

Big Thicket Terrestrial Arthropod Collection Plan

Arthropods are the most diverse form of life known on planet Earth. Therefore the discovery of the diversity of any region requires adequate sampling of this group. The Big Thicket All Taxa Biological Inventory (ATBI) would benefit greatly from a large scale inventory of arthropods, but to organize TWIGs to sample each of the arthropod groups is both redundant and cost prohibitive at this time. A simple solution to this dilemma is for the ATBI to organize collecting and sorting of the material to supply specimens to experts willing to study this portion of the Big Thicket diversity. The plan outlined below would collect terrestrial arthropods using traps purchased by the ATBI or donated by Sam Houston State University, use students that have training in arthropod taxonomy to sort the material, and then loan the material to experts for identification. Interested experts who require more sampling to fully document the diversity of their group in the Big Thicket could then become TWIG leaders for that group.

Materials and Methods:

Sampling will use four malaise traps and twenty pit-fall traps at each site. Each site will be sampled continuously for one month, at least twice a year (during different seasons). Priority of sites will be determined by the Science Committee and Big Thicket Park Staff. Sampling will consist of putting all traps within the same region to make an extensive survey. Each week during the sampling regime, Materials from traps will be collected and traps will be recharged for the next sampling. This collecting of materials will be carried out by Big Thicket Park staff, Volunteer Citizen Scientists, or student workers (whichever is determined to be the most feasible to insure a continued effort). Materials from traps will be transferred to the labs of Jerry Cook and Sybil Buchelli at Sam Houston State University for sorting by student workers. Cook and Buchelli will oversee and supervise the student workers at no cost to the ATBI. Student workers will be paid an hourly wage. Sorted materials will be sent to experts who will previously agree to processing the material. The material will officially be loaned from the Big Thicket to these experts. Cook and Buchelli will document loans and report to the Big Thicket National Park as they require. Experts will return identified materials which will be accessioned into a Big Thicket National Park approved depository. Experts will have intellectual rights to their work unless they do not want to publish and then these rights will be publicly open.

Not all groups have experts identified and some groups may have other experts identified by the time of implementation of the program. The following is a partial list of scientists to currently receive sorted samples:

HYMENOPTERA

Ichneumonoidea (Sharkey or Wharton, USA)

Braconidae (Sharkey or Wharton, USA)

Orgilinae (Braet, Belgium)

Rogadinae (Butcher, Thailand)

Microgastrinae (Whitfield, USA)

Cardiochilinae (Whitfield, USA)
Miracinae (Whitfield, USA)
Blacinae (van Achterberg, Netherlands)
Cheloninae pt. (van Achterberg, Netherlands)
Agathidinae pt. (van Achterberg, Netherlands)
Ichneumonidae (Wahl, USA)
Pimplinae (Villemant, Dubois, France)
Chalcidoidea (Woolley, USA)
Agaonidae (Rasplus, France)
Chalcididae (Delvare, France)
Eurytomidae (Delvare, France; Gates, USA)
Torymidae (Rasplus, France)
Pteromalidae (Rasplus, France)
Pteromalidae (Heydon, USA)
Eucharitidae (Heraty, USA)
Aphelinidae (Heraty, USA)
Eulophidae (Gates, USA)
Mymaridae (Triapitsyn)
Proctotrupeoidea (Ronquist et al., USA)
Diapriidae (Yoder, USA)
Ceraphronoidea (Ronquist et. al, USA)
Cynipoidea (Ronquist et al., USA)
Platygastroidea (Johnson, USA)
Apoidea (Packer, Canada)
Megachilidae (Griswald, USA)
Halictidae (Packer, Canada)
Andrenidae (Patiny, Belgium)
Sphecidae s.l. (Ohl, Germany)
Vespoidea Vespidae (Carpenter, USA)
Formicidae (Cook, USA)
Pompilidae (Pitts, USA)
Mutillidae (Cook, USA)
Tiphidae (Kimsey, USA)
Dryinidae (Olm, Italy)
Embolemidae (Olm, Italy)
Sclerogibbidae (Olm, Italy)
Chrysididae (Kimsey, USA)
Megalyroidea (Shaw, USA)
Symphyta (Smith, USA)
Aulacidae (Smith, USA)
Evaniidae (Deans, USA)
Gasteruptiidae (Deans, USA)
STREPSIPTERA (Cook, USA)
NEUROPTERA (Oswald, USA)
Mantispidae (Ohl, Germany)
HOMOPTERA

Cicadellidae (Freitag, USA)

LEPIDOPTERA

Butterflies (Murray, USA)

COLEOPTERA

Anobiidae (Philips, USA)

Buprestidae (Bellamy, USA)

Cerambycidae (Farrell, USA)

Chrysomeloidea (Farrell, USA)

Chrysomelidae general (Farrell, USA)

Bruchinae (Farrell, USA)

Cleridae (Opitz, USA)

Corylophidae (Cline, USA)

Curculionidae general (Farrell, USA)

Dytiscidae (Miller, USA)

Scolytinae (Farrell, USA)

Baridinae (Franz, USA)

Platypodinae (Farrell, USA)

Dytiscidae (Roughley, Canada)

Elateridae (Johnson, USA)

Eucnemidae (Johnson, USA)

Gyrinidae (Realzola, USA)

Haliplidae (Jasper, USA)

Helotidae (Cline, USA)

Histeridae - general (Carlton, USA)

Hydrophilidae (Short, USA)

Kateretidae (Cline, USA)

Nitidulidae (Cline, USA)

Noteridae (Jasper, USA)

Passalidae (Gillogly, USA)

Phalacridae (Cline, USA)

Propalticidae (Cline, USA)

Ptinidae (Philips USA)

Scarabaeidae (Godwin, USA)

Staphylinidae general (Ashe, USA)

Pselaphinae (Carlton, USA)

Throscidae (Johnson, USA)

DIPTERA (Brown, USA)

Nematoceros groups:

Tipulidae (Young, USA)

Trichoceridae (Krzeminiska, Poland)

Sciaroidea (Hippra, Vilkkamaa, Jaschhof; Sweden, Finland)

Psychodidae (Ibanez-Bernal, Mexico)

Lower Brachycera:

Stratiomyidae (Woodley, USA)

Rhagionidae, Athericidae, Coenomyiidae, Vermileonidae (Yang, China)

Tabanidae (Burger, USA)

Therevidae (Gaimari, USA)
Acroceridae (Schlinger, USA)
Mythicomyiidae, Bombyliidae (Evenhuis, USA)
Nemestrinidae, Scenopinidae (Winterton, USA)
Asilidae (Dikow [coordinator], USA)
Mydidae (Dikow, USA)
Dolichopodidae (Pollet [coordinator], Belgium)
Empididae (Plant, UK)
Lower Cyclorrhapha:
Phoridae (Brown, Mostovski; USA, South Africa)
Syrphidae (Hauser [coordinator], USA)
Schizophora:
Calypterae (Pape [coordinator], Denmark)
Conopidae (Stuke, Germany)
Ctenostylidae, Ulidiidae, Platystomatidae (Korneyev, Kameneva; Russia)
Tephritidae, Asteiidae (Friedberg, Israel)
Lauxaniidae (Gaimari, USA)
Milichiidae (Swann, Canada)
Anthomyzidae (Rohacek, Czech Republic)
Chloropidae (Nartshuk, Russia)
Pallopteridae (Metz, Switzerland)
Agromyzidae (Sasakawa, Japan)
Drosophilidae (Grimaldi, USA)
TRICHOPTERA (Hozenthal, USA) (Bowles USA)
EPHEMEROPTERA (McCafferty, USA)
PLECOPTERA (Kondratieff, USA)
COLLEMBOLA (Bernard, USA)
DIPLURA (?)
PROTURA (?)
THYSANURA (?)
ORTHOPTERA (?)
ARCHAEOGNATHA (?)
ISOPTERA (?)
PSOCOPTERA(?)
THYSANURA(?)
HEMIPTERA
Miridae (Henry, USA)
Pleidae (Hernandez, USA)
Cicadellidae (Cryan, USA)
Cercopidae (Cryan, USA)
ODONATA (Abbott, USA)
Others (?)
PSEUDOSCORPIONIDA (Clopton)
ARANEAE (Hormiga, NSF-ATOL project, USA)

Budget:

Malaise traps (6 needed, 2 supplied by SHSU) @ \$300	\$1200
Pitfall traps (all supplied by SHSU)	0
Ethylene Glycol for pitfall traps	50
Glass Vials 200 (dozen) 6.50	1300
Ethyl alcohol	150
Postage	500
Forceps, labels, etc.	600
Student wages* 400 hrs @\$7	2800
Travel to traps	<u>400</u>
Total	7000

* I propose to run the process for 400 student work hours at which point the program should be evaluated.