

A C R E S

QUARTERLY

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APRIL 10

SATURDAY - 9:00 A.M.

SPRING

WORK DAY - ACRES PROPERTIES

PROGRAM: Join in a day of work and fun. Clear trails, paint up markers, pick up litter. We'll be working at Mengerson Nature Reserve- Ed Eberhardt in charge; Lonidaw- Pat Pichon in charge; Spurgeon Woodland Reserve - John Ellenwood in charge.

BRING: Lunch, drink, work gloves, boots, axe, saw, shovel, loppers, plastic bags, and the family.

MEET: Go directly to one of these Reserves if it is closer to you. Be there by 9:30 or meet at Heritage House parking lot (E. side) on Rte.3 north of US 30 bypass, NW edge of Ft. Wayne for work assignments and car pooling at 9:00 AM.

MAY 1

SATURDAY - 9 A.M.

BIOLOGY FIELD DAY - WOODLAND BOG AND BEECHWOOD

PROGRAM: We will tour and study flowers, trees, animals, birds and aquatic life of the Woodland Bog. Interpretive naturalists Robert Weber, Jim Haddock and Pat Bolman will guide us. The Beechwood Reserve for lunch and exploring there in the afternoon.

BRING: Lunch, drink, the family, magnifying glass, field glasses, waterproof boots.

MEET: Go directly to the Bog by 9:30 or meet at South end of Marriott Inn parking lot at Coldwater Rd. (27) and I-69 at 9:00 AM.

MAY 22

SATURDAY - 9 A.M.

ACRES ALONG THE WABASH - READING THE LANDSCAPE AND COOKING
A TASTE FROM THE WILD

PROGRAM: Learn how to read the landscape by exploring old fence rows and tree growth patterns - then learn about the edibles that are always at hand in fields, woods and riverine edges. Martha Seaman will lead the expedition. We will cook some wild foods we find in the area and prepare some wild teas.

BRING: Sandwich and dessert, hiking clothes, your family.

MEET: West side of Rogers market parking lot, Bluffton Rd., Waynedale or meet us at the Reserve along the Wabash at 9:30.

JUNE 12

SATURDAY - 9 A.M.

WORK DAY - SOUTH BRANCH ELKHART RIVER - BENDER PROPERTY

PROGRAM: This area is in need of special care from ACRES' members and manpower is needed to remove dead falls from the riverway. Work leaders will be Jim Haddock, Joe Yuska, Jane Dustin.

BRING: Lunch, drink, work gloves, boots (waders if you have them or sneakers if you don't mind getting wet), axe, saw, loppers, plastic bags.

MEET: Old Fortmeyer's parking lot on Highway 33 just off US 30, NW edge of Fort Wayne or meet at Bender Reserve at 9:30 AM.

RAIN OR SHINE POLICY - a lot of ACRES time and personnel goes into field trip & work day planning so we go as scheduled no matter what the weather decides to do!

Fox Island Journal 1975

It has been a year since Fox Island Preserve was put into my charge. I would like to share with you a few highlights, as taken from the Fox Island Journal.

15 Dec., 1974: First day at Fox Island. Spent the day hiking the trails, picking up trash, and working out in my mind the meaning of my presence here. Not only was my job to clean up the trash, maintain and install new trails and work with school groups, but above all to protect every living thing natural to Fox Island.

19 Jan., 1975: Have the trash under control, with much help from volunteers. Starting to install a small boardwalk across the marsh, using scrap wood found on the trails. Also took a survey of the muskrat dens; found--none! On the same note, have been watching the trees for squirrels. I have seen a few, but not the number that should be in a woods like this!

13 Feb.: My birthday gift to myself was a house--trailer. The front gate is 10' 6" and my new home was 10' wide. What a day!

26 March: The first group, a garden club, visited Fox Island with me as guide. This is what I have waited all winter for!

14 April: Fox Island is a beehive of action now as the schools send four or five groups out a day; birds and bird watchers are everywhere. With warm weather came many volunteers to repair the trails and markers. Trees and a few wildflowers are showing the color that Indiana woods are famous for.

4 May: Sunday--Grand Opening. The day broke with sunshine and cool air. The trails were at their best--all clean--and the woods floor was a maze of color with flowers. A large tent was on the site, and the naturalist had his hair combed and tie on. Over 300 people attended!

26 June: Hot. Because the school groups were coming at the rate of six to eight a day, it would have been very hard had not the Junior League helped take them through. The mosquitoes are showing their force. Most of them can be killed with a swat, but rumor has it there is one that stands 5'8" and has Black & Decker written on his beak. (I think I've seen his tracks this winter.)

4 July: Fox Island closed for the summer to give the trails, the naturalist, and the mosquitoes a rest. Total visitors--11,895. We must take caution not to love Fox Island to death.

Sept. and Oct: Great hikes with all sorts of groups and people. The marsh board walk was re-installed for the tenth time (kept floating away) and most of the mosquitoes have died off. Fall colors were outstanding. The fall flight of birds was about average except 21 Sept. when a group of more than 50 hawks flew over.

Nov. and Dec: Spent all of my extra time working on new trails and tracking down hunters. The wildlife is starting to increase. Muskrats have gone from no den last year to 38 this year; treetops are full of squirrels; after a snow the trails are full of rabbit tracks; trails reveal that Fox Island is the home of many deer.

Christmas Eve: I must visit the feathered and furred in the woods. I hope someday that when man goes into the woods, the wild animals, instead of fleeing in terror and haste, will trust man and he in turn will understand them.

Pat Bolman

HOW'S YOUR

MOSQUITO KNOWHOW?

By Dr. R. E. Siverly,
Director, Public Health
Entomology Laboratory,
Ball State University

It has been my privilege to travel in various parts of Indiana and work with many people in connection with Mosquito problems. Also, during the last 17 years, I have been asked to address many groups—service clubs, laboratory workers, veterinarians, kennel clubs, health officers—and others.

Regardless of whether the group is a lay or professional organization, whether it is local or away, whether a field demonstration or an illustrated lecture, the recipients of the information reveal several misunderstandings, or lack of understanding,

or just plain “hang-ups” about mosquitoes.

These hang-ups have been identified at the rate of about one per year! They are presented here. You might like to take the Quik Quiz on Mosquitoes and check your own “know-how” with the answers that follow. A self-rating scale is given at the end of the article. It is suggested that the reader take the entire test before referring to any of the answers.

Incidentally, “sleeping sickness” is a misnomer for *Arthropod-borne Encephalitis*. “Sleeping sickness” is otherwise known as *Von Economo's Disease*, or *Encephalitis Lethargica*. It appeared about World War I. Thereafter the virus seems to have disappeared. It might have been a

virus related to or associated with the *Influenza* virus which caused a great epidemic about that time in the United States.

QUICK QUIZ ON MOSQUITOES

(True, False)

- 1. There are approximately 25 different kinds of Mosquitoes.
- 2. All female Mosquitoes take blood.
- 3. All female mosquitoes take human blood.
- 4. All female Mosquitoes lay their eggs on water.
- 5. Mosquitoes hatch out in tall grass and bushes.
- 6. Little winged Mosquitoes grow up to be big winged Mosquitoes.
- 7. The pupa stage of Mosquitoes is immobile, like the cocoon of a moth.
- 8. Malaria, yellow fever, and encephalitis are caused by Mosquitoes.
- 9. The bigger the body of water, the bigger the Mosquito crop.
- 10. Mosquitoes are no public health problem if they don't carry disease.
- 11. Some of the new organophosphorus compounds are specific for Mosquitoes, and will kill no other insects.
- 12. To Mosquitoes the Purple Martin is Public Enemy No. 1.
- 13. Most people can't distinguish Mosquitoes from non-Mosquitoes.
- 14. Some Mosquitoes eat other Mosquitoes.
- 15. All Mosquitoes require water for development.
- 16. There are no Mosquitoes which feed exclusively on Man.

1. **False.** There are more than 2,500 kinds or species of Mosquitoes, world wide. Approximately 140 species are found in the United States North of Mexico. Indiana has 51 species in 10 genera. These genera have some distinctive behavioral and physiological, as well as anatomical characteristics. However, identification to species usually is necessary before intelligent control recommendations can be formulated.

2. **False.** Some species of *Aedes*

are autogenous (develop eggs without taking blood). But the best example of autogeny in Indiana Mosquitoes is the genus *Toxorhynchites*. There is but one species of the genus in Indiana. The immature stages live in tree holes and are predaceous and cannibalistic.

Larvae are huge, at least four times as large as *Aedes triseriatus*, with which they are associated (See Figure 9 on Page 19.) The adults likewise are large. The proboscis in both males and females is bent downward and is incapable of piercing skin. (See Figure 2.) Sufficient protein is acquired in the larvae stage for subsequent egg production, and adults subsist entirely on carbohydrates in Nature, such as nectar and sap of trees. Broadly considered, this insect is beneficial to Man.

3. **False.** *Culex* species in general are preferential bird feeders, as are members of the genus *Orthopodomyia* (see Figure 1) and *Wyeomyia*. *Culex territans* feeds on reptiles and amphibians. Some *Aedes* and *Psorophora* prefer large mammals (cattle and horses) over Man.

4. **False.** Members of the genus *Culex* lay their eggs in water in aggregate masses called “rafts”. (See Figure 10 on Page 19.) *Culiseta* and *Uranotaenia* species do likewise. The shape of the raft depends upon the position of the hind legs during oviposition. Crossed legs result in diamond-shaped rafts, while legs held parallel result in rectangular egg masses!

However, members of the genus *Aedes* and *Psorophora* oviposit on damp surfaces, not directly on water. (See Figure 11 on Page 19.) These are known as floodwater Mosquitoes. Hatching occurs after snow melt in spring or flooding in summer. All *Psorophora* are multivoltine (more than one annual generation). Some *Aedes* are multivoltine also, while others have but one annual generation (univoltine). The number of broods of multivoltine Mosquitoes depends upon the pattern of rainfall for any given year.

5. **False.** Mosquitoes may rest in the tall grass and bushes, but water is required for development, and “hatching” or emergence. The emergence of a Mosquito is one of the most impressive acts in Nature. (See Figure 3.) Sometimes the amount of water required is no more than half a cupful, as in the case of the genus *Wyeomyia*. *W. smithii* develop in the

corollas of the Pitcher Plant, *Sarracenia purpurea*. (See Figure 5.)

6. **False.** As in the case of Beetles, Butterflies, Wasps and Bees, and other insects with complete metamorphosis, members of the order *Diptera*, to which Mosquitoes belong, accomplish all growth in the larval stage. Different sizes of Mosquitoes are due either to differences in nutrition among larvae of the same species, or different species are involved.

7. **False.** Mosquito pupae are very motile. Whereas larvae are described as wrigglers, pupae are comma-shaped and are called tumbler. They are naturally buoyant and will rise to the surface unless they are moving. Respiratory trumpets penetrate the surface film and obtain oxygen from above the water. (See Figure 3.)

8. **False.** Mosquitoes serve as carriers (or vectors) but not as causes of diseases. Malaria is caused by a protozoan, yellow fever by a viscerotropic virus, and encephalitis by different strains of neurotropic viruses. These pathogens are injected with salivary secretion when an infective Mosquito takes a blood meal from a susceptible host.

Indiana was once a highly malarious area and the genus *Anopheles* still is indigenous. *Anopheles punctipennis* (Figure 4) is much more abundant than *Anopheles quadrimaculatus*. Fortunately, *Anopheles punctipennis* is a poor vector of malaria compared with “quads”.

In parts of Northern Indiana, these permanent water breeders have become displaced by *Mansonia perturbans*. The immatures of this unique Mosquito obtain oxygen by tapping the tracheal system of Cattails, Pond Lilies and other aquatic plants. (See Figure 12 on Page 19.) *Mansonia perturbans* is almost impossible to control with insecticides, since it surfaces for only a few minutes at the time of emergence.

Mansonia are vicious biters and will enter premises and human dwellings in late evening. They are not considered serious vectors, although California Viral Encephalitis was isolated from one pool of *Mansonia* which I obtained in a biting collection from horses in Northern Wisconsin in 1966.

9. **False.** Most Mosquito production sites are smaller than the area occupied by an average-sized American home. Farm ponds are usually negative for Mosquitoes if shorelines

AN OPPORTUNITY TO LEARN OR BRUSH UP ON NATURE LORE!

- Trail guides are needed for Fox Island Nature Preserve
- Training session to be conducted by Pat Bolman, Fox Island naturalist, on Saturday, April 24, from 9:30 AM to 3:30 PM at Fox Island
- Training manuals are available
- If you can help, call Vera Dulin
#432-3000

QUARTERLY cover artist is Ethyle Bloch, who is an art education graduate of the University of Wisconsin and has been treasurer of ACRES since its beginning.

are kept clean of vegetation, permitting access in shallow areas of natural predators, such as Aquatic Beetles, Crayfish, and fish. But watch the temporary forest ponds in early Spring, or trapped water in blocked drainage ditches, or flooded pasture pools after Summer rains! Mosquitoes are off the water in such places *either* before predators can become established, or before pools dry up.

Old tires are a health hazard, since they commonly harbor house Mosquitoes (vectors of St. Louis Encephalitis) and tree hole Mosquitoes (vectors of California Encephalitis).

10. False. This implies an obsolete concept of health, the absence of disease. In this modern day we prefer to regard health as a *state of well-being*. Few will argue that a state of well-being is not impaired when swarms of buzzing, biting Mosquitoes prevail, even if no vectors are present. Therefore, even pest Mosquitoes constitute a public health problem.

11. False. The only compounds that approach specificity for Mosquitoes are some of the new juvenile hormone compounds. These are actually synthetic materials that mimic hormones and are, therefore, homonomimetic in nature. These materials tend to be biodegraded in polluted waters, but success has been reported in irrigated areas in California and rice fields in Arkansas.

Unfortunately, the public is impressed with dramatic exhibitions such as airplane spraying and ground fogging. If organophosphorus compounds, applied from aircraft, are effective in communities at ground level (which often is *not* the case) many non-target organisms, including Honey Bees, Ladybird Beetles and other beneficial insects are destroyed, along with target organisms. Trained Mosquito workers are exceedingly careful in selecting application sites for such operations.

The new, sophisticated profession of pest management employs experts who use integrated control methods. Insecticides may be only a part of a program which also involves pathogens, predators, introduction of sterile males, and other auxiliary methods. The public has equated "control" with "spraying" and much re-education is in order in that regard.

12. False. According to Kale (1968), in his review of pertinent scientific information regarding the role of Purple Martins in Mosquito

control, the following conclusions were derived:

- (1) Mosquitoes appear to be a negligible item in the diet of the Purple Martin.
- (2) Behavior patterns of Mosquitoes and Martins are such that most Mosquitoes are not flying in Martin feeding areas when Martins are active. Contact between the two is minimal during daylight hours. None of the published statements appearing in the popular ornithological literature that attributes a Mosquito-feeding habit to the Purple Martin is based on a factual study. The oft-quoted statement "a Martin eats 2,000 Mosquitoes per day" has no evident means of support.
- (4) No evidence exists that any avian species can effectively control species of insect pest upon which it feeds when that pest is at or near peak abundance.
- (5) The Purple Martin is one of our most beautiful and friendly birds. It daily consumes a large number of insects. Its aesthetic qualities alone recommend it highly to Man. There is no need to ascribe to the Martin abilities greater than those it already possesses in order to encourage its protection and propagation.

13. True. Some of the Midges, or Gnats, bear a superficial resemblance to Mosquitoes, as do Crane Flies. Mosquitoes are distinctive among the Diptera in having scales on the wings and on the body. The female has a well-developed proboscis, usually capable of piercing skin.

Confusion reigns even more supreme in people distinguishing immature stages of Mosquitoes. Phantom Midges, viewed from above, *look* like mosquitoes. (See Figure 13 on Page 19.) But viewed from the side, the mouthparts are quite different from Mosquito larvae, and the prehensile antennae might suggest that not only is this *not* a mosquito, but that it *might* be a Mosquito predator. (See Figure 7.) Indeed this is the case!

Yet, without sufficient training in Mosquito identification an individual would likely destroy these non-target, beneficial organisms with larvicide.

The importance of this training cannot be over-emphasized. A recently developed program at Ball State University stresses exclusive use of fresh material in studying Mosquito Identification and Biology in a closely-coordinated field and laboratory experience. (Information regarding the program is available on request from the author.)

14. True. The predaceous nature of *Toxorhynchites* species was discussed in connection with question No. 2. (See Figure 7.) Larvae of the big Gallinipper, *Psorophora ciliata*, also are predaceous. (See Figure 14 on Page 19.) These larvae strike with amazing speed and will devour as many as 10 Mosquito larvae per day (Siverly, 1972). However, *Aedes vexans*, with which *Psorophora ciliata* often is associated, is produced in such large numbers and in so many types of habitats that Gallinipper larvae are not considered effective biological agents in controlling *Aedes vexans*. Adult *P. ciliata* is the "really big Mosquito" to which many persons refer.

15. True. Again, it bears repeating that the breeding site, or production habitat, need not be a large one as long as it contains water. One treehole on the Ball State University campus has been studied for about one year, and is known to produce two species each of *Aedes*, *Culex* and *Orthopodomyia*, as well as *Toxorhynchites* and treehole Anopheline, *Anopheles barberi*. Yet this habitat is only about eight inches in diameter and perhaps six inches deep.

The only key to the long-term solution of Mosquito control is modification, or reduction, or elimination of the water in which Mosquitoes develop.

16. True. Mosquitoes were on Earth long before Man. They saw the Dinosaurs come and go. Mosquitoes are opportunistic. None are dependent on human blood for survival, and they can and do survive in places uninhabitable by man.

QUIZ RATING

14 to 16 right—Indiana needs your know-how.

9 to 13 right—You've acquired some wooden nickels.

8 or less right—Better back up and start over.

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YOU'RE INVITED

Members of ACRES -- finest humans in this corner of Indiana -- why not visit more of our preserves? Each preserve has some unique members in its lifeforms if we will be clever enough to decipher them.

In many cases we have only begun to catalog the extent of the animal and plant life in any one of our preserves. You are warmly invited to visit the preserves and to list, photograph or sketch what you find there. Share these with all of us. Please be sure to date your notes and sketches and to identify the person who makes them. Take along new prospective ACRES members and sign them up for the cause which we all believe in so much.

Here is a brief outline on our preserves to get you "warmed up":

Acres-Along-The-Wabash

Trail goes through woods dominated by large, old sugar maples, then along wooded bluff overlooking the Wabash River. Spring wildflower display superb, especially the shooting star. Giant sycamores and hackberries on the floodplain.

30 acres

Beechwood

The bog part dominated by yellow birch, touch-me-not and golden ragwort. Excellent spring-peeper concerts. Extensive old fields going through succession.

90 acres.

Bender

The best example we have so far of oak-hickory uplands. Shore of the Elkhart River offers the lizard's tail, cardinal lobelia, ferns and large old silver maples. Lloyd Bender, nearby, will list the wildflowers for you.

65 acres

Foxfire

A flat, sometimes wet woods of young-growth forest. Little has been cataloged there yet. (Noted a very unique, pink, bell-shaped fungus there.)

7 acres

Hanging Rock

This coral outcrop has certain herbs growing on its hand-to-reach spots which we have nowhere else in our preserves. See if you can find the cliffbrake fern which Charles Deam once reported from there. Splendid view of the Wabash.

1 acre

Lonidaw

Here and at Spurgeon is where we have our largest old beech trees. (Olin Lake has even more spectacular ones.) Lake shore is relatively natural. Good display of cinnamon and sensitive ferns. Record all for this one.

20 acres

Mengerson

Very wet oak-hickory woods and an old field in succession. Good assortment of mosses and common wildflowers. Go before mosquito season!

17 acres

Ropchan

Highlight here is the sphagnum bog complete with tamarack, orchids, huckleberry, giant ferns, yellow birch (look for the very large one near the trail) and one large white pine which is seeding successfully around itself. Wildflower and fungus display in the extensive woods is very worthwhile.

80 acres

Spurgeon

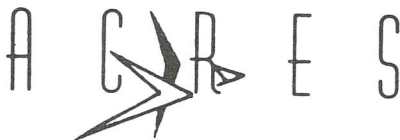
Our best tulip tree display is here, along with other large trees. Largest yellow adder's tongue flowers I've seen in Indiana, along with many other spring wildflowers. Puttyroot orchid, pawpaw, squirrels, chipmunks, puffballs, and an old CCC black locust grove. Excellent old-field succession.

80 acres

Woodland Bog

In my mind it should be called Fern Bog. Cinnamon, sensitive and royal ferns are in profusion. Tamarack and sphagnum. (Overshoes for trail.) Bird population is good.

20 acres



MEMBERSHIP RENEWAL TIME

REGULAR \$2.00 SUSTAINING \$10

PATRON \$ 50 STUDENT: \$.50

If you find a membership return envelope enclosed in your Quarterly, your ACRES dues are due. Make sure we have your correct address and zip.

NOTICE: A COMMITTEE HAS BEEN APPOINTED to look into our current dues structure. It is almost certain that your board of directors will endorse a raise in the annual dues at the next meeting. You are urged to take advantage of the current low dues rate before a change is made. The higher costs of postage and printing as well as the many other increases are forcing changes upon us.

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Directors: Robert C. Weber, President; Frank Kirschner, Vice President; Hy Goldenberg, Vice-President; James M. Barrett III, Vice President; Jane Dustin, Secretary; Ethyle Bloch, Treasurer; Wm.C. Bloch; Dan McCain; Angela Derheimer; Pat Bolman; Arthur Eberhardt; Gloria Beckner; Sam Ropchan; Pat Pichon; Jim Haddock; Kay Hough; Ed Eberhardt; John Ellenwood.

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Membership: Student, \$.50; Regular, \$2.00; Sustaining, \$10.00; Patron, \$50.00 payable annually to ACRES, Inc., 1802 Chapman Road, Huntertown, Indiana 46748.