimilis</i> (Banks)	13	07, 09, 10, 16, 20, 21, 23
<i>Setodes</i>	<i>epicampes</i> Edwards ^a	1	07A
<i>Triaenodes</i>	<i>aba</i> Milne ^c	1	09A
<i>T.</i>	<i>ignitus</i> (Walker)	12	05A, 08A, 09, 20, 21, 24, 26
<i>T.</i>	<i>injustus</i> (Hagen)	7	02, 05, 05A, 09, 11, 20, 22
<i>T.</i>	<i>marginatus</i> Sibley ^a	19	07, 07A, 08, 08A, 09, 20, 21, 23, 24, 26
<i>T.</i>	<i>nox</i> Ross ^{a, d}	5	09
<i>T.</i>	<i>perna</i> Ross ^a	3	05A
<i>T.</i>	<i>tardus</i> Milne ^c	7	02, 10, 20, 26
	Family Limnephilidae	49	
<i>Ironoquia</i>	<i>kaskaskia</i> (Ross) ^a	25	21
<i>I.</i>	<i>lyrata</i> (Ross) ^{a, d}	1	08
<i>I.</i>	<i>punctatissima</i> (Walker)	4	02, 08
<i>Pycnopsyche</i>	<i>antica</i> (Walker) ^a	2	08, 09
<i>P.</i>	<i>gentilis</i> (McLachlan)	1	FTC1
<i>P.</i>	<i>guttifer</i> (Walker)	12	20, 26, FTC1, FTC239, FTC255, FTC543, FTC598
<i>P.</i>	<i>lepida</i> (Hagen)	2	09, 24
<i>P.</i>	<i>virginica</i> (Banks) ^a	2	20, 21
	Family Odontoceridae	4	
<i>Psilotreta</i>	<i>labida</i> Ross ^a	4	05A
	Family Philopotamidae	13,428	Includes 7170 females to genus only
<i>Chimarra</i>	<i>feria</i> Ross ^d	386	02, 03, 05A, 07, 08, 08A, 09, 09A, 10, 11, 16, 19, 20, 21, 22, 24
<i>C.</i>	<i>obscura</i> (Walker)	5857	02, 03, 04, 05, 05A, 07, 07A, 08, 08A, 09, 09A, 10, 11, 12A, 16, 18, 19, 20, 21, 22, 23, 24
<i>Dolophilodes</i>	<i>distinctus</i> (Walker)	4	07A, 08A, 26
<i>Wormaldia</i>	<i>shawnee</i> (Ross) ^b	11	02, 03, 05A, 10
	Family Phryganeidae	58	
<i>Agrypnia</i>	<i>vestita</i> Ross	17	02, 08, 09, 11A, 12A, 24, 26
<i>Phryganea</i>	<i>sayi</i> Milne	26	02, 05A, 16, 20, 21, 23, 24
<i>Ptilostomis</i>	<i>ocellifera</i> (Walker)	6	08A, 16, 24
<i>P.</i>	<i>postica</i> (Walker)	9	01A, 09, 09A, 16, 18
	Family Polycentropodidae	2088	Includes 14 females to genus only
<i>Cernotina</i>	<i>spicata</i> Ross ^a	163	02, 11

TABLE 2. Continued.

Genus	Species	Number of specimens	Location where species was collected (collection numbers all begin with BHB04-)
	Family Polycentropodidae	2088	Includes 14 females to genus only
<i>Cernotina</i>	<i>spicata</i> Ross ^a	163	02, 11
<i>Cyrnellus</i>	<i>fraternus</i> (Banks)	41	01A, 02, 05, 05A, 07, 07A, 08A, 09, 10, 20, 21, 22, 23
<i>Neureclipsis</i>	<i>crepuscularis</i> (Walker)	36	02, 07, 07A, 08A, 09, 10, 12A, 16, 18, 20
<i>N.</i>	<i>piersoni</i> Lago & Harris ^{a, d}	18	02, 03, 07, 09, 10, 16, 18, 20, 24
<i>Nyctiophylax</i>	<i>affinis</i> (Banks)	120	02, 10, 20
<i>N.</i>	<i>serratus</i> Lago & Harris ^a	1	09
<i>Polycentropus</i>	<i>centralis</i> Banks	1487	01A, 02, 03, 04, 05A, 07, 07A, 08, 08A, 09, 09A, 10, 11A, 16, 18, 20, 21, 22, 24
<i>P.</i>	<i>chelatus</i> Ross & Yamamoto ^a	22	02, 03, 04, 07A, 16
<i>P.</i>	<i>cinereus</i> Hagen	34	02, 04, 05, 05A, 07A, 08A, 09, 09A, 10, 12A, 18, 20, 21
<i>P.</i>	<i>confusus</i> Hagen	66	02, 04, 07, 07A, 08A, 09, 09A, 10, 12A, 18, 20, 21, 24
<i>P.</i>	<i>crassicornis</i> Walker	85	09A, 10, 11A, 12A, 18
<i>P.</i>	<i>elarus</i> Ross ^c	1	07
	Family Psychomyiidae	1338	Includes 788 females to genus only
<i>Lype</i>	<i>diversa</i> (Banks)	314	02, 04, 05, 05A, 07A, 09, 09A, 12A, 16, 20, 21, 23, 24, 26
<i>Psychomyia</i>	<i>flavida</i> Hagen	236	02, 03, 04, 05, 05A, 07, 07A, 08A, 09, 09A, 12A, 20, 21
	Family Rhyacophilidae	987	Includes 418 females to genus only
<i>Rhyacophila</i>	<i>fenestra</i> Ross	394	01, 02, 03, 04, 05A, 07, 07A, 09A, 10, 11A, 12A, 16, 20, 21
<i>R.</i>	<i>glaberrima</i> Ulmer	1	08
<i>R.</i>	<i>ledra</i> Ross	1	07A
<i>R.</i>	<i>lobifera</i> Betten	173	01, 02, 04, 05A, 10, 11A, 12A, 16
	Family Uenoidae	2	
<i>Neophylax</i>	<i>concinus</i> McLachlan	2	07
	Total Number Identified to Species:	23,963	

^a Represents a new record for the state of Kentucky (22 species).

^b Represents first confirmed specimen(s) from within political boundaries of Tennessee; however, this species was known from bordering counties in adjacent state(s) (5 species).

^c Represents a new record for the middle Tennessee region (15 species).

^d Represents a new record for the state of Tennessee, and not previously known from bordering counties in adjacent states (6 species).

^e An additional 24,496 unidentified females that could be members of the families Dipseudopsidae, Hydropsychidae, and/or Polycentropodidae were identified as hydropsychoid only.

limited sampling of larval insects and a review of several adult aquatic insects collected previously by FTC personnel resulted in the addition of two species of caddisflies represented only by either a larval case (*Pycnopsyche gentilis* (McLachlan)) or larvae (*Neophylax concinnus* McLachlan).

This study resulted in the collection of 92,047 adult caddisflies. Of this total, 23,963 were identified to species (all males and some females), most females (11,979) were identified to genus only, family only (31,609), or "hydropsychoids" (24,496), a classification that potentially contains members of families Dipseudopsidae, Hydropsychidae, and Polycentropodidae.

Table 2 includes the 106 species of caddisflies now known from FTC, the number of specimens of each species identified, and the list of collection localities where the species occurred.

Piney Fork collection localities (five locations, sampled 38 times) yielded 77 species of caddisflies, seven of which were collected only from this basin. Sampling of five locations in Saline Creek 23 times produced 68 species and five species captured only in this system. Noahs Spring Branch was

sampled a total of 26 times at eight locations, yielding 57 species represented by adults and a single species represented only by an empty case. Only one species recorded from Noahs Spring Branch was not collected in another FTC system. Fletchers Fork was sampled a total of 11 times at only two locations, yet it yielded 54 species and four species not found elsewhere on the base. Jordan Creek was sampled 15 times at three stations and produced 50 species, none of which was exclusive to this system. Casey Creek, although sampled only 10 times at three locations (reflecting an absence of water throughout most of the summer), yielded 46 species of adults and one species represented only by larval forms. Four species were collected only from Casey Creek. Little West Fork was sampled successfully only three times at a single location (due to vandalism) resulting in capture of 21 species, none of which were exclusive to Little West Fork.

The five species most widespread in their distributions at FTC are: *Cheumatopsyche analis* (Banks) (23 stations), *Chimarra obscura* (Walker) (22 stations), *Oecetis inconspicua*

(Walker) (21 stations), *Cheumatopsyche oxa* Ross (20 stations), and *Polycentropus centralis* Banks (19 stations), respectively.

Resh (1975) published the most recent state-wide listing of caddisflies for Kentucky. Additional records of caddisflies in Kentucky are provided in Floyd and Schuster (1990). Etnier et al. (1998) is the most current listing of caddisflies in Tennessee. Based upon these three publications, this study included a total of 22 species of caddisflies not previously reported for Kentucky and six species representing new Tennessee records (species was not previously reported from Tennessee or adjacent counties in bordering states, Table 2). Five species listed by Etnier et al. (1998) as present in adjacent counties of other states, but not in Tennessee at that time, were captured in Tennessee during this investigation. Fifteen species identified in this study were previously unknown for middle Tennessee (Etnier et al., 1998; Table 2).

DISCUSSION

The goal of this study was to establish baseline information on the diversity of caddisflies that utilize the streams of FTC. The identification of 106 species of caddisflies captured on FTC documents that the installation supports a diverse caddisfly fauna. Future studies and inventories will likely add additional species to the list of taxa known from FTC.

Perhaps the most significant finding was the capture of two taxa represented only by larvae (*Pycnopsyche gentilis* (McLachlan), *Neophylax concinnus* McLachlan), and 12 taxa represented by only a single specimen: *Phylocentropus placidus* (Banks), *Cheumatopsyche pasella* Ross, *Neotrichia vibrans* Ross, *Ochrotrichia xena* (Ross), *Ironoquia lyrata* (Ross), *Setodes epicampes* Edwards, *Triaenodes aba* Milne, *Pycnopsyche gentilis* (McLachlan), *Nyctiophylax serratus* Lago & Harris, *Polycentropus elarus* Ross, *Rhyacophila ledra* Ross, and *Rhyacophila glaberrima* Ulmer.

Because adult caddisflies are highly variable with regard to time of emergence, additional light trapping would likely add additional species to the list of caddisflies found on FTC. During this study, as much as two weeks passed between some sampling efforts, which is sufficient time to have missed taxa that emerged during this time as short-lived adults. Other sampling protocols that would likely add additional taxa to the FTC list of species would be sampling during the complete fall season, sampling during daytime using Malaise traps, and to conduct instream sampling for larval forms of caddisflies. Additional trichopteran taxa that are likely to occur at FTC but were not detected in this study include: Brachycentridae (*Micrasema*), Calamoceratidae (*Anisocentropus pyraloides* Walker), Helicopsychidae (*Helicopsyche borealis* (Hagen)),

Molannidae (*Molanna*), and Sericostomatidae (*Agarodes*). Additional species of Hydropsychidae, Hydroptilidae, Polycentropodidae, and Uenoidae are also to be anticipated at FTC.

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