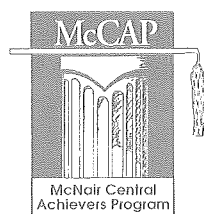


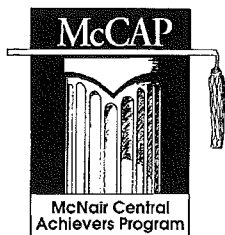
THE

McCAP JOURNAL

FALL 1999

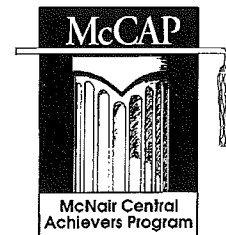


Central Missouri State University
Warrensburg, MO 64093



Journal of the McNair Central Achievers Program–McCAP

Central Missouri State University
Warrensburg, Missouri



Volume VIII, Issue I

Fall 1999

Table of Contents

About Dr. Ronald E. McNair	1
From Dr. Bobby Patton, University President	2
From Mary Alice Lyon, Director	2
The McCAP Staff	3

Features:

Registered Nurses' Perceptions and Self-Report of Empathy Toward Patients with Eating Disorders Nancy A. Keeton and Susan A. Morgan, Ph.D., R.N., C.S.	4
Determinants of State Prison Wardens' Job Satisfaction: An Empirical Analysis Roberta J. Glaspie and Donald H. Wallace, LL.M.	8
The Effect of Resistance Training on Stride Length and Trunk Lean in Elderly Individuals Living in Senior Residential Communities Elizabeth A. Gross and H. Scott Strohmeyer, Ph.D..	12
The Distribution of <i>Tachopteryx thoreyi</i> (Hagen) (Insecta, Odonata, Anisoptera, Petaluridae) in Missouri Michael L. Ferro and John F. Belshe, Ph.D.	17

Abstracts:

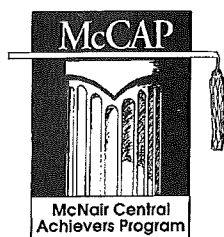
A Comparison of Dietetics Knowledge of Advanced Dietetics Students and Registered Dietitians Kerri M. Barnes-Cannon and Mary Anne Drake, Ph.D.	22
Chinese Adoption: A Cultural Experience Jennifer R. Beavers and Billy Hu, Ph.D.	23
Impact of Subliminal Stimuli on Dream Activity Joseph C. Berry and David S. Kreiner, Ph.D.	24
Effects of an Educational Intervention on Increasing Nutritional Content of Snacks by WIC Participants Tilusha S. Bharti and Kathryn A. Brown, Ed.S., R.D.	25
Black Literature: Hard Tempered by Effects of the Reconstruction Carolyn S. Borgman and Sharlene Garber-Bax, Ph.D.	26
Quality of Life, Fertility & Ecological Pressure: Native Americans vs. European Americans Carroll J. Brincefield and Catherine Hodge McCoid, Ph.D.	27

COPYRIGHT/DISCLAIMER

The *McCAP Journal* is the official journal of the McNair Central Achievers Program at Central Missouri State University, Warrensburg, MO. Funding is through a Ronald E. McNair Post-Baccalaureate Achievement Program grant from the United States Department of Education (Grant No. P217A50091-98).

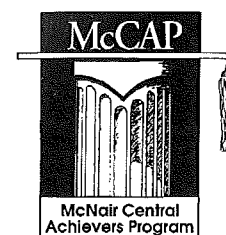
The *McCAP Journal* is published annually, and copies may be obtained by contacting the Educational Development Center, (660) 543-4061. All copyrights are owned by McCAP. Reproduction of material in this publication is hereby authorized provided the use is for educational or non-commercial purposes and does not exceed 100 copies.

COVER PHOTO: A dragonfly *Tachopteryx thoreyi* perches among the Shut-In Mountain Fens owned and operated by The Nature Conservancy of Missouri (photo by John F. Belshe).



Journal of the McNair Central Achievers Program—McCAP

Central Missouri State University
Warrensburg, Missouri



Economic Consideration of Social Demographics Surrounding Social Security Misty Broady-Burnett and Catherine M. Chambers, Ph.D.	28
An Experimental Study to Determine Noise Levels in the Vicinity of General Aviation Airports Katherine Eldredge and Fred J. Schieszer, Ed.S.	29
Teaching Note-Reading to Three-Year-Old Children Rachel M. Fritz and Mia M. Kim, D.M.A.	30
An Examination of the Civil War Entries in the Diary of Elvira Scott Erin Kempker and Mary Ellen Rowe, Ph.D.	31
Influence of Music on Rate of Perceived Exertion During Submaximal Exercise Lauren E. Loucks and Michelle E. Myers, Ed.D.	32
Designing a Survey Instrument to Evaluate the Economic Impact of Aviation in a Community Millicent Parker and John W. Horine, Ed.D.	33
Differences in Level of Satisfaction As Perceived by Tour Operators and by Disabled Travelers Jeanett D. Riley and Terry D. Simmons, Ph.D.	34
An Examination of Student Needs in Challenges to <i>Huckleberry Finn</i> Kelly A. Sanders and Kathleen A. Leicht, Ph.D..	35
An Attributional Analysis of Role Conflict and Its Relationship to Mental Health Christina M. Sprayberry and David S. Kreiner, Ph.D.	36
Accutane Versus Retin-A: The Battle Against Acne Melissa L. Tomalka and Steven R. Boone, Ph.D.	37
Evaluating African American Male Participation in Mentoring Programs Joyce Washington-Templeton and Karen A. Bradley, Ph.D.	38
McCAP Hall of Fame	39
The Achievers and Mentors of the McCAP Class of 1999	42

JOURNAL EDITOR

Mary Alice Lyon, Ed.S.
Director, TRIO Programs
Educational Development Center

ASSOCIATE EDITOR

Margaret E. Stone, Ph.D.
McCAP Academic Coordinator
Educational Development Center

LAY-OUT COORDINATOR

Linda K. Moore, Microcomputer
Tech./Projects Application Spec.
Educational Development Center

PHOTOGRAPHY

Margaret E. Stone, Ph.D.
John F. Belshe, Ph.D.
Public Relations Office

CONSULTANT

David M. DeFrain, Ed.D.
Professor of Psychology & Chair,
Educational Development Center

WRITING EDITOR

Davie Davis
Writing Instructor
Educational Development Center

REVIEW BOARD

Michael D. Bersin, D.M.A.
Associate Professor of Music

Kenneth W. Engelbrecht, Ph.D.
Associate Professor of Geography

David R. Hofmeister, Ed.D.
Associate Professor of Education

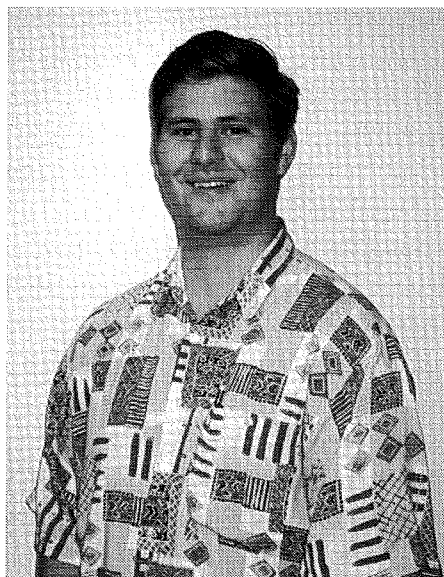
Ann M. Legreid, Ph.D.
Professor of Geography

Harold W. Keller, Ph.D.
Dir., Sponsored Research and
Projects and Professor of Biology

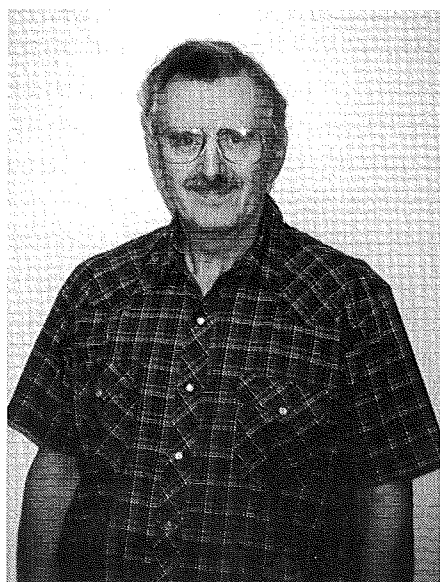
Susan Lee Pentlin, Ph.D.
Professor of Modern Languages

The Distribution of *Tachopteryx thoreyi* (Hagen) (Insecta, Odonata, Anisoptera, Petaluridae) in Missouri

by Michael L. Ferro and John F. Belshe, Ph.D.



Michael L. Ferro is a senior biology/chemistry major from Clinton, Missouri. He is a University Distinguished Scholar with plans to pursue graduate studies in biology.



Dr. John F. Belshe is a Professor of Biology at Central.

Abstract

The dragonfly family Petaluridae was dominant in the age of the dinosaurs (Mesozoic). *Tachopteryx thoreyi* is the only species of this family that exists in eastern North America today. The purpose of this research was to examine *T. thoreyi*'s known published distribution, locate additional information about collections of the species in Missouri, and attempt to find the species at known and additional locations. Due to their habitat requirements, the locations of *T. thoreyi* populations in Missouri are poorly known and not well documented. Water and chemical data from such locations are nonexistent, as is information on other dragonfly species found in the same area.

Populations of *T. thoreyi* were sought during May, June, and July 1999. The presence of odonate species other than *T. thoreyi* was noted either by sight identification or by collection of voucher specimens. Physicochemical data were also taken at each location. Locations visited for this research where *T. thoreyi* was found were Big Buffalo Creek Conservation Area, Clearwater Creek Conservation Area, Nancy B. Altvater Grasshopper Hollow, and Nancy B. Altvater Shut-in Mountain Fens. Reports of *T. thoreyi* at Chilton Creek Watershed and

Little River Conservation Area were also discovered. Of the 34 odonate species recorded, 14% were at half or more of the locations surveyed. However, an adult dragonfly is quite mobile, so it is not known whether these locations are used for reproduction as well as feeding. Additional location visits are planned with an emphasis on nymph collection.

Introduction

The primary purposes of this research were to examine the known published distribution (Williamson, 1932) of the dragonfly *Tachopteryx thoreyi* (Hagen in Selys) (Insecta, Odonata, Anisoptera, Petaluridae) in Missouri, locate additional information about collections of the species in Missouri, and attempt to find the species at known and additional locations. Secondly, when *T. thoreyi* individuals were located, additional odonates and physicochemical data were collected.

The Petaluridae were the dominant dragonfly family during Mesozoic times (Dunkle, 1981). Their numbers have dwindled considerably, with only two species remaining in North America (Needham & Westfall, 1954). *T. thoreyi* is one of those two and is distributed throughout the eastern half of the United States. Williamson (1932) report-

ed finding *T. thoreyi* near the Current River in Carter County, Missouri.

T. thoreyi populations are quite localized due to the specific habitat needed for larval development. Williamson (1932), Dunkle (1981), and McPheron (1988) report that nymphs are associated with seeps, fens, and bogs, where they burrow into the substrate. Williamson (1932), while at a place he called Tachopteryx Bog in Carter County, collected a nymph from a reservoir which held no more than a cup of water.

The expected flight season of *T. thoreyi* in Missouri is from late May to early August (Williamson, 1932). Adults frequent woodlands, perching on the vertical surfaces of tree trunks and occasionally vertical logs (Dunkle, 1981). The collection of perching adults, according to Dunkle (1981), can be done by touching them with the net to make them fly and then catching them in mid-air.

Due to their habitat requirements, the locations of *T. thoreyi* populations in Missouri are not well known nor well documented. Abiotic data for areas in Missouri surrounding the nymphal stage of *T. thoreyi*'s life are nonexistent, as is information on other dragonfly species that are found in the same area.

Methods

Populations of *T. thoreyi* were sought in Missouri during May, June, and July 1999. Williamson (1932) was the first to record *T. thoreyi* from Missouri, and his is the only published record of the species in the state. Locations where he and others had found *T. thoreyi* were visited with only lim-

ited success. One area he described, Chubb Hollow, was located, but two others he described, Tachopteryx Bog and an unnamed site, were not.

According to Nelson (1985), locations in Missouri that resemble those areas reportedly used by *T. thoreyi* for nymphal development are located in Benton, Camden, Dallas, Gasconade, Reynolds, Carter, Ripley, St. Francois, Bollinger and Stoddard Counties.

Locations visited as part of this research included Big Buffalo Creek Conservation Area, owned

Due to their habitat requirements, the locations of *T. thoreyi* populations in Missouri are poorly known and not well documented.

and managed by the Missouri Department of Conservation (MDC) in Benton County; Nancy B. Altvater Shut-in Mountain Fens, owned and managed by The Nature Conservancy (TNC) in Shannon County; Clearwater Creek Conservation Area, owned and managed by the MDC in Reynolds County; and Nancy B. Altvater Grasshopper Hollow (leased by TNC from Doe Run Mining Co.) in Reynolds County (personal communication, Blane Heumann, 1999). Specific locations of these areas can be found in Missouri's Conservation Atlas (1995).

Cowardin's (1979) wetlands classification system was used to classify each of the locations

where *T. thoreyi* specimens were found during this study. This system of wetland classification was used even though adult dragonflies in the area are very mobile.

Adult odonate specimens were collected chiefly using appropriate aerial collecting nets. The presence of odonate species other than *T. thoreyi* was noted by either sight identification or collection of voucher specimens. Adult specimens were narcotized with ethyl acetate in a killing jar, immersed in an acetone bath for twelve hours, and dried. They were then placed into polypropylene envelopes with hard paper backing. All specimens were labeled with identification, state, county, field number, date and location of the collection, and name of the collector. Other appropriate information was added as necessary. They were placed in the Aquatic Invertebrate Collection at Central Missouri State University, curated by John F. Belshe. Also, larvae and exuviae were sought when collecting specimens.

Selected specimens of *T. thoreyi* were placed live into a quart plastic bag, which was inflated, sealed and placed in a cooler with ice for return to Central Missouri State University. These specimens were narcotized and dissected to remove the thoracic muscle mass for deep freezing (-80°C) for possible future molecular work. Three incisions were made through the exoskeleton on the left side of the thorax: one through the dorsal aspect of the thorax medial to the wing attachment; a second anterior connecting incision ventrally to the base of the anterior legs; and a third posterior connecting incision ventrally to the base of the posteri-

or legs. The muscle mass was dissected free of the exoskeleton, which was deflected ventrally, removed with forceps, placed in a Cryovial, and labeled. The container with the thoracic muscle mass was placed in the cryogenic freezer located in the CMSU Molecular Laboratory. The remainder of the specimen was treated and placed in the CMSU collection along with the other odonate specimens.

Abiotic data were taken using a Texas Instruments Calculator Based Laboratory (CBL) System in conjunction with a Texas Instruments TI-85 Graphing Calculator and the various probes using the CHEMBIO program (Vernier Software). The probes used to collect the data were Vernier Calcium Ion Selective Electrode (CA- ISE); Vernier Nitrate Ion Selective Electrode (NO3- ISE); Vernier pH system (PH-DIN); Vernier Dissolved Oxygen Probe; Texas Instruments Temperature Probe; and Texas Instruments Light Probe.

Results

Linden Trial (personal communication during this research) reported collecting *T. thoreyi* at Big Buffalo Creek Wildlife Area, Shut-in Mountain Fens, and Grasshopper Hollow. She also reported seeing *T. thoreyi* at Little River Conservation Area. Blane Heumann (personal communication) of TNC supplied information on *T. thoreyi* collected at Chilton Creek Watershed by Stephanie Haggarty.

The first adult *T. thoreyi* of the flight season was observed on 3 June 1999, at Big Buffalo Creek Conservation Area. According to

Cowardin (1979), this area would be classified as System, palustrine; Class, scrub-shrub wetland and emergent wetland. It is located beside a tributary of Brush Creek at N 38° 20' 33.5", W 93° 4' 53.4" or approximately one half kilometer north of County Road (CR) SE 991. The area lies in a hollow between two hills and is surrounded on all sides by woodland. As shown in Table 1, odonates captured within the area were *Erythemis simpliciolis*, *Gomphus militaris*, *Libellula luctosa*, and *L. lydia*.

Only two *T. thoreyi* were seen at the oxbow lake of Webb Creek (System, palustrine; Class, streambed; Subclass, mud) in the Clearwater Conservation area when visited on 8 June. The area was bisected by County Road 512 and located at N 37° 08' 20.1", W 90° 52' 14.0" or immediately past the MDC parking area, which was located less than a half kilometer from Highway HH on County Road 512. Due to the large amount of surface water, it is suspected that the breeding *T. thoreyi* population is not at that location, but in

Table 1.
List of odonates taken at sites where *T. thoreyi* was found.

Location	A	B	C	D	E	F	G
<i>Tachopteryx thoreyi</i> (Hagen in Selys)	1	1	1	1	1	1	6
<i>Erythemis simpliciolis</i> (Say)	1	1		1	1	1	5
<i>Libellula lydia</i> Drury	1		1	1	1	1	5
<i>L. flavida</i> Rambur	1	1			1		3
<i>L. luctuosa</i> Burmeister	1				1	1	3
<i>Pachydiplax longipennis</i> (Burmeister)	1	1		1			3
<i>Boyeria vinosa</i> (Say)		1	1				2
<i>Gomphus exilis</i> Selys	1				1		2
<i>Hagenius brevistylus</i> Selys		1			1		2
<i>L. cyanea</i> Fabricius	1			1			2
<i>L. pulchella</i> Drury	1		1				2
<i>Aeshna umbrosa</i> Walker		1					1
<i>Celithemis elisa</i> (Hagen)	1						1
<i>C. fasciata</i> Kirby	1						1
<i>Cordulegaster diadema</i> (Carle)			1				1
<i>C. obliqua</i> (Say)					1		1
<i>Dromogomphus spinosus</i> Selys		1					1
<i>Epitheca cynosura</i> (Say)	1						1
<i>E. princeps</i> (Hagen)	1						1
<i>Gomphus militaris</i> Hagen in Selys						1	1
<i>G. sp.</i>			1				1
<i>L. incesta</i> Hagen				1			1
<i>L. vibrans</i> Fabricius				1			1
<i>Macromia sp.</i>			1				1
<i>Ophiogomphus rupinsulensis</i> (Walsh)		1					1
<i>Pantala flavescens</i> (Fabricius)			1				1
<i>Perithemis tenera</i> (Say)	1						1
<i>Progomphus obscurus</i> (Rambur)	1						1
<i>Somatochlora sp.</i>			1				1
<i>S. linearis</i> (Hagen)		1					1
<i>S. tenebrosa</i> (Say)		1					1
<i>Stylogomphus albistylus</i> (Hagen in Selys)			1				1
<i>Sympetrum ambiguum</i> (Rambur)		1					1
<i>Tramea lacerata</i> Hagen	1						1
<i>T. onusta</i> Hagen				1			1
Species richness of location	16	12	10	8	8	5	

A= Grasshopper Hollow; B= Williamson's (1932) collections at Chubb Hollow and Tachopteryx Bog; C= Chilton Creek Watershed; D= Clearwater Conservation Area; E= Shut-in Mountain Fens; F= Big Buffalo Creek; G= Number of Occurrences with *T. thoreyi*. Species' richness of location decreases from left to right; species' occurrences with *T. thoreyi* decrease from top to bottom.

an area nearby that is more like a seep or muck. Odonates captured at this location were *Erythemis simpliciolis*, *Libellula cyanea*, *L. incesta*, *L. lydia*, *L. vibrans*, *Pachydiplax longipennis*, and *Tramea onusta* (Table 1).

Shut-in Mountain Fens were first visited on 9 June. The most accessible of the fens was located at N 37° 06' 26.1", W 91° 14' 15.1" beside Shut-in Mountain

kill specimen of *T. thoreyi* was found approximately 5 kilometers south of this area on Highway H.

On 8 June the gravel bottom streams at the northern end of Grasshopper Hollow were visited. *Calopteryx maculata*, a stream-loving woodland damselfly (Odonata, Zygoptera), seemed to fill the air, but no *T. thoreyi*. Grasshopper Hollow was entered from the south on 24 June, and *T.*

described by Williamson (1932). It is suspected that erosion and slumping or other natural forces have destroyed this particular place.

With the exception of Chubb Hollow, all collection locations were visited on 12 and 13 July with a full battery of sampling equipment. The physicochemical results are found in Table 2. Statistical tests are still pending on

Table 2.
Physicochemical data taken at sites where *T. thoreyi* was located.

Location	A	B	C	D	E
Light	0.892mW/cm ²	1.006 mW/cm ²	1.028 mW/cm ²	1.024 mW/cm ²	0.780 mW/cm ²
Temp water	21.9°C	26.8°C	20.8°C	26.6°C	19.6°C
Temp air	24.2°C	28.9°C	25.9°C	27.5°C	25.4°C
Calcium	99.97 ppm	71.96 ppm	66.27 ppm	78.12 ppm	84.80 ppm
Nitrate	6.86 ppm	0.928 ppm	2.97 ppm	0.526 ppm	1.48 ppm
Dissolved Oxygen	NA*	8.6 ppm	NA*	3.0 ppm	5.8 ppm
Conductivity	223.6 µS/cm	136.8 µS/cm	235.0 µS/cm	213.0 µS/cm	32.0 µS/cm
pH	7.40	6.78	7.20	8.22	7.40

A=Big Buffalo Creek; B=Clearwater Conservation Area; C=Shut-in Mountain Fens (above); D=Shut-in Mountain Fens (below); E=Grasshopper Hollow.

mW/cm²=milliwatt per square centimeter; °C=degrees Celsius; ppm=parts per million; µS/cm=microsiemens per centimeter.

*Ion interference.

Road. The area was divided into two very distinct zones. The zone which borders the road is System, palustrine; Class, emergent wetland; Subclass, persistent. Further downhill, the area changes drastically and is chiefly System, palustrine; Class, moss-lichen wetland; Water Chemistry, alkaline (pH 8.2). Patches of *Panicum virgatum* are also abundant. *T. thoreyi* was found in abundance along with *Cordulegaster obliqua*, *Erythemis simpliciolis*, *Gomphus excilis*, *Hagenius brevistylus*, *Libellula flavida*, *L. luctuosa*, and *L. lydia* (Table 1).

T. thoreyi was quite bold, insisting that humans, nets, or trees made suitable perch sites. It was in such numbers here that a specimen was taken and the thoracic muscle mass placed in the cryogenic freezer. Later, on 12 July, a road

thoreyi was immediately sighted. The location was N 37° 25' 20.6", W 91° 05' 33.4" or at the end of County Road 860 off Highway 72. The southern region is a series of beaver ponds, which empty into one of the streams previously mentioned. Other species seen or collected in the area were *Celithemis elisa*, *C. fasciata*, *Epithecya cysosura*, *E. princeps*, *Erythemis simpliciolis*, *Gomphus exilis*, *Libellula cyanea*, *L. flavida*, *L. luctuosa*, *L. lydia*, *L. pulchella*, *Pachydiplax longipennis*, *Perithemis tenera*, *Progomphus obscurus*, and *Tramea lacerata*. No *T. thoreyi* were seen in the middle of the hollow; sightings were prevalent on the border between woodland and wetland.

Chubb Hollow was visited on 8 June. No *T. thoreyi* were found, nor was "Tachopteryx Bog," as

these data. Locations C and D, although separated by only a few meters, have greatly differing nitrate and pH, probably due to differences in location of water inflow and substrate. The alkaline pH (8.22) of location D is due to high calcium carbonate deposits in the area. The high nitrate level of 2.97 ppm taken at location C is probably of organic origin. Locations A, D, and E appear to be chemically quite similar. Each has high calcium levels and correspondingly high pH levels.

Discussion

Through this study, a better understanding of the distribution of *T. thoreyi* in Missouri was gained. Populations were found at Big Buffalo Creek, Clearwater Creek, Grasshopper Hollow, and Shut-in Mountain Fens. Other

reports place *T. thoreyi* at Chilton Creek Watershed and Little River Conservation Area. *T. thoreyi*'s occurrence at any of these locations is published for the first time in this paper.

A wide variety of odonates were found in conjunction with *T. thoreyi*. Of the 34 species recorded, 14% were at half or more of the locations surveyed. However, an adult dragonfly is quite mobile, so it is not known whether these locations are used for reproduction as well as feeding. A survey of odonate nymphs at each location should be instigated to diminish the ambiguity.

Of the six areas, the four that were visited during this research were all System, palustrine. Each had year-round water-saturated soil, with little or no flow. This matches the description of *T. thoreyi* habitat given by Williamson (1932), Dunkle (1981), and McPherson (1988). *T. thoreyi* was easily sighted at the stagnant southern end of

Grasshopper Hollow. However, there were no sightings of adults at the northern rock bottom creeks or over the beaver ponds at the center of the Hollow. This suggests that adults remain near or in woodlands and areas with water-saturated soils, but little surface water. At Chubb Hollow, plenty of water could be found in the Current River and along the losing stream that was followed to the suspected location of Tachopteryx Bog. *T. thoreyi* appears to be dependent not solely on water, but on water's interaction with the substrate. The inability to find either *T. thoreyi* or Tachopteryx Bog suggests that species and habitat are linked quite intimately.

References

- Cowardin, L.M., Carter, V., Golet F. C., & LaRoe, E. T. (1979). *Classification of wetlands and deepwater habitats of the United States*. US Department of the Interior Fish and Wildlife Service. 84pp.
- Dunkle, S.W. (1981). The ecology and behavior of *Tachopteryx thoreyi* (Hagen) (anisopectera: petaluridae). *Odonatologica*, 10(3), 189-199.

- Heumann, B. (1999). Personal Communication. The Nature Conservancy, Van Buren, MO.
- McPherson, B. A. & Schiff, N. M., (1988). New distribution records for three dragonflies species (odonata: anisopectera) in Illinois. *Journal of the Kansas Entomological Society*, 61(4): 494-495.
- Needham, J. G. & Westfall, M. J. (1955). *A manual of the dragonflies of North America (anisopectera): Including the Greater Antilles and the provinces of the Mexican border*. University of California, Berkeley. 615pp.
- Nelson, P. W. (1985). *The terrestrial natural communities of Missouri*. Missouri Department of Natural Resources, Jefferson City, MO. 197pp.
- Overby, C. (Ed). (1995). *Missouri's conservation atlas: A guide to exploring your conservation lands*. Missouri Department of Conservation, Jefferson City, MO. 264pp.
- Trial, L. (1999). Personal Communication. Missouri Department of Conservation, Missouri Department of Conservation Research Center, Columbia, MO.
- Williamson, E. B. (1932). *Dragonflies collected in Missouri*. Occasional papers of the Museum of Zoology (Number 240). Ann Arbor, MI.

Acknowledgments

The authors of this paper wish to express their appreciation for location information provided by Blane Heumann and Linden Trial. Without their help, many miles would have been needlessly walked. Similar thanks are given to Jay Raveill for his botanical expertise.

Kathleen Clay Represents Central in the National McNair Journal



Kathleen Clay, 1998 McCAP Achiever, will represent Central in the national *McNair Journal* to be published this fall. Kathleen's internship, researched and written under the mentorship of Jyotsna Pattnaik, Ed.D., was entitled, "The Impact of Teachers' Verbal Preferences on Students' Artwork."

Kathleen hypothesized that students in a child-centered or constructivist environment would show fewer tendencies to match a teacher's stated color preference than students in a teacher-centered classroom. Specifically, students were asked to draw two different objects; each object was drawn twice, first without color preference being stated by the teacher and again several days later with color preference being given. Although final comparisons were not conclusive, trends to support the hypothesis were observed.

Congratulations, Kathleen!