

THICKET OF DIVERSITY
TAXA WORKING GROUP PROGRESS REPORT

TWIG GROUP Parasites of Aquatic Ectotherms

NAME OF GROUP LEADER Michael Barger

Address 1213 13th Street, Auburn, Nebraska 68305 AND Dep't Nat. Sci., Peru State College, Peru, Nebraska 68421-0010

Phone #: 402-872-2326 Mobile #: _____ Fax #: _____
Email: mbarger@oakmail.peru.edu

Report (Check) Quarterly Semi-Annual Annual Final
Research Permit # BITH-2007-SCI-0004 (to apply for permit visit the following website:
<http://science.nature.nps.gov/research/ac/ResearchIndex> or call (409) 951-6821)

- REPORT THE FOLLOWING:**
- Number of hours in the Field: about 90
 - Number of volunteer hours in the Field: about 190
 - Collecting Sites/ Units: 4/1
 - Number of species collected: about 40
 - Number of new to the Preserve: all
 - Number of new species: not known
 - Number of threatened species: not known

Comments: (attach additional comments on separate sheet)
Collections of specimens are still being processed and reported numbers will be updated as species are identified.

Signature Mike Barger

Date January 7, 2008

Submit copies to:
Dale Kruse, Science-Technical Committee / S.M. Tracy Herbarium, TAMU. 2138 TAMU,
College Station TX 77843-2138, dakruse@tamu.edu
Linda Brindle, BTA Executive Director, P.O. Box 198, Saratoga TX 77585
director@bigthicket.org

REPORT OF PROGRESS
AND APPLICATION FOR FUNDING FOR 2008
TWIG: PARASITES OF FISHES AND AQUATIC HERPETILES
TEXAS BIG THICKET ATBI
2007

Prepared by: Michael A. Barger, PhD; Associate Professor of Biology; Department of Natural Science; Peru State College; Peru, NE 68421-0010; 402-872-2326; mbarger@oakmail.peru.edu.

Scientific Progress

Collections in 2007. Two sampling trips were made to the Big Thicket in 2007: March 17-24 and July 22-28. In March, fish samples were collected by seining from 3 localities: Steinhagen Lake, Harmon Creek, and an unnamed tributary of Sandy Creek in the Big Sandy Creek Unit. In July, additional samples of fish were collected from the unnamed tributary of Sandy Creek and Sandy Creek itself. In both cases, all collected fish were necropsied for recovery of parasites. Parasites were killed, fixed, preserved, and transported back to my laboratory at Peru State College, Peru, Nebraska, where identification of parasites is ongoing. At this date, approximately 70% of the specimens from the March collection are processed and identified; processing of the specimens from the July collection will proceed through the fall and winter months of 2007 and 2008. Although specific identifications are lacking on most specimens at this time, a rough estimate of parasite species recovery was generated for the March and July samples. Table 1, below, contains the relevant summary data from these estimates.

Table 1. Summary of parasite species recovery from two samples in 2007.

	Collection Date	
	March, 2007	July, 2007
Fish Species Collected	16	13
Fish Necropsied	39	41
Myxozoa species	6	3
Monogenea species	5	4
Trematoda species	8	8
Cestoda species	5	2
Nematoda species	6	4
Acanthocephala species	2	1
Total Parasite Species	32	22
Parasite Species / Host Species	2.0	1.7

Estimates of Species Diversity. The proposal estimated that between 20 and 40 parasite species would be recovered from preliminary sampling in 2007. The above data are consistent with this prediction. Extrapolating from the above summaries to an estimate of total parasite species in the ~140 species of fishes and aquatic herpetiles in the Big Thicket is tenuous, but that estimate would be between 238 and 280 species. This also is consistent with the prediction from the proposal that approximately 250 species reside in these vertebrates. At the present rate of

parasite species recovery, between 6 and 7 years will be required to complete the field collection aspect of an inventory of these parasites.

Weaknesses of the 2007 Survey. Persistent rains in both March and July of 2007 restricted sampling to very small streams and backwaters of lakes; larger streams were too high for collection. This limited the recovery of parasite species by preventing collection of fishes, turtles, and amphibians in larger bodies of water, where parasite species diversity is usually higher. It also prevented the collection of some target fish species that typically harbor high densities of parasite species and individuals but are found only in larger bodies of water. Thus, the above estimates of parasite species recovery are probably somewhat lower than the true parameter because sampling was restricted to areas with low densities of hosts and low total parasite species diversity. I anticipate increased species recovery in future years when conditions allow access to a wider variety of aquatic habitats.

Outreach

During the July collection trip, my ATBI work was combined with the efforts of the class members of the BIO 580 FIELD PARASITOLOGY taught by Dr. Tamara Cook at Sam Houston State University. The class included 10 students, all of whom are graduate students and four of whom are currently secondary-school teachers in Texas. The course had been ongoing for several weeks prior to my involvement; thus, the students had received a substantial amount of training in the process of collecting hosts, host necropsy, and the collection and preservation of parasites. The class participated in the collection and necropsy of fishes during two days during the week, and the overwhelming bulk of all the physical and scientific labor was conducted by these students. This constituted approximately 16 hours of research effort by each student. Also participating was an undergraduate student from Sam Houston State University and a PhD candidate from Texas A&M Kingsville. All were a great help to my efforts, and I included a list of their names in Appendix A as acknowledgement of their assistance.

Scientific Communication

A presentation entitled, "Biodiversity Inventory of Parasites in the Big Thicket," was presented at the 2007 Big Thicket Science Conference in Beaumont, Texas. The presentation outlined the long-term plan of sampling for this TWiG, detailed expectations regarding recovery of parasite diversity, and provided a brief summary of what was accomplished during the previous week of sampling.

At this time, no print publications are in preparation, press, or published as a result of the work in the Big Thicket. As parasite taxa are identified and survey data accumulate, peer-reviewed publications are anticipated, e.g., the description of new species, summary survey data, etc.

Expenditures

\$1,259 were available for ATBI work in 2007. Funds were spent on travel, supplies, and various other books, licenses, etc. In-kind assistance was provided by Drs. Tamara and Jerry Cook, who provided lodging and meals during both collecting trips and Sam Houston State University and the Field Parasitology class of 2007, who provided laboratory and field assistance. Copies of receipts are provided in Appendix B, a justification is provided below, and a summary of expenditures is provided below in Table 2.

The collection trip in March coincided with the Big Thicket Conference in Beaumont, Texas. Funds were used to register for the conference, to pay a ½ share of a hotel room, and for a meal at the conclusion of the conference (\$220.⁸⁸). A variety of supplies were purchased that are directly used in research efforts, including texts (road atlas, fish identification book), a Texas fishing license, and vials and vial storage for specimen processing, (\$410.⁰²). Travel costs in March included a coach class, round-trip, airline ticket from Omaha, NE to Houston, TX and ½ share of parking costs at the Omaha Airport for 12 days (\$429.⁸⁰). Travel costs in July included gasoline costs for my personal vehicle to and from Texas (\$188.⁵⁷).

Table 2. Summary of expenditures of grant funds in 2007.

Item	Cost	Justification
Big Thicket Conference		
Registration	\$ 150.00	Presentation at BT Conference
Hotel	\$ 48.88	Presentation at BT Conference
Meal	\$ 22.00	Presentation at BT Conference
Supplies		
BioQuip Order	\$ 163.53	Vials for specimen storage
Diagger Order	\$ 131.44	Boxes for vial storage
Texas Atlas	\$ 43.05	Travel in Texas
Texas Fish ID Book	\$ 12.00	Identification of Texas fishes
Texas Fishing License	\$ 60.00	Collection in certain localities
Travel		
Airline Ticket (March)	\$ 369.80	Travel for collection in March
Parking at Airport	\$ 60.00	Travel for collection in March
Gasoline (July)	\$ 188.57	Travel for collection in July
Total Expenditures	\$1249.27	
(Funds available)	(\$1259.00)	
Funds remaining	\$ 9.73	

APPENDIX A: List of Participants in BIO 580 FIELD PARASITOLOGY Course

Instructor

Dr. Tamara Cook, Associate Professor of Biology, Sam Houston State University

Enrolled Students

Mona Avalos
Shirley Carrias
Jovanne Cole
Joanna Hays
Tiffany Hill
Heather Lebow
Angela McMillian
Kim Moore
Brandy Nunez
Glenda Rice

Volunteer Students

Juan Garcia, undergraduate student, Sam Houston State University
Autumn Smith, PhD candidate, Texas A&M University—Kingsville

APPENDIX B: Copies of Receipts and Credit Card Statements

071000301
03/12/2007
6216521447

This is a LEGAL COPY of your check. You can use it the same way you would use the original check.

03/09/2007
095607007003368
0013070070000
0106054113

MICHAEL A. BARGER
1213 - 13TH STREET
JOHNSON, NE 68305-1804

78-388, 1049, 604149
1322
DATE Feb 7, 2007

10490588
FIRST NATIONAL BANK
PAY TO THE ORDER OF JOHNSON NE Academy of Science \$12.
Twelve and 00/100 DOLLARS

THE FIRST NATIONAL BANK OF JOHNSON
10490588
JOHNSON, NE
MEMO MICHAEL A. BARGER
10490588 1322 0000001200

⑆10490588⑆ 1322 ⑈0000001200⑈

402-872-2326

date 2/14/07 No. 074005
received from Michael Barger \$150.00
amount Asso Prof Biol Penn State College dollar
600 Hoyt St PO Box 10 Peru NE 68421-
for payment of
 cash money order credit card check # 1320 0010
amount due
amount paid 150.00 from BTSC to
signature m.j.

Continental Airlines

Name: BARGER/MICHAELADR
Date: SUN 25 MAR 2007 86
Flight: CO 2459 U
Gate: B69 Seat: 18C
Depart: Houston-Bush Intl 11:25 AM
Arrive: Omaha 1:39 PM
Board Time: 10:50 AM
eTicket 00521822284955

Continental Airlines

Name: BARGER/MICHAELADR
Date: FRI 16 MAR 2007 30
Flight: CO 2231 U
Gate: B12 Seat: 1A
Depart: Omaha 12:05 PM
Arrive: Houston-Bush Intl 2:28 PM
Board Time: 11:30 AM
eTicket 00521822284955

STATE OF MISSISSIPPI
DEPARTMENT OF REVENUE
P.O. BOX 1000
JACKSON, MS 39202
PHONE: 601-359-3000
FAX: 601-359-3001

TABLE # 001 ACCOUNT # 20114
DATE: 03/24/07 PERIOD: 0000
CITY: JACKSON STATE: MS
NAME: BARGER/MICHAEL
CITY: JACKSON
STATE: MS ZIP: 39202
REF: 00000000000000000000

TOTAL * 120.00

LICENSE/FINES: *I paid half of this RE Clotson paid other half*

I AGREE TO PAY ABOVE TOTAL AMOUNT
ACCORDING TO MY CARD ISSUER AGREEMENT

SIGNATURE: *Michael Barger*



Holiday Inn
Beaumont Plaza

MIKE BARGER
1213 13TH ST
Auburn
NE 68305

A/R Number
Group Code BTS
Folio/Invoice No. /
Reference #

Room No. **809** Page No. 1 of 1
Arrival 03-23-07 Cashier No. 133
Departure 03-24-07 User ID ARS

www.holidayinnbeaumont.com

Date	Description	Charges	Credits
03-23-07	*Accommodation 85.00 Split into 42.50 (50.00%)42.50	42.50	
03-23-07	State Tax 6%	2.55	
03-23-07	City Tax 9%	3.83	
03-24-07	MasterCard XXXXXXXXXXXX2609		48.88
Total		48.88	48.88
Balance		0.00	

Guest Signature: *Michael Barger*

I have received the goods and / or services in the amount shown heron. I agree that my liability for this bill is not waived and agree to be held personally liable in the event that the indicated person, company, or association fails to pay for any part or the full amount of these charges. If a credit card charge, I further agree to perform the obligations set forth in the cardholder's agreement with the issuer.



what's in your wallet?

www.capitalone.com

Previous Balance	Payments & Credits	FINANCE CHARGE	Transactions	New Balance	Minimum Payment	Due Date
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	Aug. 27, 2007

Jul. 03, 2007 — Aug. 02, 2007

Page 1 of 1

PLEASE PAY AT LEAST THIS AMOUNT

MasterCard Platinum Account

Your Account Information

TOTAL CREDIT LINE [REDACTED]
 TOTAL AVAILABLE CREDIT [REDACTED]
 CREDIT LINE FOR CASH [REDACTED]
 AVAILABLE CREDIT FOR CASH [REDACTED]



Rewards Summary

Previous available balance:	2,990
Earned this period:	611
(reflects transactions posted during this billing cycle)	
Available Balance:	3,601

Payments, Credits & Adjustments

Transactions

3	19 JUL	BARNES & NOBLE.COM 800-843-2665 NJ	\$43.06
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Texas Atlas + Gazetteer.

Finance Charges (Please see reverse for important information)

	Balance rate applied to	Periodic rate	Corresponding APR	FINANCE CHARGE
Purchases	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Cash	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
ANNUAL PERCENTAGE RATE applied this period: [REDACTED]				



At Your Service 1-800-955-7070

To call Customer Relations or to report a lost or stolen card:



Send payments to:

Capital One Bank · P.O. Box 660007 · Dallas, TX 75265-0007



Send Inquiries to:

Capital One · P.O. Box 30285 · Salt Lake City, UT 84130-0285



For more information on your Rewards:

Visit: www.capitalone.com/pointsrewards

Call: 1-800-228-3001

Capital One Home Loans offers a variety of no hassle home loan products, including first mortgages, refinance and debt consolidation loans, as well as home equity loans and lines of credit. Our team of experienced professionals understands that your situation is unique so your loan solution should be too. You'll have the one-on-one attention of the same personal loan consultant from call to close. Visit www.capitalonehomeloans.com for more information. Capital One is an Equal Housing Lender.

Previous Balance	Payments & Credits	FINANCE CHARGE	Transactions	New Balance	Minimum Payment	Due Date
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	Mar. 24, 2007

Jan. 25, 2007 — Feb. 24, 2007

Page 1 of 1

PLEASE PAY AT LEAST THIS AMOUNT

MasterCard Platinum Account

Your Account Information

TOTAL CREDIT LINE [REDACTED]
 TOTAL AVAILABLE CREDIT [REDACTED]
 CREDIT LINE FOR CASH [REDACTED]
 AVAILABLE CREDIT FOR CASH [REDACTED]



Rewards Summary

Previous available balance:	887
Earned this period:	694
(reflects transactions posted during this billing cycle)	
Available Balance:	1,581

Payments, Credits & Adjustments

1	03 FEB	PAYMENT	[REDACTED]
---	--------	---------	------------

Transactions

3	05 FEB	CONTINEN 00521822284955-HOUSTON TX TK#: 0052182 PSGR: BARGER/MICHAELADR ORIG: OMA, DEST: IAH CARRIER: CO SVC: U1 ORIG: IAH, DEST: OMA S/O: O CARRIER: CO SVC: U1	\$369.80
8	19 FEB	TPWD REC LICENSES AUSTIN TX	\$60.00

March travel

Fishing License

Finance Charges (Please see reverse for important information)

	Balance rate applied to	Periodic rate	Corresponding APR	FINANCE CHARGE
Purchases	[REDACTED]	0.02230% F	8.14%	[REDACTED]

ANNUAL PERCENTAGE RATE applied this period: [REDACTED]



At Your Service 1-800-955-7070

To call Customer Relations or to report a lost or stolen card:



Send payments to:

Capital One Bank · P.O. Box 650007 · Dallas, TX 75265-0007



Send inquiries to:

Capital One · P.O. Box 30285 · Salt Lake City, UT 84130-0285



For more information on your Rewards:

Visit: www.capitalone.com/pointsrewards
Call: 1-800-228-3001

Previous Balance	Payments & Credits	FINANCE CHARGE	Transactions	New Balance	Minimum Payment	Due Date
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	May. 24, 2007

Mar. 25, 2007 — Apr. 24, 2007

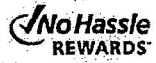
Page 1 of 1

PLEASE PAY AT LEAST THIS AMOUNT

MasterCard Platinum Account
 [REDACTED]

Your Account Information

TOTAL CREDIT LINE [REDACTED]
 TOTAL AVAILABLE CREDIT [REDACTED]
 CREDIT LINE FOR CASH [REDACTED]
 AVAILABLE CREDIT FOR CASH [REDACTED]



Rewards Summary

Previous available balance:	1,630
Earned this period:	720
<small>(reflects transactions posted during this billing cycle)</small>	
Available Balance:	2,350

Payments, Credits & Adjustments

1	02 APR	PAYMENT	[REDACTED]
---	--------	---------	------------

Finance Charges (Please see reverse for important information)

	Balance rate applied to	Periodic rate	Corresponding APR	FINANCE CHARGE
Purchases	[REDACTED]	0.02230% F	8.14%	[REDACTED]

ANNUAL PERCENTAGE RATE applied this period: [REDACTED]

Transactions

• 2	24 MAR	PAPPADEAUX SEAFOOD KTC BEAUMONT TX	\$22.00
• 3	25 MAR	HI BEAUMONT PLAZA BEAUMONT TX	\$48.88
		ARRIVE: 03/23/07 DEPART: 03/24/07 FOLIO#: 000025752 PH#: 400-842-5995	
• 4	25 MAR	AMPCO PARKING EPPLEQ42 OMAHA NE	\$120.00
• 5	30 MAR	A DAIGGER VERNON HILLS IL	\$131.44
• 6	02 APR	BIO QUIP PRODUCTS INC RNCHO DOMINGZ CA	\$183.53



At Your Service 1-800-955-7070
 To call Customer Relations or to report a lost or stolen card:



Send payments to:
 Capital One Bank · P.O. Box 650007 · Dallas, TX 75265-0007



Send inquiries to:
 Capital One · P.O. Box 30285 · Salt Lake City, UT 84130-0285



For more information on your Rewards:
 Visit: www.capitalone.com/pointsrewards
 Call: 1-800-228-3001

Capital One Home Loans offers a variety of no hassle home loan products, including first mortgages, refinance and debt consolidation loans, as well as home equity loans and lines of credit. Our team of experienced professionals understands that your situation is unique so your loan solution should be too. You'll have the one-on-one attention of the same personal loan consultant from call to close. Visit www.capitalonehomeloans.com for more information. Capital One is an Equal Housing Lender.

Handwritten calculation:
 163.44
 + 60.53
 + 48.88
 + 20.85

 293.70

Love's #260
Love's #260
Norman, OK

07/28/07 11:26:00
Ticket: 1682227
Approval:
Type: MAST

Pump	Gallons	Price
11	22.169	2.859

Product	Amount
Plus Unl	\$63.38

HUNTSVILLE, TX 77340

1D48531122-001
BUBBA'S
2211 HWY 190 EAST
HUNTSVILLE, TX

DATE 07/27/07
TIME 11:02 AM
AUTH# 03870Z

MASTERCARD
ACCOUNT NUMBER
XXXX XXXX XXXX 2609
BARGER/MICHAEL

PUMP PRODUCT PPG
01 PLUS \$2.939

GALLONS	TOTAL
17.076	\$50.19

THANK YOU
HAVE A NICE DAY

WELCOME
0733030605
PHILLIPS 66
135 HWY142
ARDMORE OK

****CHARGE****

Store ID#:
073303060-5
MASTERCARD 06/10

INVOICE#: 0499
DATE 07/22/07 13:20
AUTH#: 08708Z

PUMP #5
MIDI 24.046G
SELF-SERVE
PRICE/GAL: \$ 3.119
FUEL TOTAL \$ 75.00

THANK YOU
HAVE A NICE DAY

Application for Funding for 2008

Funding is requested to continue the TWiG's activities in 2008. At this time, consumable supplies and equipment are in place to support at least 1 more calendar year of field and laboratory work. This additional funding request is limited to travel to and from the Big Thicket to conduct field work. I am requesting funding for 2 trips to the Big Thicket in 2008. Current coach airfares from Omaha, NE to Houston, TX are \$389.00 on Continental Airlines (\$778 total). In addition I am requesting funds to defray costs of travel while in Texas. The current IRS rate for travel reimbursement is \$0.445/mile; I estimate that approximately 500 miles of ground travel will be necessary (\$222).

Total request for funds: \$1,000.