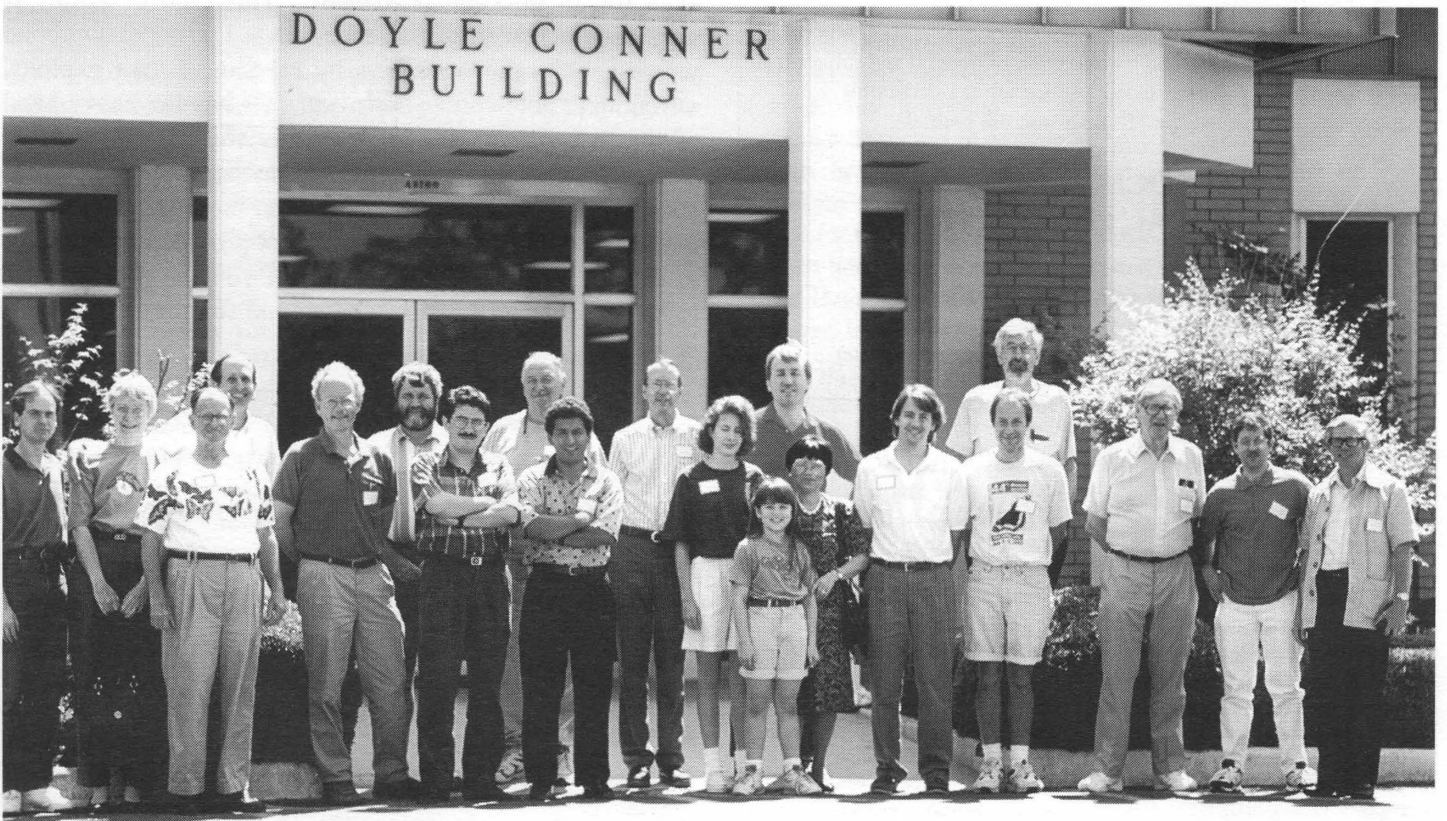


TROPICAL LEPIDOPTERA NEWS

June/September 1995 No. 2-3



1995 ANNUAL MEETING

Gainesville, April 21-23, 1995

Members in the group photo are as follows (left to right), [unknown visitor], *Mrs. Brown* (Brazil), *Howard Weems, Jr.* (Florida), *Keith Brown, Jr.* (Brazil) [back row], *Bill Russell* (Georgia), *Mark Scriber* (Michigan) [back row], *Manuel Balcázar* (Mexico), *Jean Filiatrault* (Quebec, Canada) [back row], *Patricio Ponce* (Florida), *Tom Emmel* (Florida), *Kerri Schwartz* (Florida), *Vanessa Heppner* (Florida), *James Adams* (Georgia) [back row], *Mrs. Yu-Cheng Chang* (Taiwan), *Richard Worth* (Florida), *Dale H. Habeck* (Florida) [back row], *Jaret Daniels* (Florida), *Paul Milner* (Georgia), *Jeff Slotten* (Florida), *John Heppner* (Florida).

1996 Annual Meeting: April 11-14, in Gainesville, Florida.

1996 ATL Photo Contest: remember to submit your entries by March 15, 1996. \$480 in prizes!

ATL EXPEDITIONS: 1995 — CHILE, December 9-22. **1996 — BRAZIL,** October to Rondonia.

YOUR NOTES?: None submitted!

TROPICAL LEPIDOPTERA NEWS

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Assoc. Editor: Thomas C. Emmel

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EXPEDITIONS: Brazil (Rondonia), coming in October 1996.

Let us know to what areas you would like trips organized for discount travel?

TO OUR READERS

Apathy! It is a subject it seems must be addressed. I subscribe to a newsletter on wasps, edited by a colleague of mine, and each issue has numerous member notes of interest (more than even other Lepidoptera newsletters I read). Our fellow lepidoptera enthusiasts, however, seem unwilling to share their experiences, events, or other news, with fellow members. We have gotten nothing from members for this newsletter, eventhough so much seems to be happening in the tropics. This is puzzling, since at meetings one hears of these things while talking with others, yet there seems no effort made to submit anything in writing, even for an informal newsletter. This kind of apathy is very detrimental to our science, since it reduces the bond we feel with other members by reading of their exploits, adventures, noteworthy news, etc. Or has the heavy hand of the U.S. government bureaucrats so intimidated some that even notes are not submitted anymore.

As editor, I can make this newsletter more informative for our members, but zero input does not provide a lot of news to report to anyone! I hope some of you can find the time to put your recent events on paper and submit them for this newsletter.

J. B. Heppner
Executive Director

NOTES

1. **1996 Annual Meeting:** April 11-14, in Gainesville.

2. **1996 Annual Photo Contest**

Members are welcome to enter up to 5 photographs (8x10 in) in each of three categories: butterflies, moths, and immatures. Prizes total \$480; winners are published in *Tropical Lepidoptera*.

It seems Kirby Wolfe has challenged everyone to win the immatures prizes; see below!

3. **CHILE 1995**

This trip will be made December 9-22, 1995. Already some have signed on with the trip, so if you have any interest, please let us know as soon as possible before all available space is taken! It should be a spectacular expedition to one of the more remote areas of the world, the Valdivian forests of southern South America, with their unique species of moths and butterflies.

4. **1995 VOTING**

Please vote for new officers before the deadline, December 31, 1995.

1995 PHOTO CONTEST WINNERS

BUTTERFLIES: 1st Prize, Jaret Daniels (Florida) for a Florida *Vanessa virginiana* (Nymphalidae); 2nd Prize, Jeremy Kuhn (Texas) for a Madagascan *Pharmacophagus antenor* (Papilionidae); 3rd Prize, Jaret Daniels (Florida) for a Florida *Celastrina ladon* (Lycaenidae).

MOTHS: 1st Prize, Kirby Wolfe (California) for a Madagascan *Antheraea suraka* (Saturniidae); 2nd Prize, Kirby Wolfe (California) for a Mexican *Copaxa multifenestrata* (Saturniidae); 3rd Prize, Jaret Daniels (Florida) for an Asian *Samia cynthia ricini* (Saturniidae).

IMMATURES: (all by Kirby Wolfe, California) - 1st Prize, *Eupackardia calleta* from Honduras; 2nd Prize, *Sysphinx molina* from Mexico; 3rd Prize, *Automeris curvilineata* from French Guiana (all Saturniidae).

GRAND PRIZE WINNER: Kirby Wolfe won the Nikon macro lens: \$550.

PRESIDENTIAL ADDRESS

Dr. Hiroshi Inoue was elected President last year but since he declined, Dr. Diehl becomes President.

ANMERKUNGEN ZUR VERBREITUNG VON LEPIDOPTEREN UND SPEZIELL ZUM BEGRIFF "KULTURFOLGER"

REMARKS ON THE DISTRIBUTION OF LEPIDOPTERA AND ESPECIALLY THE TERM "CULTURE FOLLOWER"

Dr.med. E. W. Diehl

Pematangsiantar, Sumatra, Indonesia

Unter Verbreitung versteht man gewöhnlich nur die geographische Ausbreitung, während die vertikale, obwohl genau so wichtig, selten Erwähnung findet; sie gibt die Höhenlage an, wo die betr. Art anzutreffen ist. Dabei kommt es vor, daß Arten, die hier Bergbewohner sind, in andern Teilen ihres Fluggebietes auch in tieferen Lagen beobachtet werden und umgekehrt. Der Grund dafür dürfte in dem hohenmäßig verschiedenen Vorkommen der Futterpflanzen (Bodenbeschaffenheit) liegen. In Sumatra kommen nach meinen Erfahrungen ca. 90% der Heteroceren von 0 bis über 1000m Meereshöhe vor, allerdings meist in unterschiedlicher Häufigkeit. Daß die Höhenangaben weder auf den Meter, noch die geographische Verbreitung auf den Kilometer genau angegeben werden können, ist klar. Dazu fehlt vor allem eine erschöpfende Besammlung und außerdem ist die Verbreitung andauernden Schwankungen unterworfen; "panta rhei" heißt, daß es weder scharfe räumliche Grenzen, noch zeitlichen Stillstand gibt. Und schließlich: Lepidopteren haben keine Landkarten oder Höhenmesser!

Nach dem Vorgesagten ist es also sinnlos, in faunistischen Arbeiten zeilenlang Fundorte aufzuzahlen, als ob die betr. Arten nur dort vorkamen. Ein ähnlicher Lapsus ist es, Fangdaten mit Flugzeiten gleichzusetzen; letztere dauern in den feuchtheißen Tropen vom 1. Januar bis zum 31. Dezember!

Die eben zitierte "Besammlung" oder besser Besammlungsintensität ist ein enorm wichtiger Faktor, der in der entomologischen Literatur bis dato so gut wie ignoriert wird. Dabei ist es doch einleuchtend, daß man keine Vergleiche ziehen kann zwischen Gebieten, die örtlich und zeitlich intensiv besammelt wurden und solchen, wo nur sporadisch und an ein paar "klassischen" Fangplätzen gesammelt wurde. Dieser grobe Fehler wird aber laufend gemacht und führt natürlich zu völlig falschen Schlußfolgerungen. Ganz gefährlich wird es aber, wenn auf Grund solch falsche Daten "wissenschaftliche Theorien" aufgebaut werden! Wenn in Europa, das sicher im Schnitt als gut besammelt gelten kann, immer wieder überraschende Neufunde gemacht werden (*Brahmaea!*), so ist es klar daß solche in den weit artenreicheren Tropen laufend gemacht werden könn(t)en. Checklisten sagen daher weniger über die wahre Artenzahl eines Gebietes, als über die Intensität seiner Besammlung aus!

Von einigen Autoren wird der Begriff "bevorzugtes Habitat" gebraucht. Ich halte diese Angabe nicht für sehr glücklich gewählt, da sie, um zutreffend zu sein, jahrelange, ubiquitäre und intensive Sammeltätigkeit erfordert, was aber nach dem eben Gesagten in tropischen Ländern, nicht der Fall ist. Außerdem ist

By distribution, one generally understands only the geographical spread, while the vertical distribution is seldom noted, although it is equally important: it indicates the elevation where the particular species is to be found. Thereto, one finds that there are species here that are montane, yet can be observed at lower elevations of other places within their range, and vice versa. The reason for this could well be due to the highly varying occurrence of their hostplants (i.e., soil condition). In Sumatra, about 90% of the Heterocera occur from 0 to about 1000m above sea level, however, in varying abundance. It is clear that neither the exact meter range in elevation nor the exact kilometer range in geographical distribution can be accurately given. Thereto above all is the lack of an exhaustive survey, and besides this, the distribution is continually subject to fluctuations: "panta rhei" means that there are neither precise regional boundaries nor timely resting periods. And last but not least: Lepidoptera do not use maps or altimeters!

With the above, it is therefore senseless to enumerate localities in page-length in faunistic works, as if the species in question would occur only in those places. A similar lapsus is found in taking the dates of capture as an indication of the flight periods: the latter being from January 1 until December 31 in the tropics!

The just noted "survey," or better yet "survey intensity," is an enormously important factor which is to this day practically ignored in the entomological literature. And yet, it is evident that one cannot compare regions that have been systematically and periodically surveyed, with those where only sporadic and a few "classical" collecting sites have been sampled. This gross error is continually made, and naturally leads to completely false conclusions. It becomes very dangerous, however, when "scientific theories" are built on such flawed data. When in Europe, which certainly on average one can take as well surveyed, new and unexpected discoveries are still made (e.g., *Brahmaea!*), then it becomes clear that such discoveries can continually be made in the species-rich tropics. Checklists, therefore, say less about the true species census of a region, than about the intensity of the surveys of the region.

A few authors use the term "habitat preference." I hold this assertion to be unluckily chosen, since to be accurate it would require a multi-year, ubiquitous and intensive survey regime, which as just stated is not the case in the tropical countries. In addition, the potential habitat of a species can only be there where its foodplant(s) grows. Furthermore, which preferred habitat should one attribute to a species that one observes as

das potentielle Habitat einer Art nur dort, wo ihre Futterpflanze(n) wächst (wachsen). Und andererseits: welches bevorzugte Habitat sollte man einer Art zuerkennen, die man sowohl im Urwald als auch in den Straßen von Kuala Lumpur beobachten kann?

Ich bin dafür, daß man die Verbreitung einer Spezies — eine sehr wichtige biologische Information — am besten folgendermaßen angibt: 1) geographische Verbreitung; 2) vertikale Verbreitung von ... bis ... Meter u.d.Meer; 3) durch ein Zeichen (K), ob die betr. Art auch in Siedlungen vorkommt (Kulturfolger); 4) ggf. Angabe, an welchen speziellen Biotop die Art gebunden ist (z.B. Moor, Sumpf, Dünen, Kalkgebiet, Kiefernwald, etc.).

Beispiel: Speziesname, Autor, Jahr . . .

Verbreitung/Distribution: 1) auch von Burma, Thailand und Malaysia gemeldet; 2) 400 - 1600m; 3) K; 4) nur, wo die Futterpflanze *Pinus* wächst.

Genauer und kürzer läßt sich die Verbreitung nicht angeben.

Nun zum Begriff "Kulturfolger". Eigentlich gilt dieser nur für tropische Länder, wo der Urwald noch die Naturlandschaft darstellt. In allen anderen, besonders den Industrieländern, hat die Urlandschaft schon seit vielen Jahrhunderten einer Monokultur, bzw. Akkumulation von Nutzpflanzen, weichen müssen und nur noch wenige Brachflächen hinterlassen; sie könnten allenfalls noch als Naturlandschaften bezeichnet werden. Anders in den äquatorialen Gebieten (z.B. Sumatra), die vor knapp hundert Jahren noch größtenteils mit Urwald bedeckt waren. Diese Wälder, das ureigenste Habitat der dortigen Lepidopteren, reichten damals noch bis dicht an die wenigen Siedlungen heran, sodaß alle Arten auch hier angetroffen werden konnten, wenn auch ihre Brutplätze nebenan im Urwald lagen. Das hat sich inzwischen gewaltig geändert, denn aus jenen kleinen Siedlungen sind nun Millionenstädte geworden, um die im Umkreis von vielen Kilometern kein Urwald mehr zu finden ist; das Gleiche gilt auch für die Dörfer, wo das Millionenheer der Kleinbauern für die Vernichtung des Urwaldes gesorgt hat und noch sorgt. Aus den intakten Waldgebieten kommt also kein Falter mehr in die Nähe der Siedlungen, ein Irrgast findet keinen Partner, ein Weibchen zur Eiablage keine Futterpflanze.

Dennoch haben sich eine Reihe von Arten in den Siedlungen gehalten und diese manchmal sogar zu ihrem "bevorzugten Habitat" (K3,4) machen können, weil sie in der Zeit, als der Urwald sozusagen vor der Haustür lag, dort geeignete Futterpflanzen vorfanden. Daß dabei polyphage Arten sich leichter adaptieren konnten als oligophage oder gar monophage, liegt auf der Hand; monophage hatten keine Chance und mußten dem zurückweichenden Urwald folgen, leben also heute meilenweit von Siedlungen entfernt. Sicher spielt bei diesem Umstellungsprozeß auch die genetisch bedingte Anpassungsfähigkeit mancher Spezies' eine bedeutende Rolle ("survival of the fittest").

Um die Kulturfolge kurz und präzise anzugeben, scheinen mir folgende Zeichen am praktischsten:

K-0 = reiner Bewohner des Primärwaldes

K = in Siedlungen nur vereinzelt

K-1 = in Siedlungen und Freiland/Urwald gleich häufig oder selten

K-2 = in Siedlungen häufiger als im Freiland/Urwald

K-3 = bisher nur in Siedlungen beobachtet

Das Zeichen "K" ist also wesentlich kürzer — und informativer — als unter langatmigen Fundortaufzählungen die Angabe z.B. Dolok Merangir oder Tebing Tinggi (Sumatra), denn es besagt,

easily in original forest as in the streets of Kuala Lumpur?!

I am of the opinion that the distribution of a species — a very important bit of biological information — can best be indicated as follows: 1) geographical distribution; 2) vertical distribution, from ___ to ___ meters above sea level; 3) with a symbol (C), if the species in question also occurs in settlements ("culture follower"); 4) notation with which specific biotope the species is associated (e.g., moor, bog, dunes, limestone regions, pine woods, etc.).

Example: species names, author, year . . .

distribution: 1) known for Burma, Thailand and Malaysia; 2) 400-1600m; 3) C; 4) only where the hostplant *Pinus* grows.

The distribution cannot be given more concisely and precisely.

Now to the term "culture follower": this actually is valid only for tropical countries where the original forest is still evident in the landscape. In all other countries, particularly so in the industrial countries, the original landscape has already given way to a monoculture (i.e., an accumulation of economic plants) since several hundred years ago, and only some fallow lands remain: this could still be stated as their "natural landscape" for these cases. The situation is quite different in the equatorial regions (Southeast Asia), e.g., Sumatra, where hardly 100 years ago most of the original forest still remained intact. These forests, the ancient habitat of the indigenous Lepidoptera, then still reached close to the few settlements, such that all species could be found close by even if their breeding sites were in the nearby forest. Meanwhile, this has been enormously altered, since those small settlements have developed into metropolises of a million or more, in whose circumference within many kilometers no original forest may be found. The same holds true for the villages, wherein the hords of millions of small farmers have taken care of the destruction of the primary forest, and still do. From the intact forest regions, no moth wanders near to settlements anymore: a straggler finds no partner, a female finds no hostplant for her eggs.

And yet, some species have maintained themselves in settlements, and sometimes have even made these "preferred habitats" (C 3,4), as they found useful food plants at the time when the original forest, so to say, lay before the doorstep. It is understandable then, that polyphagous species could in this way more easily adapt than oligophags. Monophags had no chance and had to remain in the regressing original forest, and today live miles away from settlements. The genetic adaptability of some species certainly played a major role in this process of change ("survival of the fittest").

To indicate acculturation precisely and briefly, the following symbols seem to me most practical:

C-0 = pure inhabitants of primary forest

C = only seldom in settlements

C-1 = found in settlements and in original forest, commonly or seldom

C-2 = in settlements more than in open land/original forest

C-3 = only in settlements

The symbol "C" is much shorter — and more informative — than lengthy locality notations like the notation, Dolok Merangir, or Tebing Tinggi (Sumatra), since it indicates that the species in question may be found throughout settled regions.

Of course, even among the culture followers there is a continual specialization, and even more so the further separated

daß die betr. Art überall in bewohnten Gebieten anzutreffen ist.

Natürlich wird auch unter den Kulturfolgern die Speziation weitergehen und zwar umso mehr, je weiter sie von ihren Artgenossen im Urwald getrennt sind (K, K-1, K-2) und es werden ggf. "a priori Kulturfolger" entstehen, die sich dann kaum in den Urwald verirren, weil abgesehen von der Entfernung, die Futterpflanzen dort — wenn überhaupt — viel schwerer aufzufinden sind; es wäre denkbar, daß die unter K-4 angeführten Arten diesen Wandel durchgemacht haben.

Mit der Dichte der Besiedlung (Zersiedlung) nimmt natürlich die Artenzahl laufend ab, weil im Zuge der, wenn auch langsam fortschreitenden Bereinigung immer mehr Kleinbiotope der Nutzung und dem Ordnungssinn (das Prinzip der Natur ist die Unordnung!) zum Opfer fallen. Das betrifft vor allem diejenigen Arten, die an Unkräutern oder besser gesagt, nicht an Nutzpflanzen leben; dagegen haben die, welche an Obst- und Zierpflanzen angesiedelt sind (K-1, K-2, K-3) eine ziemlich gesicherte Zukunft, vorausgesetzt, daß nicht allzu radikal insektiziert wird. Daß in Plantagen mit allen erdenklichen Mitteln gegen "Schädlinge" vorgegangen wird, versteht sich, dann sobald Profit auf dem Spiel steht...!

Dabei können ausgesprochen seltene (geschützte) Arten urplötzlich eine Nutzpflanze in ihren Speisezetteln einbeziehen, in Massen auftreten und Verheerungen anrichten (Beispiel: *Darna bradleyi* Holloway, Limacodidae), weshalb sie postwendend der Schädlingsbekämpfung überantwortet werden, ein Musterbeispiel für die Absurdität reinen Artenschutzes.

Weshalb ist nun in faunistischen Arbeiten der Vermerk "Kulturfolger" von Wichtigkeit? Weil er neben seinem Beitrag zur Angabe der Verbreitung einer Art einen Anhalt dafür vermittelt was nach der Vernichtung der letzten Urwaldparzelle von dem ehemaligen Falterreichtum noch übrig bleiben kann. Nach meinen Erfahrungen sind es in Sumatra z.Zt. bei den Tagfaltern höchstens 10%, bei den meist polyphageneren Heteroceren 20% bis 30%; in (noch) dünner besiedelten Gegenden dürften diese Prozentsätze etwas höher liegen, da dort noch mehr Brachland vorhanden ist. Insgesamt werden aber diese Zahlen weiter abfallen, mit Sicherheit nicht zunehmen.

Nach der völligen Entwaldung, die kaum aufzuhalten ist, wird schließlich eine Fauna übrigbleiben, die etwa der mediterranen entspricht. Allerdings wird — vorausgesetzt das Klima bleibt weiter tropisch/regnerisch — auf Grund der raschen Generationsfolge (10 bis 12 pro Jahr) eine schnellere Speziation stattfinden als in gemäßigten Zonen und die Artenzahl langsam wieder zunehmen; sie wird aber nie wieder die frühere Vielzahl erreichen, da durch die Entwaldung auch das Gros der Pflanzenarten dahinging.

Es ist aber mehr als wahrscheinlich, daß die radikale Entwaldung auch eine einschneidende Klimaveränderung nach sich zieht und sich ein Steppen — oder gar Wüstenklima — entwickelt, was zur weiteren Verarmung von Flora und Fauna führen muß. Übrig werden dann nur noch solche Arten bleiben, die sich an das neue Klima und seine Flora anpassen konnten, also eine Lepidopterenfauna, wie wir sie heute im mittleren Osten, Nordafrika, Arabien und der Sahara vorfinden, Gebiete, die früher einmal eine zusammenhängende Vegetation trugen.

In diesem Zusammenhang muß auch der so häufig benutzte Begriff "Sekundärwuchs" (secondary growth, disturbed forest) klargestellt werden. Es scheint, daß landläufig unter diesem

they are from their relatives in the primary forest (C, C-1, C-2), such that, "a priori culture followers" originate, who hardly will enter the original forest, due to its distance and to the increased difficulty of finding foodplants, even if those occur there. It seems plausible, that these species noted as C-4 have already moved past the above scenario.

With the density of settlement (urbanization), species numbers are of course continually reduced, while at the same time, even if slowly, the ever increasing cleansing of useful micro-biotopes continues as offerings to orderliness (the principle of Nature is disorder!). This impinges foremost on those species which live on weeds, or rather not on useful plants. Contrarily, those which have settled on fruit or agricultural plants (C-1, C-2, C-3) seem to have a secure future, as long as an anti-pest program is not maintained too radically. It is understandable that in plantations all manner of remedies against "pests" is undertaken, then as soon as profit can be seen . . .!

In this way, species that usually are rare (even protected species) may suddenly take a useful plant into its menu, increase in masses and bring attention to itself (e.g., *Darna bradleyi* Holloway, Limacodidae), whereby it quickly becomes a concern in pest eradication; a parody on the absurdity of pure species conservation.

Why then, is the term "culture follower" of importance in faunistic works? Because, besides its contribution to the distribution of a species, it provides a clue for how much of the former species diversity may remain, after the last plot of virgin forest has gone. In my experiences, at this time at most 10% of butterflies are involved; among the more polyphagous moths, at most 20-30%: these percentages may be somewhat higher in still less settled regions, since more uncultivated land remaining. Overall, these figures will only fall further, certainly not increase.

Following complete deforestation, which can hardly be held back, a fauna will remain that may resemble the mediterranean one. Above all — assuming that the climate remains tropical/wet — because of the fast generation sequence (10-20 per year), a faster speciation will occur than in temperate zones and the species number will slowly increase again. However, it will never again attain the former high point, since with deforestation the greater part of the plant species will also be lost.

It is more than probable, however, that the radical deforestation will also bring forth a sharp change in climate and will produce a steppe — or even a desert climate — which must lead to a further reduction in the flora and fauna. Only such species will then survive, that can adapt themselves to this new climate and its flora, that is, a Lepidoptera fauna as we today see in the Middle East, North Africa, Arabia, and the Sahara, all regions which formerly maintained a similar vegetation.

In this matter, the often used term, "secondary growth" (disturbed forest), needs to be clarified. It seems that this term is generally understood to mean a logged and regenerated original forest, which however, is absolutely wrong and is nowadays hardly to be found. If the original forest is only logged, even if radically, it will unquestionably regrow to the same primary forest as the seedlings of the logged trees are still there; to regain its former form, which may take from 200 to 1000 years. We have — or had — in this case, to do with a young forest, which entomologically is even more yielding than in untouched primary forest, since the caterpillars are known to mostly live on the

Begriff ein abgeholzter und wieder nachwachsender Urwald verstanden wird, was aber vollkommen falsch ist und heutzutage kaum noch vorkommt. Wird der Urwald nämlich nur abgeholzt, wenn auch noch so radikal und sich selbst überlassen, so wächst logischerweise der gleiche Urwald wieder nach, bis er seine frühere Form wieder hat, was allerdings an 200 bis 1000 Jahre dauert. Wir haben — oder hatten — es also in einem solchen Fall lediglich mit einem jungen Urwald zu tun, der entomologisch sogar ergiebiger ist als ein unberührter Primärwald, denn der gesamte Pflanzenwuchs ist ja noch vorhanden und die Raupen leben bekanntlich zum weitaus größten Teil im Unter-/Niederwuchs.

Aber, wo ergibt sich eine solche Situation noch? Überall, wo Holz geschlagen wird, sind, wie herbeigezaubert die unzähligen Kleinbauern (Squatters) zur Stelle, schlagen die paar stehengebliebenen kleinen Bäume noch um und brennen das ganze Areal ab, um Äcker anzulegen und die hungrigen Mäuler ihrer zahlreichen Kinder zu sättigen. Hier ist also der springende Punkt: das Feuer, nicht die Axt oder die Säge sind der Tod des Urwaldes, denn mit dem Abbrennen sind praktisch alle niederen Pflanzen endgültig zerstört und, wenn noch etwas nachwachsen will, wird es, solange das Land noch bewirtschaftet wird, in Schach gehalten. Läßt der Bauer nach 1-2 Ernten — denn mehr gibt der Boden nicht her — das Land auf, wird das Areal sofort von den paar ubiquitären Unkrautarten überwuchert, die alle anderen Samen ersticken. Da der "Squatter" aber jedes Jahr angrenzendes Land rodet, wird die Entfernung solcher Gebiete bis zum intakten Urwald immer weiter, die Chance der Windbesamung stets geringer. Sind erst einmal mehrere Kilometer zwischen Urwald (falls vorhanden) und diesen Brachflächen entstanden, haben diese floramäßig nichts mehr mit dem Urwald gemein und sind genauso steril wie eine Monokultur oder ein Siedlungsgebiet.

Vor der Bevölkerungsexplosion, also etwa bis Ende des ersten Weltkrieges, gab es natürlich auch schon die Brandrodung, aber da die Bevölkerung nicht zunahm, war diese nicht expansiv; was abgebrannt war und sich selbst dann überlassen blieb, wurde alsbald vom nahen Urwald wieder besiedelt. Unter Umständen war auch damals das Unkraut noch nicht von solch entscheidender Bedeutung.

Aus dem eben Gesagten geht also hervor, daß vom intakten Urwald über nicht brandgerodeten Urwald — Ödland/Kulturland — Siedlungsgebiet bis zur Monokultur (Plantagen) fließende Übergänge bestehen, ja die Vorletzten sogar wegen der Vielfalt der angepflanzten Gewächse (Zierpflanzen) entomologisch oft ergiebiger sind als Kulturland, wie die Sammelergebnisse in Städten mit viel Grünflächen beweisen; je "gepflegter" aber eine Siedlung ist, je steriler wird sie, in einer Monokultur größeren Ausmaßes leben dann nur noch eine handvoll "Schädlinge".

Es ist daher zutreffender, heutzutage nur noch von den beiden Biotopen Primärwald bzw. Kultur-/Siedlungsgebiet zu sprechen, da in den ganz seltenen Fällen, wo noch eine Zwischenstufe vorkommt, diese alsbald zur letzteren Kategorie einzureihen ist; der umgekehrte Vorgang ist bei der immer noch anhaltenden Bevölkerungszunahme in der 3. Welt unmöglich.

undergrowth.

But where is there still such a situation? All over, where timber is felled, there arrive as if by magic the uncountable numbers of small farmers (squatters), who cut down the last few trees that remained standing and then burn the whole surface in order to obtain another acre to satisfy the hungry mouths of their huge numbers of children. Here then is the main point: fire, not the ax or the saw, is the death of the original forest, since with the burning practically all lower plants are disturbed, and what still manages to regrow is maintained in check as long as the land is utilized. After 1-2 harvests, the farmer gives up on the land — for it does not offer more harvests — and the surface is immediately overgrown by a couple of the ubiquitous weed species, which suffocate all other seeds. As the squatter clears new land every year, the distance from such regions to the intact original forests is ever greater, the chance of wind dispersal of seeds always less. As soon as there are several kilometers between the original forest (if existing) and these open fields, they have florally nothing more in common with the forest and are as sterile as a monoculture or a settled area.

Prior to the population explosion, or about to the end of the 1st World War, there already occurred clearing by burning as well, of course, but since the population did not increase, this clearing was not expanding: what was burned off and left fallow, was quickly reclaimed by the nearby original forest. Possibly, the weeds were also not of such great dominance.

From the above, it becomes plain, that from intact original forest through cleared, unburned forest — wildland or managed land — from settlements to monocultures (plantations) there are transitions; the settlements being even more productive entomologically, due to the multitude of cultured plants (horticulture plants) than cultivated land, as the collecting results in towns with many green areas can attest to. The more "managed" a settlement, however, the more sterile it becomes: in a monoculture of larger proportions there then live only a handful of "pests".

It is thus more precise nowadays, to just address the two biotopes, primary forest versus cultivated/settled regions, since in those very rare cases where there still is an intermediary step to be found it will shortly enter into the latter category: the reverse situation, with the ever increasing population growth in the 3rd world, is impossible.

ANNUAL REPORT 1994

MEMBERSHIP (December 31, 1994)

	Total	USA	Other Nations (72)
Life Members	54	23	31
Benefactors	2	2	--
Patrons	3	2	1
Sustaining Members	32	23	9
Regular Members	1006	522	484
Basic Members	26	15	10
Exchanges	48	4	44
Members resigned	11	5	6
Died	2	1	1
TOTAL	1183	597	586

FINANCIAL SUMMARY

RECEIPTS AND EXPENDITURES

ASSETS	1994
Current Assets	
Net Funds (cash Dec 31)	14,490
Foreign Currency Dues	2,636
Publications Stock ¹	270,760
Endowments	5,000
Computer/Office Equipment	9,650
Total Current Assets	302,536
Other Assets	
Memberships Due	19,665
Life Memberships Due	13,750
Payments Due	11,929
Page Charges Due	12,352
Total Other Assets	57,696
Total Assets	\$ 360,232
LIABILITIES	
Current Liabilities	
Printing Invoices	21,039
Supplies/misc.	--
Total Current Liabilities	21,039
Other Liabilities	
Notes Due	10,000
Total Other Liabilities	10,000
Total Liabilities	31,039
BALANCE	\$ 329,193

RECEIPTS	1994
Cash (from previous year)	15,007.31
Member Dues	33,795.60
Life Memberships	11,500.00
Newsletter Dues (Basic only)	240.00
Foreign Currency Dues	2,636.24
Grants	9,593.71
ATL Expeditions	--
Contributions	1,652.94
Conservation Donations	14,840.72
Publication Sales	2,236.15
Program Services (page charges)	15,685.53
Interest	65.90
Annual Meeting	193.50
Advertising	252.10
Misc.	--
TOTAL RECEIPTS	\$ 107,698.70
EXPENDITURES	
Conservation Projects	7,810.37
Research Projects	1,915.75
Research Grants (grant supported)	9,593.71
ATL Expeditions	700.45
Tropical Lepidoptera Printing ²	50,960.47
Newsletter Printing ²	1,899.35
Photographic Costs	459.56
Book Stocks	400.00
Postage ³	7,990.86
Fees	475.03
Office Equipment	1,750.00
Supplies	1,465.11
Research Equipment/Supplies (with grants)	--
Advertising	1,050.45
Interest (notes/debts)	1,000.00
Annual Meeting	684.74
Misc.	53.00
TOTAL EXPENDITURES	\$ 88,208.85
BALANCE	\$ 19,489.85

The annual report presented here should be viewed with the understanding that the bulk of ATL assets involve face values for back stocks of publications, not cash. Thus, your continued donations are still needed to maintain the high quality of ATL journals.

Membership neared 1200 this past year.

1. Book value of back stock (reduced as issues are sent to members).
2. Includes invoices carried over from previous year as received from printer.
3. Includes postage for advertising.

ANNUAL MEETING 1995

There were 18 registered members at the annual meeting this year, plus a number of others who attended but would not register.

The following listing summarizes papers presented (speakers who submitted abstracts as requested, have their paper abstracts printed below):

James K. Adams, Dalton College, Dalton, Georgia

"The Immatures of southern North American Tiger Moths, and Larval Characteristics Useful in Delineating the Higher Classification of the Family"

The immature stages of several species of tiger moths (Arctiidae) from the southern United States are illustrated, including members from most of the currently accepted subfamilies. Our current understanding of the subfamilies, especially of the arctiine tribe Phaegopterini and of the Ctenuchinae, is at best poor. The ctenuchines have been classified as a group basically due to the superficial resemblance of the adults to different hymenopterans. The larvae have many useful characters in determining relationships between species, genera, tribes, and even subfamilies, and some of these characters are discussed using illustrations of immatures.

Manuel A. Balcázar, University of Florida, Gainesville, Florida, and UNAM, Mexico

"Cladistics of the Ceratocampinae (Lepidoptera: Saturniidae)"

Keith S. Brown, Jr., Universidad Estadual de Campinas, Campinas, Brazil

"Passion Flower Butterflies"

The study of biological characteristics of juveniles and adults of Neotropical Heliconiini in relation to various plant families, represents a microcosm of ecological theory, experiment, and insight, stimulating much debate and wonder in both scientific and popular media (see, for example, the article by Darlyne Murawski, December 1993 issue of *National Geographic*). Essentially all 68 species of Heliconiini have now been reared from egg to adult; the variation in juvenile morphology parallels that in adults, and in general confirms the traditional systematics proposed by Emsley (1964) and Brown (1981). The most primitive group in the tribe could be *Agraulis*, *Dione*, *Dryadula*, or even *Philaethria*, depending upon the outgroup chosen: *Euptoieta* gives most consistent results and indicates *Dione* as primi-

tive, but *Dryadula* conserves a number of typical fritillary characters, and *Philaethria* is the best sister-group to the *Dryas/Heliconius* radiation. The meaning of the patterns seen in chemical, coevolutionary, and ecological relationships to the *Passiflora* and other host plants continues to be discussed by ecologists.

Jaret C. Daniels, University of Florida, Gainesville, Florida

Poster paper: *"Seasonal Variation in Eurema lisa: How It Compares to Other Sympatric Central Florida Eurema Species"*

Thomas C. Emmel, University of Florida, Gainesville, Florida

"Captive Propagation and the First Reintroduction of the Schaus Swallowtail in the Florida Keys"

Andrei V. L. Frietas and Keith S. Brown, Jr., Univ. Estadual de Campinas, Campinas, Brazil

"Phylogeny of the Nymphalidae as Based on Juveniles"

Detailed studies of eggs, larvae (1st and 5th instars), and pupae of over 100 species in 26 Neotropical tribes of Nymphalidae (Danaini, Euploeini, Tithoreini, Melinaeini, Mechanitini, Ithomiini, Dircennini, Morphini, Brassolini, Biini, Haeterini, Euptychiini, Pronophilini, Preponini, Anaeini, Apaturini, Cyrestidini, Limenitidini, Catagrammini, Epicaliini, Coloburini, Nymphalini, Kallimini, Melitaeni, Acraeini, Heliconiini), with *Libytheana* as outgroup, reveal patterns of generic, tribal and subfamilial relationships generally in accord with the ideas of Müller (1886), Clark (1947), and Harvey (1991); also based on immatures. A few genera may need to change tribes, and some suggest the uniting of presently separate groups. The presumed phylogeny, derived from over 200 characters of juveniles and adults, shows interesting relationships with the possible phylogeny of the larval host plants. The polarity of these relationships is being tested in experiments of acceptance of presumably "ancestral" host plants, and their biochemicals, by more derived lineages.

Robert C. Lederhouse, Michigan State University, East Lansing, Michigan

Book Announcement: *"Swallowtail Butterflies, their Ecology and Evolutionary Biology"*

Richard Worth and Kerri Schwarz, University of Florida, Gainesville, Florida

"The Relationships Between Host Plant and Habitat for the Distribution of three Potentially Endangered South Florida Butterfly Species"

VOTING RESULTS, 1995

The run-off elections for a tie vote last year for two of the Board of Directors positions, resulted in Dr. Jon D. Turner winning the last seat in the year-2000 group. Dr. Turner received 63 votes and Dr. Claude Lemaire received 57 votes.

Note that only about 10% of our membership voted! We want your participation, so please vote in elections.

MEETINGS

1996 **Association for Tropical Lepidoptera**: April 12-14, Gainesville, Florida, USA

Societas Europaea Lepidopterologica: May, Madrid, Spain

Lepidopterists' Society: June, Houston, Texas

XX International Congress of Entomology: August 25-31, Florence, Italy

NOTICES

BOOKS FOR SALE: 14 books of D'Abrera's *Butterflies of the World* series are for sale at 80% of the list prices (mint condition), including *Afrotropical* (1), *Neotropical* (5), *Oriental* (3), *Australian* (1977 and 1990 editions), *Holarctic* (2), and *Birdwing Butterflies of the World* (boxed). Write to: Dave Hyatt, 6145 E. San Bernardino St., Tucson, AZ 85715, USA. Tel: (602) 885-1195.

FOR SALE: Butterflies of the Caucasus. Vol. 1. Papilionidae, Pieridae, Satyridae, Danaidae, by Y. P. Nekrutenko. This 1990 book is still available from the author for \$50 (add \$20 airmail or \$10 surface postage) (cloth, 215pp, 32 color pl.). Send payment (money order) for transfer to Mr. Nekrutenko, in the Ukraine, payable to: Dr. P. Sigbert Wagener, Hemdener Weg 19, D-46399 Bocholt, Germany.

LOST MEMBERS! **Mario Posla-F.**, San Jose, Costa Rica. **Thierry Varenne**, Draguignan, France.

September 29, 1995