

# ASSOCIATION FOR TROPICAL LEPIDOPTERA

March 2006

## NOTES

### MONARCHS IN GRAVE DANGER

The migrations of the monarch butterfly, *Danaus plexippus* (Linnaeus) (Nymphalidae: Danainae), which most persons know about in North America, may be on their way to history. Monarchs are being stressed at both ends of their annual biological cycle: 1) their breeding grounds are being reduced; and 2) their over-wintering sites in Mexico are being eliminated by deforestation. Such is the current assessment by the leading monarch expert and researcher, Prof. Lincoln P. Brower, formerly of the Univ. of Florida, Gainesville, and now at Sweet Briar College, Virginia.

Will the monarch go extinct? No, that is not likely. The West Coast populations seem in good shape and have their coastal over-wintering areas intact for the most part. It is the larger eastern North American populations that are endangered. The annual mass migration, from as far north as southern Canada to over-wintering grounds in central Mexico, between the states of Michoacán and México, is what may one day be no more, or certainly greatly reduced. Where today as many as half a billion to possibly over 1 billion monarchs make the yearly migration south to Mexico, we may soon see only a tiny fraction of these numbers do so and eventually may not have any large migration at all in the East, instead having only stragglers trying to survive along the Gulf Coast and Florida.

The culprits of this sad situation are mainly two: 1) massive herbicide and pesticide usage, and genetical engineering of crops in the north, particularly in the Midwest where more than half of all eastern monarchs breed during the summer; and 2) large scale deforestation of the over-wintering sites in central Mexico. The latter is the more pitiful in many ways since the Mexican government organized special monarch preserves in 1986 in the mountains where known colonies of monarchs can be found during the winter months. However, lacking any political will, the Mexican government has not enforced any protection of these reserves, thus allowing massive illegal logging where whole mountain sides have been denuded of all vegetation. In fact, since the governmental decree protecting the monarch sites, more logging has been done there than previously, almost as if logging areas had been designated instead of butterfly preserves. Without the large, dense trees at the higher elevations which the monarchs require, the butterflies will have no survivable over-wintering sites in southern Mexico. These large trees are also those most appealing to Mexican loggers and even thinning of these forest is detrimental, since a thinned forest does not offer the protection against killing frosts or strong winds and rain that a mature intact forest offers the monarchs.

In the north, massive herbicide usage has been accelerating and increasing since the early 1980s, turning the Midwest especially into expansive areas totally devoid of any living wildflowers or herbs, with only monoculture fields of crops. Where once one had a profusion of milkweeds and other wildflowers along crop margins, along roadsides, and along edges of properties, one now has herbi-



cide spraying in all such sites to eliminate "weeds." Without the milkweeds, the monarchs of course cannot breed, since the caterpillars feed almost exclusively on this hostplant, any number of species of the genus *Asclepias* (Asclepiadaceae).

Thus, the double-edged sword hanging over the monarchs will greatly impact the eastern populations more and more, and probably will eliminate the annual mass migration phenomenon in only a few more years. Many fewer wild places remain in northern farming areas where milkweeds can grow than in the past, and over the rest of eastern North America fewer and fewer areas are left for such "weedy" plants as well, mainly a few parks and some roadways in states that are more cognizant of nature in their region. As the milkweeds diminish in numbers, so will the monarchs that need these plants for their caterpillars to feed on.

There are other problems for monarchs as well. Many millions of monarchs die each year as they migrate simply due to car traffic on the roads and major highways. Monarchs that fly below 6 feet off the ground or so, become prime targets for passing vehicles (cont. p. 3)

# ATL NOTES

Editor: J. B. Heppner  
Assoc. Editor: Thomas C. Emmel

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March 2006

No. 1

## TO OUR READERS

ATL has a duty to let members know of the dangers facing the monarch butterfly in North America. Many of us thought, with the decree for several official monarch preserves in the mountain forests of Michoacán, Mexico, by the Mexican government, plus the formation of groups like Project Monarca, dedicated to protecting monarchs in Mexico, that the forests were saved for monarchs to continue their annual over-wintering from summer haunts in the United States and Canada. Such is not the case. The Mexican government has shown itself to be impotent against illegal loggers and Project Monarca has disbanded. Mexican army guards at the monarch reserves are only cosmetic: when the tourists leave each winter, so do the guards, and then the loggers move in.

Prof. Lincoln Brower has put out the call for others to help save the monarch's over-wintering grounds in Mexico. Why groups like World Wildlife Fund and The Nature Conservancy have not organized a relief program is hard to fathom, but hopefully as more of this state of affairs is publicized, something will be done. ATL members certainly can help by contacting their congressmen so pressure can be brought on the Mexican government to protect this unique feature of nature, the annual migration of the monarchs, and members can also contact conservation groups to become active on this front, both in the USA and in Mexico. Perhaps the area can be more effectively designated a world heritage site, to thus help protect the monarch forests. But, money is needed. The news that monarchs are not as protected in Mexico as had been thought is cause for alarm.

J. B. Heppner  
Editor

## ATL ANNUAL MEETING - 2006

June 15-18: Gainesville, Florida (joint meeting with the Lepidopterists' Society and the Southern Lepidopterists' Society). Call Dr. Emmel this year about the ATL meeting.

## ATL PRESIDENT FOR 2006

Dr. Ulf Eitschberger, Marktleuthen, Germany.

## ATL TRIPS: 2006

**JAPAN, 20-30 May 2006** (nearly sold out)

The trip to Japan will start at Osaka. Cost is \$2100, plus airfare. Guide is Prof. Hirowatari (Osaka).

**CHINA** (Yunnan and Sichuan), 23 Sep-8 Oct 2006

This trip is cancelled due to lack of sufficient interest.

**GUATEMALA, 15-21/24 Sep 2006**

The trip starts in Flores, in the Petén, until 21 Sep, for a repeat of the popular 2005 ATL trip. Cost is \$850, plus airfare. The trip can be extended to include the Quetzal Reserve until 24 Sep, for \$300 extra.

**CHILE, 2-24 March 2007**

We fly to Santiago and drive to northern Chile for specialized study of rare Andean blues and other lepidopterans. Cost is \$3,200 plus airfare. NOTE: ATL tours allow members and friends to fly in from other cities as well and meet at the destination city, if so desired. Members from Europe, for example, can join a trip by flying a route that is convenient for their destination. Each participant books their own flights from recommended routes, so insurance and airline mileage can be obtained. ATL handles all in-country arrangements.

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Tel: (352) 373-5630 FAX: (352) 373-3249 e-mail: troplep@aol.com

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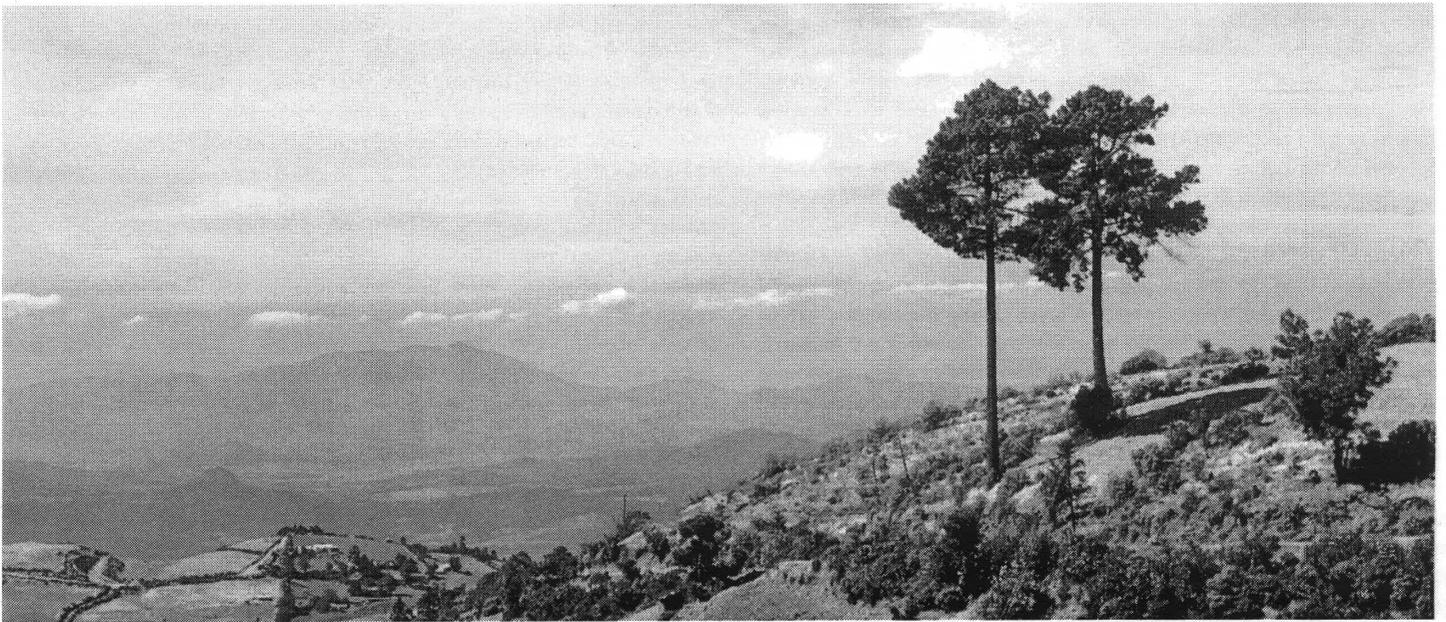


Fig 1-2. Monarchs in Mexico: 1) monarchs in flight (p. 1); 2) deforested former monarch site in Michoacán (above) (photos courtesy of R. DeCandido).

## MONARCHS IN GRAVE DANGER (from p. 1)

as the butterflies cross roadways. Although Dr. Brower did not address this, a further problem may involve the new bio-engineered crops, since studies have shown that even contact with the flowers or pollen of these plants seems to cause the death of butterflies and other insects, but much study remains to be done on this question. We also have large-scale use of the caterpillar bacterial spray, commonly called Dipel or BT (for the toxic agent, *Bacillus thuringiensis*), a bacterium specific to Lepidoptera caterpillars which is used commercially on farms to treat for pest caterpillars but which also kills all other lepidopteran caterpillars, including those of monarchs and other butterflies, if they come in contact with the agent in sprayed areas.

As the several stresses mount, fewer and fewer monarchs are able to survive. Add in massive deforestation in Mexico, and the days of mass migrations of monarchs may be numbered. It is ironic that farmers and the general public in the USA gladly spray herbicides, yet seem unconcerned or ignorant of where all these herbicides go to, let alone that these chemicals also are killing native plants that butterflies and other insects need to survive. All herbicides and pesticides trickle down into the soil and enter our water supplies, yet use of these chemicals increases every year. Should we wonder that more and more health problems arise in Americans every year?

In Mexico it is even more sinister in a way, since after the national decree establishing the monarch reserves, on paper, the amount and scale of logging operations greatly increased in these very same areas. With no political will to enforce protection of the reserves for the monarchs, there are fewer intact reserves every year and eventually all will be degraded. From what Dr. Brower said, it seems that at current logging rates, the region in Michoacán may well be devoid of all trees within about 5 years, or at least in those areas most used by monarchs for overwintering. What the local residents will then do for firewood, besides getting any income from logging, and for clean water (which after deforestation will be filled with eroded silt from the mountains), seems not to be thought about by anyone in the Mexican government, it seems to me. Perhaps the Mexican government thinks all the poor residents will simply illegally migrate across the border to the USA, as many millions of their compatriots have already done, thus making profits for the giant logging companies from logging now and then leaving the vacant land available for large ranches running cattle for the remaining wealthy Mexicans. In my view, even private purchase of monarch reserves would give no better results than what the Mexican government has tried to do

with "official" monarch reserves. The reason for this is that one needs armed guards patrolling the perimeters of such reserves to keep out illegal loggers and persons looking for firewood. No doubt firefights would eventually result with armed guards and loggers, so politically the Mexican government does nothing significant to stop illegal logging.

Cosmetic enforcement of the reserves is done by the government of Mexico during the winter when domestic and foreign tourists come to see the monarchs, making it seem like the reserves are under protection (where any trees even remain). Mexican army units are stationed at prominent places to "protect" the monarch reserves during the winter. However, come spring, they all leave with the last of the tourists and the loggers move in to prepare for the summer logging operations when no tourists are around to see the destruction of the monarch reserve forests as it occurs. Such is the routine now year in and year out, each year even more massive in its results, all done without any government intervention or even official knowledge. The trees seem to just "disappear," according to Mexican officials, so few forests remain in Michoacán, in what was once a verdant region of vast mountains covered with intact forests.

What can be done? For the Mexican highland forests where monarchs overwinter, it may be too late unless the Mexican government can actually protect these reserves. Possibly the only chance to protect the few remaining sites is to designate the reserves as "world heritage" sites. This action could possibly force the Mexican government to ensure real protection of these forests, not just on paper. However, given the politics in Mexico and the overwhelming poverty of the region, any positive results seem unlikely. Private land purchases would help but would require armed guards, 24/7, so the yearly maintenance costs would be high. Even this would not protect the forests from mischievous arson fires. One would need to hire the local people as guards so their livelihoods depended on protecting the forests. Clearly, the Mexican government is totally incapable of protecting the official reserves, other than perhaps rigorously enforcing any anti-collecting laws in case any foreign insect collectors should be found there, with large logging companies continue illegally clear-cutting while the collectors are being driven away to jail. Evidently, a lot of pay-offs are getting to Mexican officials to ensure their "limited vision" and selective amnesia of what is happening to the trees in the reserves.

In the north, one can only try to educate farmers not to spray herbicides on the edges of farms or on roadsides. More and more farming operations are, however, done by multi-national conglomerates who are less interested in listening to any concerns about nature unless

it increases their profit margins somehow. The edge areas have traditionally been the few remaining sites where milkweeds and other wildflowers could survive in what otherwise has become a massive agricultural zone in the central United States. We need an education program to have milkweeds planted in butterfly gardens throughout the USA and along public roads: the flowers are also colorful and attract many other butterflies that nectar on them, besides being the foodplant for monarch caterpillars.

As noted earlier, the western populations of the monarch are under less pressures than the eastern populations, but herbicides are also used in the mountain states where monarchs breed during the summer before migrating to the California coasts to overwinter. However, all monarch populations in North America are increasingly stressed every year more and more, so ultimately they will greatly decline in numbers unless many persons and groups work on education in the north and conservation of the over-wintering sites in Mexico. If local residents in Michoacán can be shown that they will have good incomes by being guards of the monarch reserves, then tree cutting could be stopped in those reserves (no trees, no more guard salaries). In the north, education is the key to have farmers leave edge areas for wildflowers and milkweeds, while governmental agencies need to know to keep roadway edges free of herbicides so wildflowers can grow there. One state recently switched from spring and summer roadway sidings being profuse with wildflowers to simple grass devoid of all "weeds", due to continual mowing so only grass would grow because the new state road manager liked the look of grass neatly trimmed like on the golf courses he favored, with no flowers in sight: such attitudes need to be reversed since roadway sidings are some of the major sites remaining for milkweeds and wildflowers to grow in many parts of the USA. Without such measures, the decline in monarch populations is inevitable and the mass migrations will only be a memory in the near future.

Prof. Brower has expounded on these topics in many research papers, popular articles, and lectures. It is time for conservation groups to act. Hopefully, the membership of ATL will also respond and take a leadership role to help get action from major conservation groups such as The Nature Conservancy, World Wildlife Fund, and others, so the remaining forests in Michoacán can be truly protected and northern areas remain where milkweeds can grow in profusion. It will require great effort, particularly political pressure, both in Mexico and in the various states of the United States, and in southern Canada, as well as monies to support the reserves and maintain a cadre of local guards for each reserve in Mexico, and to educate northern farmers and road managers to keep edge areas safe for native wildflowers. The Mexican government has at least already taken the first step and designated monarch reserves. Conservationists now need to provide money to hire the local guards needed to stop illegal loggers: with that kind of support from conservationists, the Mexican government can then find the political will to protect the boundaries of the reserves from illegal logging and local

residents will find they are richer because of the monarchs rather than only seeing their income coming from more logging. So, speak up and do something before monarchs are only a memory like the passenger pigeon (there used to be millions of these birds, and then there was only one left, before it died on 1 Sep 1914 at the Cincinnati Zoo, in Ohio, at 28 years of age).

It seems to me that continual tagging of monarchs and monarch parades will not protect the monarch from all the stresses we are now putting on these butterflies. Only concerted action will give us results that really can protect these amazing butterflies and their phenomenal migrations. Probably large amounts of money by conservation groups is what is needed, since then the Michoacán residents can be hired as guards, which will allow the Mexican government to politically be able to protect the reserves. Likewise, northern farmers and road managers can then be sent educational information on what to do that is simple and easy to protect areas where milkweeds can grow. If every conservation-minded person would write about this in their local newspapers, speak about it on their local television stations, more and more people would become aware of what is becoming a grave crisis for what is basically our national butterfly in the United States, the monarch.

Can we live without monarchs? Sure, although the lack of monarch migrations would be another decline in our natural world. Would it bother us not to have any more elephants, or bears? Some people could live without nature. Can the Mexicans live in a country devoid of any trees except a few left along roads? Not very likely in the long run. Can Americans live with continued increases in the use of herbicides, pesticides, BT sprays, and genetically engineered crops? Not likely either, since the ground water is already polluted with these chemicals (every person in the USA now has some residue of herbicides and pesticides in their system and children are perhaps getting taller due to growth hormones present in cows' milk and beef, a.k.a. hamburgers and steaks), so who knows what the bio-engineered food supply will result in after 30 more years or so (the federal government in Washington used to tell Americans that DDT was perfectly safe as well, since they knew no better either until many years after its first use in the 1940s). Already, many thoughtful families are eating organically grown food to prevent excessive pesticide build-up in their young children, or possible genetic problems down the road from altered cell organization and nutrient deficiencies due to eating bio-engineered plant products and meat from hormone-enhanced farm animals. It took 30 years to show that cigarette smoking causes lung cancer and before anyone really paid attention to this fact. The monarchs do not have 30 years left. Humans may not have that much time either. Think about it.

NOTE: the above remarks are paraphrased in part from a lecture given by Dr. Brower at the University of Florida, November 3, 2005. The remarks as written above, however, are my own interpretation of facts that Dr. Brower presented, with additions of my own views on the problems involved and should not be construed as viewpoints that Dr. Brower necessarily agrees with.

J. B. Heppner

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## Association for Tropical Lepidoptera

P. O. Box 141210

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