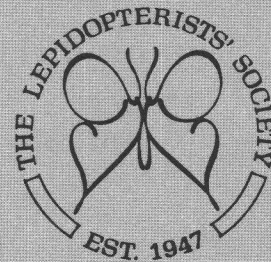


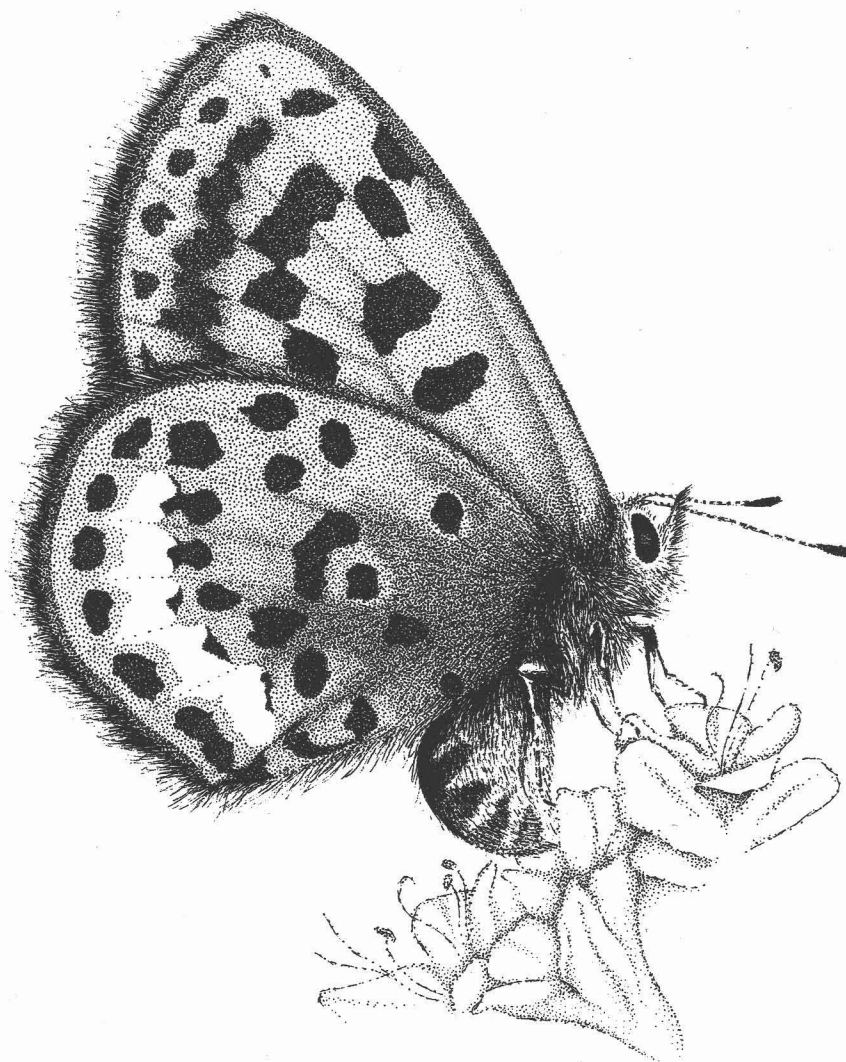
# News of the Lepidopterists' Society



Number 3

July 1995

Female El Segundo Blue  
(*Euphilotes battoides allyni*)  
ovipositing on  
wild buckwheat flowers  
(*Eriogonum* sp.)  
by Jaret C. Daniels.



# News of the Lepidopterists' Society

Number 3

July 1995

Edited by Marc C. Minno and Maria F. Minno

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## Editors' Note

With this issue we have pretty-much caught up with the four-issue schedule we set out for ourselves at the beginning of the year. Issue Number 2 will, from now on, be mailed with the Season Summary. This saves your money by cutting down on mailing costs. We decided to mail Issue Number 3 along with Number 2 and the Season Summary this time, to save both time and money. From this point on the *News* should stay on schedule according to the plan on the inside back cover (page 74).

We are really pleased with all of the dialogue and fascinating discussion in this issue, and we hope you will find it interesting and enlightening, too. Please continue to write to us and send us articles and pictures!



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## The Lepidopterists' Society

The object of the Lepidopterists' Society, which was formed in May 1947 and formally constituted in December 1950, is "to promote the science of lepidopterology in all its branches,... to issue a periodical and other publications on Lepidoptera, to facilitate the exchange of specimens and ideas by both the professional worker and the amateur in the field; to secure cooperation in all measures" directed towards these aims.

(Continued on page 59)

# Moth Miscegenation

by Joel M. Johnson, 59 East 400 North, Payson, UT 84651-1842

While trapping moths in the Uinta Mountains this last August, I made an unusual find. In the early morning, I was taking the moths out of three blacklight traps that had been hung out in different areas of the forest the night before. If I attend to the traps right at dawn, before the sun gets up, it is usually cool, and the moths are resting on the walls of the trap, too cold to be very active. I can reach in through the zipper opening of the screen and pick off, with forceps, the ones that look interesting, and drop them into a killing with minimum flurry and damage to the specimens.

I picked off a yellowish noctuid, among other things, and, as I dropped it into the ethyl acetate bottle, I thought I had seen another smaller moth in the forceps along with it. Didn't pay it too much attention at the time, because it is not unusual to have an extra one caught by a leg or antenna when rapidly taking out a number of moths. In the bottle they go, and I look them over more carefully later.

When I was sorting them after breakfast, and came to that particular bottle, I find this yellow noctuid, *Enargia decolor*, in copula with an as-yet-unidentified grey noctuid of considerably smaller size. Both were now dead, but still attached to one another. I later pinned them up that way. The grey one is definitely not an *Enargia*.

It is not unusual to find moths mating in the traps. Often I am lucky in finding a pair of an uncommon species in the same trap, both male and female. However, they are not generally actually mating. Were they following one another, and ended up trapped at the same time? Fairly often, I find a moth pair quietly copulating in a trap. Why not? It is a quiet place until I get to it in the morning.

But this pair! Like a bantam rooster taking on a hen turkey! What were they thinking? Were they too drunk from some fermented nectar? Was it a case of moth rape? Or finding themselves hopelessly imprisoned together, did they just say "What the heck, we might as well do it."

# The Luna Moth (*Actias Luna*)

by Randy Lyttle, R.D. 1 Box 409,  
Hannibal NY 13074-9771

The larvae of *Actias luna*, the luna moth, grows to be 60 cm (3 1/8 inches). It is green with a dull yellow stripe on each side. It also has spiny tubercles and hair. It feeds on the foliage of hickory, persimmon, walnut, sweet gum, birch, and a few other trees.

The larva pupates in a thin cocoon. It may include a flexible leaf, usually on the ground.

When it becomes an adult, it has an 80-115 mm (3 1/8 to 4 1/2 inch) wingspan. Adults are pale green with a brownish-purple margin. The hind wings have long tails.

Luna moths normally fly from April to June, but are occasionally seen in August. They occur in the eastern half of the United States and Southern Canada. The Luna moth has two broods per year.

## Lepidopterists' Society Information

### Membership

Membership in the Lepidopterist's Society is open to all people interested in any aspect of Lepidopteroogy. To become a member, send full dues for the current year, together with your current mailing address and a note about your particular areas of interest in Lepidoptera, to Julian P. Donahue.

Regular	\$25.00
Student	\$15.00 (certified)
Sustaining:	\$35.00
Life	\$500.00

Remittances must be in US dollars, payable to the Lepidopterists' Society. Members receive the *Journal* (published quarterly) and the *News*

(published quarterly, alternating with the *Journal*). Supplements to the *News* include a Membership Directory, published in even-numbered years, and the Season Summary, published annually.

Additional information on membership and other aspects of the Society can be obtained from the Secretary, Michael J. Smith.

### Contributions

We welcome contributions to the *News*! Please send in your article or item to us in one of the following formats, in order of preference:

1. Article on diskette. We obtained PageMaker 5.0 in December 1994, and it will translate just about any

graphics, text, or spreadsheet program made to that date, including WordPerfect up to 6.0, Microsoft Word, Lotus, Excel, and of course, ASCII and RTF, and more. You may include graphics on disk, too. Please let us know what format it's in when you send it.

2. Typewritten copy, double-spaced.
3. Electronically transmitted file in ASCII format to us via e-mail. Our address is [afn10853@freenet.ufl.edu](mailto:afn10853@freenet.ufl.edu)
4. Handwritten, (very legible, or no guarantee what the outcome will be!).

Diskettes, hard copy, and photographs (prints are less expensive to reproduce, but slides are OK) should be mailed to the

NEWS editors. Material for the following issues should reach the editors by the following dates:

Issue	Date Due
1 January-March	November 15
2 April-June	February 15
3 July-September	May 15
4 October-December	August 15

Reports for the Season Summary, which is to be mailed simultaneously with Issue #2, should reach the Zone Coordinators (see list on page 31) by January 31. The 1996 Membership Directory is to be mailed simultaneously with Issue #4.

**See inside back cover for additional Society information.**

# Red Admiral Butterflies in Florida and France

## Eighteen Years of *Vanessa atalanta* in the Southern Alps

by Laurent Schwartz, 37, Rue Pierre Nicole, 75005 Paris,  
Telephone (33)(1) 43 54 50 30 Fax (33)(1) 43 29 49 60,  
e-mail: schwartz@dmi.ens.fr

A previous article published in the News of the Lepidopterists' Society, describes a remarkable ecological event [see Observations of *Vanessa atalanta*, page 59, News of the Lepidopterists' Society No. 2, March/April 1993].

To summarize the previous article, and bring readers up to date, every mid-July since 1977, I travel to the village of Saint Bonnet in Chanpsaur in the Southern Alps, 1,000 meters elevation. The numerous butterflies of 25-30 years previous have largely disappeared, but *Vanessa atalanta* has remained common throughout France.

On each of the 15 days in 1977 that comprised our first visit to Saint Bonnet, I would take late afternoon walks. The particular road that I traversed was bordered by nettles, the Red Admiral's larval food plant. It is surrounded by big trees, but rather sunny in many places, and frequented by cows and horses. At the summit of the road, there is an ideal place for *Vanessa atalanta* to bask on the ground. I consistently observed a particular red admiral in this same locality every day during our first visit to Saint Bonnet.

However, this continued the following years, so that one was consistently observed between 6:00 and 8:00 p.m. in the same position, from 1977 to 1989. In 1990 and 1991, very cold, rainy weather prevailed, but in 1992, in splendid weather, the *Vanessa atalanta* returned.

In July 1993 we did not see the *Vanessa atalanta* again, but the weather was very bad. Moreover, there was no trace of the passage of cows and horses, and all of the nettles of the border of the route had been cut.

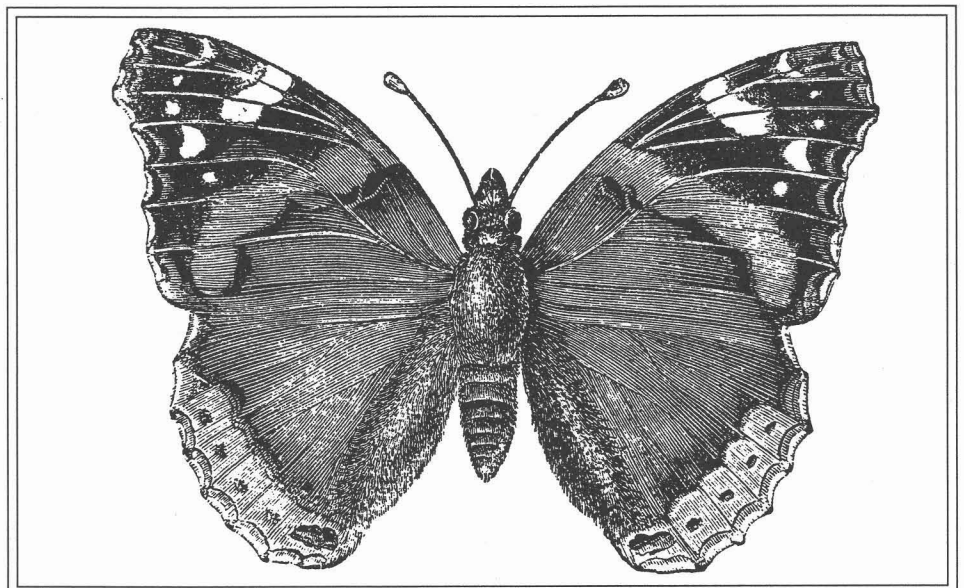
This year, 1994, we saw the *Vanessa atalanta* again! There was evidence of the passage of cows and horses on the road; however the nettles had also been cut. Still, there are so many nettles in the neighbourhood that, after all, it is probably not important.

We saw it at 7:50 p.m., just a few days after our arrival, Sunday the 17th of July. It was always seen at the same spot, and was extremely friendly. We could approach it to about three meters. It frequently opened and closed its wings. Several times it was troubled, perhaps by our moves. At least ten times it fled into

the woods, but came back to the same place within ten or fifteen seconds. It once landed on the shoulder of my wife. It was extremely fresh and beautiful, so that we surmised that we may have found it the day of its emergence.

We came back to the same place two more days, and saw it again, except that it was 5:00 p.m. Thus, I imagine that this animal remains in the same locality more than two hours every day! In the garden of our hotel, I saw another very fresh *Vanessa atalanta*. Could it have been the same individual?

Such a precise ecological fact amazes me. Since my first observation of *Vanessa atalanta* at this spot in 1977, it has now, in 1994, been here eighteen years consecutively. And it is never the same individual! Since I am already seventy-nine, I imagine "it" will survive me.



# Eighteen Years of *Vanessa atalanta* in Winter Park, Florida

by Henry F. Swanson, 1531 Norfolk Avenue, Winter Park, Florida 32789-5518

It began a week after Easter 1977, when one red admiral butterfly established an unusual friendship with me. This strange encounter initiated a chain of butterfly friendships that has run continuously for years through many individual butterflies.

On Friday, April 14, 1995, I completed my 18th year of observing a family of red admiral (*Vanessa atalanta*) visitors to an overwintering mating site in my backyard. I recorded my four-thousand-and-first daily visitor on that day. I now have two daily visits by the butterflies into my 19th year.

This 18-year activity over 6,574 days going back to April 15, 1977, must represent some kind of Guinness World Record for butterfly watching! My friends say I am an outstanding person, because I have been *out standing* in my backyard for over 6,000 days in order to record these activities.

I do not know of anyone in Florida who can match my record in observations, day after day, month after month, year after year. How about the rest of the US, or the world?

## Butterfly Revelations

From a week after Easter, 1977, Henry F. Swanson has enjoyed a continuing relationship with the butterflies in his backyard, through many butterfly generations.

These butterfly encounters ranged from simple amusing capers to some unbelievable responses. Some of these were what the author refers to as "think" responses, the kind that he believed only higher forms of animal life were capable of, not butterflies! Also, he found the butterflies to be very individual, just like people.

The author feels that these unusual revelations were a part of God's plan to strengthen his faith and to help him rearrange his goals in life. Because of his experiences, the author believes that many readers (like himself) may be looking for a burning bush, an angel, or some sign on their journey to faith. He suggests they

simply take time to smell the roses and observe a butterfly or some other of God's creations. Then perhaps they, too, will experience a new awareness of God.

Butterfly Revelations, by Henry F. Swanson, is a true story. The book price is \$3.50; to order, contact Women of the Church, First Presbyterian Church, 106 East Church Street, Orlando, Florida 32801. Proceeds from the sale of the books go to the Women of the Church for use in the Student Assistance Fund, First Presbyterian Church.

Henry Swanson speaks at garden clubs throughout Florida, warning listeners that the draining and paving of Florida are having the same effect as over-grazing and deforestation in parts of Africa. He predicted the monster sinkhole in his hometown of Winter Park nine years before it swallowed cars, trees, parts of houses, and a city swimming pool.

## Butterfly Learning?

by Cal Schildknecht, 135 Doubleday Avenue, Gettysburg, PA 17325

As a possible example of insect learning, I submit some observations of male *Speyeria idalia*, which were last seen on the Gettysburg Battlefield in summer 1983.

In our area, the males of *Speyeria idalia* and *S. cybele* have shown very different behaviors from the females. The males fly about wildly in open areas, and at times through bushes, so that by late June their wings are usually torn. The females were much less active, and is much more easily captured by predators and collectors. It is not unusual to find females with wings in good condition in September.

My observations of *S. idalia* on the Battlefield from 1970 to 1983 suggest that they exceed *S. cybele* in their dimorphic behaviors. Especially memorable is a male *S. idalia* seen near the Peace Light Memorial on August 13, 1982. It had only the stumps of wings remaining, but had learned (?) to fly about vigorously with exceedingly rapid wing beats, resembling somewhat the buzzing flight of a bumblebee. The butterfly hovered over flowers of swamp milkweed (*Asclepias incarnata*) several times briefly, before disappearing with rapid flight.

Might this compensatory flight behaviour, a response to injury, be evidence of primitive learning?

These regal fritillaries of the Battlefield were a larger form than I had seen in mountains of West Virginia and New Jersey in the 1970's. *S. cybele* has persisted locally, though it is not abundant, near edges of woodland on the Battlefield and on South Mountain to the west.

# Goggles for Protection from Ultraviolet Exposure

by Dave Winter, 257 Common Street,  
Dedham, Massachusetts 02026-4020 (617)326-6053

Moth collectors spend considerable time in proximity to fluorescent blacklights or mercury vapor lamps. These light sources radiate particularly in the ultraviolet-A portion of the electromagnetic spectrum, peaking at about 360 nanometers, a frequency particularly effective in attracting moths. Ultraviolet-A also has the ability to inflict eye damage. Absorption by the cornea results in a very painful burning and itching sensation, with a delay in onset of four to six hours, and usually spontaneous subsidence over a similar period of time. Radiation passed by the cornea is largely absorbed by the lens. This can result in gradual and premature development of cataract, an opacity in the lens, with significant loss of visual acuity, a problem no lepidopterist would welcome. Very little radiation traverses the lens to impinge on the retina, so that structure is ordinarily not at risk. However, anyone who has already had a lens removed for cataract, without a lens replacement, is at extra risk, as is anyone with a history of macular degeneration. If you already wear eyeglasses, and use plastic lenses, you are quite well protected from sources straight ahead of you, but not from radiation coming in around the periphery of your frames. Frames that slip a few millimeters down on your nose also let in a lot of radiation over the top.

Excellent protection against ultraviolet injury is available through relatively inexpensive goggles, which need to meet several particular criteria. The goggles should be:

- ¥- Comfortable, and roomy enough to accommodate your regular glasses. They should stay in position on your head.
- ¥- Designed for complete peripheral protection.
- ¥- Able to screen out 100% of UV radiation.
- ¥- Able to reduce visible radiation moderately.

Goggles meeting these standards are available at a reasonable price from NoIR Medical Technologies, P.O. Box 159, South Lyon, MI 48178. Six models tested were assessed, and the results are listed in the box, below. (all are rated as screening out 100% of the ultraviolet light). "Percent" column indicates percent transmission of visible light:

For work around Mercury vapor as well as blacklight, I would choose U50 (yellow); if you use only blacklight, then U48 (light amber) or U20 (light gray) are fine. The polycarbonate lenses scratch easily if not cleaned properly by flushing and patting dry. Hard-coating is available for about \$3.25 extra, and an adjustable headstrap for about \$10.80 extra, above the base price of about \$12 per pair for the goggles (as of February 1995).

# Beer In The Bait

by William D. Winter, Jr.,  
257 Common Street  
Dedham, MA 02026-4020

Since the nineteenth century, "stale beer" has been regularly listed as a major ingredient in bait for sugaring or for moth and butterfly traps. What may have been the basis for this recommendation, and is it still valid at the end of the twentieth century?

The beer undoubtedly contributed to the overall aroma of the bait concoction, the medium through which the presence of the bait is brought to the attention of the passing Lepidoptera. This element is unarguably still present, although its qualitative resemblance to the product of 150 years ago

**(Continued on next page)**

These goggles may be available through your local optician. NoIR does not retail in the ordinary sense, but the following approach should work, according to the contact person: call 1-800-521-9746 (eastern time zone), ask for Iris Prince and for a current price quote on the model of your choice. Then mail in a check (? plus tax and shipping and handling) accompanied by a slip from your physician, saying something such as "Please provide one Model \_\_\_\_ UVShield for protection against avocational exposure to UV." This should work — and I don't get a commission!

Code/Name	Percent	Comment
U20 (light gray)	58	too bright for Mercury vapor; OK for blacklight, little ontrast.
U21 (medium gray)	32	comfortable for Mercury vapor; little contrast
U22 (dark gray)	13	comfortable, but too little visible light
U48 (light amber)	53	fairly comfortable for Mercury vapor; good contrast
U50 (yellow)	65	comfortable, good contrast
U60 (orange)	49	comfortable, good contrast; but cost is double

## Beer In The Bait (continued)

would be hard to assess, other than to say that the aficionados of current home brews assert that their products have far more olfactory appeal than the excretions of commercial breweries.

Beyond the beer, the other ingredients of most baits are crudely refined sugars and rotting fruits, also sources of sugars. Under the influence of yeast-induced fermentation, these sugars are converted into alcohol and other by-products, heightening the aroma and the attractiveness of the bait. It can be assumed that nineteenth century stale beer was a reliable source of yeasts, brewers' yeast being the prime mover in beer production.

But what about the late twentieth century? A spokeswoman for the Miller Company indicated that modern beer is thoroughly filtered to make it crystal-clear (with recovery of millions of pounds of yeast to sell for cattle feed). It is then pasteurized to keep it clear. Culture experiments (Winter, unpub.) performed on freshly opened Budweiser (U.S.), Molson (Canada), and Beck (Germany) beer yielded no growth of yeast from the freshly opened products, nor when recultured after sitting loosely covered for six weeks at room temperature, presumably long enough to qualify as stale. No home brews were available for comparable testing. It is safe to say that current commercial beer is not a reliable source of viable yeast!

Recorded recommendations include advice to add a pinch of bakers' yeast to initiate fermentation in the bait mixture, and advice against this practice, stating that addition of yeast encourages subsequent mould growth, with degradation of the bait (Koehn, Southern Lepidopterists' News 10:11-18, 1988). The latter is an erroneous

## Computerized Science Curriculum Based on the Monarch

courtesy of Floyd W. Preston,  
832 Sunset Drive, Lawrence, Kansas 66044-2373  
(913)843-6212

According to a February 16, 1995 article by Kim Imdieke in the University Daily Kansan, the student newspaper at the University of Kansas, the monarch butterfly will be the centerpiece of a computer curriculum to teach science to middle and high school students.

The curriculum is being developed by Chip Taylor, a Professor of Systematics and Ecology at Kansas University, Acting Head of the Entomology Department, and a member of the Lepidopterists' Society. Taylor has received a

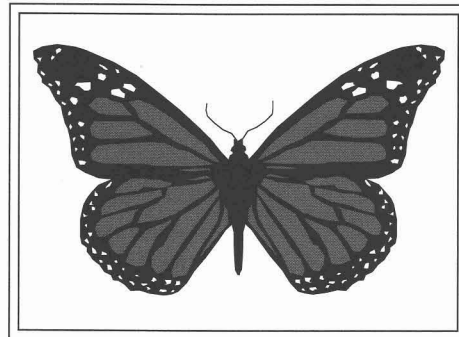
\$475,000 grant from the National Science Foundation for this project. It will be available on the Internet, connecting it to computers around the world. Because the World Wide Web allows graphics, text, and sounds to be transmitted through the Internet, it will be a multi-media educational experience.

Middle and high school students will learn about butterfly life cycles and migration, along with the pertinent terminology, using a multi-disciplinary approach. It is designed based upon questions, so teachers will not have to tell students everything, but will help the student find out for themselves. Taylor hopes that it will help show students how complex and interconnected the world is.

The project will eventually evolve into the publication of a compact disk that will store the information for the monarch butterfly based curriculum.

Taylor hopes that it will also develop into an electronic student journal, where students from around the country could send science reports via the Internet to his lab. He could then publish the reports on Monarch Watch, his own Internet Home Page.

Monarch Watch now includes video clips of the butterflies in Mexico, and the milkweed plants that they feed upon. It developed from a 1992 project of Taylor's, in which elementary and middle school students were asked to capture and tag monarch butterflies as they migrated south for the winter. Last fall about 500 schools participated, perhaps about 20,000 students.



interpretation of the facts. Yeast and moulds are related, but are as distinct as are sphingids and geometrids. Mould spores are ubiquitous in the air and quickly contaminate and colonize any substrate containing moisture and carbohydrate, sometimes ruining a batch of bait.

Recommendation? Use beer for aroma if you like, but don't count on it as a source of yeast. Add a pinch of brewers' yeast if you can find it, but bakers' yeast (grocery stores, inexpensive) works just as well. Two or three days at moderate or warm temperatures will be long enough for good fermentation. Keep the cover loose!

## Butterfly Poachers

Press Release from the US Department of Justice, U.S. Attorney  
Northern District of California, San Jose Branch Office  
January 30, 1995

United States Attorney Michael J. Yamaguchi announced today that in San Jose, California, a felony plea of guilty was entered by the last of three men charged in December 1993 for conspiring to poach federally protected wildlife between 1983 and 1992 on federally protected lands (including National Parks, National Wildlife Refuges, and National Forests) and conspiring to trade and traffick in protected wildlife protected under the Endangered Species Act and the wildlife laws of Mexico. The plea was entered by Thomas W. Kral, 30, of Tucson, Arizona as jury selection was scheduled to begin in one of the largest poaching cases involving federal lands, and the first butterfly poaching case brought in the United States.

Thomas Kral, 30, of Tucson, Arizona, pled guilty this morning to conspiracy to violate the wildlife laws of the United States, and faces a maximum penalty of five years in federal prison, a \$250,000 fine, a term of supervised release, and a \$50 mandatory penalty assessment. Kral also agreed to forfeit to the United States all of the 1,637 rare, protected and endangered butterflies seized under search warrant by US Fish and Wildlife Service investigators in June 1992. Sentencing for Kral is set for April 26, 1995 before United States District Judge James Ware in San Jose.

Among the specimens seized from Kral and described in the Indictment that were the following:

158 specimens protected under the Endangered Species Act (including such San Francisco Bay Area rarities as the Bay Checkerspot, the San Bruno Elf, Lange's Metalmark, and the Mission Blue);

298 specimens from the National Wildlife Refuge System (including Lange's Metalmarks, from the Antioch National Wildlife Refuge, an area specifically set aside for protection of that species of butterfly);

126 specimens from the National Park System (including the Grand Canyon and Yosemite National Parks, Golden Gate National Recreation Area, and Point Reyes National Seashore),  
--63 specimens from National Forests, including an area closed in a Colorado National Forest to protect the delicate habitat of the Uncompahgne fritillary butterfly, 460 specimens protected by international treaty with Mexico, and  
--217 other specimens from state and county parks.

On December 7, 1994, co-defendant Marc L. Grinnell, 40, of Santa Rosa, California, pled guilty to the same charge; on December 14, 1994, co-defendant Richard J. Skalski pled guilty. Both men agreed to forfeit their collections of rare, protected, and endangered wildlife seized under federal search warrants from their homes in the summer of 1992 by US Fish and Wildlife Service Special Agents. The case came to light when the US Fish and Wildlife Service learned from a Stanford University biologist that Richard J. Skalski was poaching a rare species of butterfly found in Grand Canyon National Park.

Adding the number of butterflies to be forfeited by Kral to the butterflies which co-defendants Grinnell and Skalski will forfeit yields a total of more than 2,012 butterflies protected by law in the US and Mexico that the defendants took during the nine years that the conspiracy operated. There were more than 210 butterflies protected under the Endangered Species Act (ESA), which were taken or traded for commercial gain. The ESA, enacted in 1973, protects species in danger of extinction from any harassment, capture or harm.

## If You Value Your Freedom

by David V. Holmquist,  
8 Roane Circle, Little Rock,  
Arkansas 72204-3547

### Attention Lepidopterists' Society Members:

If you value your freedom in exchanging specimens it is time to write your Federal Congress Representatives. During 1995 there are proposed changes concerning the importation, exportation, and transportation of wildlife. These would greatly affect the scientific and avocational collecting of Invertebrates, including Butterflies and Moths. Let your views be known. Perhaps a letter using the format shown following this note would be of help. For more information about this matter please contact:

J. Benjamin Ziegler, Ph.D.  
64 Canoe Brook Parkway  
Summit, NJ 07901-1434  
(908)273-2288

### Suggested Letter Format:

Honorable Senator or  
Representative:

It is very much desired that you vote AGAINST any expansion of the Endangered Species Act when it comes to Invertebrates or any rules concerning the importation, exportation, and transportation of wildlife. Such Acts would involve such a myriad of species that the laws



## Freedom (Continued)

involving them would be a regulatory nightmare. All that would be accomplished would be a huge amount of red tape and paperwork. Any wildlife professional knows that species survival is based upon retaining and improving habitat, not increasing paperwork and regulations. Does it make sense to devote our financial resources to policing, when they could be used to directly help the habitat? In addition, individuals with a serious interest in invertebrates could be really harmed by such Acts. Some of these individuals are very likely to be the same as those involved with our Wildlife Resources in the future.

The November elections, The media, and even some political party Contracts with America are calling for less not more Government. Is the proposed expansion of listings the will of the Governed? It's hoped you agree and understand this expressed concern. From your position, turn back what is not needed and even very harmful. Vote against such laws. Please keep me informed of your opinion and actions.

Sincerely, A Concerned  
Voting Citizen



July 1995

## Governmental Regulation of Lepidopterists

by J. Benjamin Ziegler,

64 Canoe Brook Parkway, Summit, NJ 07901-1434

courtesy of David V. Holmquist, 8 Roane Circle, Little Rock, Arkansas 72204-3547

*There is a tide in the affairs of men,  
which, taken at the flood, leads on to fortune;  
Omitted, all the voyage of their life  
Is bound in shallows and in miseries.*

— Julius Caesar, William  
Shakespeare

Is a new regulatory ball-game being played in Washington? Is there light at the end of the tunnel?

It has been reported publicly in print that Representative Don Young (R-Alaska) will chair the newly renamed House Natural Resources Committee (HNRC) which plans to report out an Endangered Species Act (ESA) reauthorization bill within the first six months of the 104th Congress. Lepidopterists' Society member Ralph E. Wells of Jackson, California has informed me that Representative Richard Pombo (R-California) will chair a subcommittee of HNRC, which will concentrate on reforming ESA and that Ralph's own Representative Doolittle is a member of that subcommittee.

According to the source mentioned above, Representative Young has made the following indications or statements either by direct quotation or by paraphrase: (1) reauthorization and reform of the ESA, and drafting legislation on wetlands, are among the top priorities of HNRC; (2) HNRC will attempt to codify in the letter of the law the original intent of the ESA; the resulting bill will be almost identical to HR 1490, originally submitted to the 103rd Congress by Representative W.J. Tauzin (D-La); (3) the HNRC bill will insist that no species would be listed (as threatened or endangered) without formal biological, scientific review by e.g. Federal agencies such as the National park Service or the Fish and Wildlife Service followed by external peer review of the hard science essential for validating the listing; (4) no subspecies ("locale' endangered species") will be listed; (5) efforts will be made to help listed Threatened species to recover; (6) with regard to wetlands protection, HNRC will push for the hitherto non-existent clear-cut

and detailed legislation dealing solely with wetlands and supplanting the currently used mixture of regulations implementing various federal requirements; (7) property rights will be the keystone issue that will affect both ESA reauthorization and wetlands protection; (8) HNRC will review the activities of and need for several agencies under the control of the Department of the Interior, e.g. the U.S. Fish and Wildlife Service, the Army Corps of Engineers, the National park Service and the Bureau of Land Management; some of these agencies may not have been reviewed for 40 years and they will be asked whether they have followed the original intent of the law or whether they are instead writing regulations based upon some agenda - driven interpretation of poorly written statutes; (9) HNRC will work with Interior Secretary Bruce Babbitt who, although having a more liberal environmental policy personally, is viewed as a pragmatist who understands how things are going to work.

Time is of the essence and now is the time to redouble our efforts to bring about a return to regulatory sanity. Many lepidopterists believe that ESA should not be applied to invertebrates in general and to insects in particular, especially as regards restrictions on ordinary scientific and avocational collecting. I urge you to make your opinions known to those persons in government with whom you might have influence, e.g. your own Representatives and Senators, Secretary of the Interior Bruce Babbitt, the HNRC members mentioned above or others, and I also encourage you to urge all of your like-minded associates and colleagues to do the same. On the bottom line, absent a forthright and determined effort to defend our legitimate interests, we shall be doomed to be hopelessly entangled in a snarl of bureaucratic red tape.

# Commentary on U.S. Fish & Wildlife Service Regulations

by Harry Pavulaan, 494 Fillmore Street, Herndon, VA 22070 (301)713-2829

As recent actions indicate, and reflected by several articles in recent issues of the News of the Lepidopterists' Society, a (no doubt small) handful of regulators within the U.S. Fish & Wildlife Service (USFWS) have decided to end natural history research in this country by any means possible, and have effectively halted all international transportation of specimens into the U.S. and most interstate movement of same. These regulations not only adversely effect studies by non-professionals, but impact studies by professionals as well, apparently even including studies currently being done for USFWS itself! Reported correspondence, communications and meeting with the USFWS enforcement authorities has left one colleague describing a "cowboy" mentality, and has shown incredible inflexibility by the agency to consider outside suggestions. All this amounts to outright harassment of the natural science research community. For natural history sciences to survive in the leading democracy of the world, either cooperation and accommodation must be secured, or a "line" has to be drawn, and even the most "reasonable" line has long been crossed by the USFWS.

I would like to pose a question and challenge to the leadership and membership, of not only the Lepidopterists' Society, but also to every national and international organization dealing with the natural sciences. How can a handful of government regulators get as far as they have gotten without so much as raising an eyebrow from Congress, causing an uproar in the scientific community, or attracting public attention? Very simple: most societies are relatively small, containing several hundred members each, at best. We are not organized collectively, and most of us are either too apathetic to do anything about it,

or are law-abiding and will obediently take whatever is dished-out to us. Further, natural history is seen more as a children's activity by the general public, who can't see what all the fuss is about. Natural history research and specimen exchange does not generate a whole heck of a lot of money (despite USFWS claims), thus does not contribute more than an infinitesimally small amount to the GNP of this country. And, Congress has had more important things to do, than to listen to our petty individual complaints.

The few articles and letters written in the News so far have simply informed us of more and more regulations and restrictions dumped upon us by the USFWS and states (who's laws have been made the business of the federal government by the Lacey Act), not to mention that it is illegal to receive even common specimens from most foreign countries without some sort of costly permits bordering on extortion. We are just talking to ourselves! Letters to the USFWS get NO sympathy. Perhaps most of our members don't realize it yet, but current laws (and USFWS interpretation of such) criminalize transfer (gifts or exchanges included) of any specimens collected on any type of Federal land, no matter how common they are. This is now interpreted as commercial activity, illegal when conducted with specimens taken on federal land. This basically wipes out all serious collaborative natural history research in most western states, particularly Nevada, and especially when specimens often need to be sent to specialists across the country or globe for identification, electrophoresis, or other lab or systematic work. Work which cannot be done by individual researchers with limited budgets or facilities. Very soon, it will be illegal to send

any live or dead natural history specimens through the mail, and across state lines. Thank god for private delivery services! With even GIVING a natural history specimen to someone else interpreted as "commercial activity", you will soon have to file for a commercial license to exchange butterflies, and file IRS forms to complicate your life even more. Most member's activities have been deemed criminal, and even more frighteningly: retroactively. And you are guilty until you prove yourself innocent! Something is definitely wrong here.

Some short-range implications will have an immediate chilling effect on published research. What researchers (be they professional, or more importantly, amateurs) would risk publishing articles that indicate collecting locations within Federal lands, for voucher specimens that were donated to a museum? Given to a co-author in another state? By law, unless one obtains the commercial permit necessary for parting with their specimens (at considerable expense), he or she would have to personally retain any voucher specimens in connections with research...essentially forever. Thus, many academics will have to convince their institutions that they require funds for commercial-activity permits in connection with their research on federal lands. Museums are moving toward accepting specimens only when accompanied by appropriate legal documentation. Why bother to donate specimens to a museum? The point is, USFWS can easily use published evidence against any researcher that has not thoroughly researched every possible required permit for collecting, transporting, or GIVING away specimens. Such an endeavor could incur great effort, expense, and time. From the standpoint of many, why bother?

## Commentary on U.S. Fish & Wildlife Service Regulations

The long-range implications of this policy are frightening. What happens when zoological science has effectively been killed, and we enter a natural-scientific Dark Age? Will USFWS then shift it's attention to botanical science? Imagine the specter of agents raiding flower beds, closing down flower and garden shops and mail-order firms, confiscating the collections of public and institutional gardens. This is reportedly happening right now with butterfly collections; a few outside the Lepidopterists' Society know what's going on. While seeming far-fetched, but technically quite possible under the current scenario, would be automobile-radiator inspections at the state line, enforcement officers waiting with summonses.

Folks, wake up and smell the coffee. We are barely fighting for our existence and are losing fast. Unless the Lepidopterists' Society calls a "time out" on normal society activities, and takes immediate action, in unison with other natural science organizations (such as the well-respected Entomological Society of America) and takes an active political role right now, I predict the demise of this society and others, along with the study of natural history science in this country within a few short years. Youngsters will be well-warned that what was once an enjoyable and productive hobby, and contributed to our knowledge and ultimate betterment of mankind, has now become a criminal activity. How are children supposed to enter the field of biology without being allowed the initiative of obtaining their own biological specimens from friends in other states or countries? Anybody foolish enough to enter the field of biology in college had better be prepared to get a minor in legal studies. Biological field science will be left to a small and diminishing number of degreed state biologists of those working with organizations

such as the Nature Conservancy, with limited time, limited budgets, and most with knowledge limited to general natural science. To a shrinking circle of university and institutional professionals who will continue to crank out technical papers that average people without a higher degree in molecular chemistry can't understand. And to a rapidly growing number of generalist-naturalist, anti-collecting activists, who will help shape public opinion and legislation by their activities.

Thus, I challenge the leadership of the Society to become more active in our defense, and to rally the membership into action. How? Perhaps members should first be polled about what direction the Society should take: continue with business as usual and slowly watch as the study of Lepidoptera dies, or by DOING something to defend ourselves? I know there was a recent survey, but the situation over the past year has changed dramatically. Instead of writing letters to ourselves and to the USFWS, initiate a letter campaign to Congress. Perhaps join with other natural science organizations, and launch a massive petition drive. If relaxation, alteration, or elimination of many USFWS regulations will be a goal, then we may now have a more sympathetic ear in the Republican-led congress. The current congress is out to eliminate much government regulation, even declaring a moratorium on some regulations, so we may have a chance to make ourselves heard. Government agencies are being threatened with elimination or may be stripped of much of their functions. Perhaps USFWS functions and regulatory process should be reviewed as well. Also, how much taxpayer money was spent on the recent grand jury probe of the three western collectors charged with poaching and conspiracy? The society should print

the names and addresses of congressmen and senators to whom we can write. Who are all the new congressional committee members, reviewing the government's budget and regulations? What is Congress doing in our favor? With continued budget cuts, and lots of more serious crimes being committed against humanity and nature, surely our government could focus it's efforts in more critical areas that plague our society and sap our resources such as drugs, violence, and the like.

Priorities have to change in order for natural science research by non-professionals to continue. While protecting lower-order living entities is a noble concept, and should be done in some cases, laws need to be changed to protect dwindling habitats, promote conservation of resources, restore populations of organisms, and recognize the ACHIEVEMENTS of avocational entomologists. I don't advocate unlimited, unrestricted collecting, but just when we need to learn much more about the earth's ecosphere, authorities such as the USFWS want to take away our tools to do so. In the meantime, perhaps the North American Butterfly Association has the right idea. The only safe way to study a butterfly (at least from a legal standpoint) will be to look at it from a distance, through binoculars. And who knows, perhaps soon you will be denied permission to do even that, under the premise of disturbing wildlife.

[Editors' note: If anyone or any group of members wants to design another opinion poll (one or two pages) to circulate via the News, we are willing to include it in an issue.]

# Fish and Wildlife Service Agrees to Modify Regulations

[reprinted from ASC Newsletter, February 1995/vol. 23, no. 1,  
with permission from the Association of Systematics Collections]

The Fish and Wildlife Service has agreed to modify the regulations and policies that had become increasingly problematic to ASC members and field biologists over the past few years. Enforcement of FWS regulations had appeared to diverge from the spirit of the law, punishing scientists for trading in unidentified species, lack of collecting permits for old specimens, and other technicalities. Some FWS officials had discouraged scientists from using the mails to ship specimens, and harassment of a few scientists had been reported. We believe that the proposed changes discussed at recent meetings of ASC and FWS representatives will solve nearly all of the problems of the past concerning regulations that do not impact endangered species but that hamper scientific work. Issues addressed include import-export of non-endangered biological specimens, migratory bird collecting permits, salvage permits, and treatment of old specimens that lack permit documentation. Playing a major role in resolution of the import-export matters were more than 100 letters sent by scientists and museum administrators to the FWS in response to a Federal Register notice in November. ASC had convinced the FWS to extend the deadline for comment, so that more scientists could respond.

ASC and our members had become concerned that FWS regulations and policy were interfering with the normal international shipment of scientific specimens for exchange and for study. New regulations proposed in November appeared to make the situation worse. In addition, ASC and the Ornithological Council (a coalition of North American Ornithological societies) were concerned about other portions of

the wildlife regulations, including the limits to the number of birds that could be taken by permit under the Migratory Bird Act. Our discussions with FWS indicates their willingness to liberalize this policy.

The FWS had used four general principles of their own in responding to our suggestions: 1) Streamlining of regulations; 2) Biological foundations for regulatory actions; 3) Standardization across regions; and 4) Flexibility in case of unusual circumstances. However, when policy issues are in debate within the agency, the FWS always wants to err "on the side of the species."

**Import-Export:** FWS will issue a new Federal Register notice amending the rule. It will contain these importance changes: Scientific institutions and scientists will be given an exemption from inspection, clearance, and designated port requirements for imports and exports. The rule will specifically state that use of the mails is allowed. Scientists will be given 6 months to declare the specimens using the lowest taxonomic level feasible. This covers scientific exchange of specimens, loans, importation of new materials, etc. as long as no CITES-listed or endangered species are involved. Current procedures will not change for listed species (and ASC requested no changes).

ASC and the FWS have yet to work out details as to how to authenticate scientific institutions and individual scientists, but the definition of CITES-certified institutions, and those scientists associated with them, may suffice. If not, some kind of accreditation might be necessary. We are examining whether any legitimate scientific institution in the US would be unable to qualify for a CITES registration,

making a separate accreditation process necessary.

**Migratory Birds:** Proposed new procedures and regulations will allow for institutional collecting permits that will liberalize the taking of migratory birds for scientific study. The taking of up to 50 birds of non-listed species (those not occurring on national or state lists of species of management concern) will probably be allowed. We expect that one permit will be valid in all 50 states, allowing the taking of up to 50 specimens per year for the duration of the permit (probably three years). Annual reports will be required, but the due date will be moved to January 31st. The FWS will endeavor to improve its databasing procedures so that information on the permit application and annual report can be used to monitor the affect of scientific "takings" of birds and to obtain information on the total takes per species, nation-wide. A new rule covering these changes will appear in the Federal Register shortly.

We also expect liberalization of regulations covering cases in which individuals without permits bring salvaged birds to museums, but there must be assurance that the birds were not killed by the bearer.

**Other issues:** Permits for endangered species to be collected within the U.S. will be issued from the FWS Regions. FWS hopes to move to a single application point for all types of permits, and this point will be within the regions, with all regions using the same guidelines.

These new regulations and policies of the FWS will greatly improve relations between scientists and the FWS, but ALL ASC MEMBERS NOTE: Successful

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implementation will require absolutely scrupulous adherence to the letter and spirit of the law. If it is found that scientists go beyond the law, privileges to collect, transport, and house biological specimens can again be restricted. Strict self-policing will be required by our collections institutions! In particular, we were warned that directors and department chairs must enforce ethical behavior and adherence to all laws and regulations by their staffs, and professors must thoroughly instruct their students as to the regulations and the seriousness with which they must be taken.

ASC and the Ornithological Council will prepare an umbrella response to the revised rules expected out at the end of January. We expect that our response will be favorable and that no mass letter-writing will be required. We hope for a quick turn-around time with few complications.

The FWS will prepare fact sheets that will provide a step by step permit process for each type of activity and permit requirement (e.g., interstate shipment, international shipment, endangered species collecting, bird salvages, etc.). ASC will review the draft fact sheets to insure that all logical permutations of activities of biologists will be covered.

ASC will continue to send scientists and collections managers to training courses given to FWS agents. Two herpetologists will present a four-hour course at the next session in February. This activity is co-sponsored by the National Museum of Natural History, and has had excellent reviews by FWS agents. We will also continue to invite FWS agents to ASC's annual meetings, and we encourage other scientific societies to do the same.

In the future, the Ornithological Council may work with the FWS regions to improve the accuracy of listings of bird species of management

## Fish and Wildlife Service Update on Regulations and Permits

by K. Elaine Hoagland [excerpted from ASC Newsletter, April 1995, Vol. 23, No. 2, with permission from the Association of Systematics Collections]

### Regulations on Import and Export of Wildlife

The supplement to the proposed Rule on 50 CFR 13-14 was published in the Federal Register, Vol. 61 No. 56, March 23, 1995 (pp. 15277-15279). The comment deadline is MAY 22, 1995. At the end of the comment period, FWS will redraft the Rule taking into account all the comments received on this AND the

concern. If interest is high enough and funds can be found, ASC may work with the FWS, NOAA, and the National Biological Survey to develop expert systems packages to assist FWS agents and others in quickly identifying species of management concern.

The progress that we made on the FWS regulations resulted from high- and mid-level meetings with FWS officials over the past year, backed by the letters of many systematists and institutional leaders. We thank all those who wrote and took time to attend meetings.

ASC has learned that Marshall P. Jones, Jr. is now Assistant Director, International Affairs, of the FWS. He was formerly head of the Management Authority.

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previous comment solicitation. As promised to us by FWS, the Rule allows shipment of dead, non-listed and non-specially permitted specimens to and from "accredited" scientific institutions and individuals (as defined in the Rule). The new proposed Rule explicitly allows use of the U.S. mails. It exempts scientific specimens being imported or exported by accredited scientists or individuals from clearance requirements. A declaration form need not accompany the shipment, but must be provided to the FWS within 180 days, using the "most accurate taxonomic classification reasonably practical."

In our comments, ASC will suggest streamlined computerized filing of this information in batch form (e.g. for large institutions, a download of loan and exchange transactions could be provided twice annually). This could be an administrative change once the FWS moves into electronic automation of its permit system, and would not have to be a part of the final rule on 50 CFR 13-14. The ASC Biosystematics and the Law Committee, including FWS representatives, have been discussing the need to automate the permit process, and FWS is receptive but may not be able to move immediately. We do not think that FWS will agree in the near future to

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## **Fish and Wildlife Service Update on Regulations and Permits (continued)**

eliminate the need to provide them information on our transactions, even though in our opinion, the information on loan transactions has little use to them.

Specimens of species that require a special permit under various special US wildlife conservation laws (e.g. CITES-listed species, those listed under the Endangered Species Act, Marine Mammal Protection Act, and so forth) do not fall under the newly proposed exemptions for scientists and scientific institutions. ASC will investigate the implications for material that requires permits under the Lacey Act.

### **Migratory Bird Permits**

ASC has also received a draft of proposed changes in permitting policies for scientific collection of migratory birds, issued by the Office of Migratory Bird Management, USFWS. The Migratory Bird Office is proposing changes on POLICIES, not actual regulations, so as soon as a final draft is issued, the policies will be in effect. Other issues may be addressed later. The changes are very favorable to scientific institutions, and are very much in line with our suggestions to the FWS.

Under the proposed policy, scientific institutions are allowed to apply for institutional general collecting permits. A listing of individual sub-permittees is to be appended to the permit; additions to the list can be submitted. The annual limit on collection of non-listed migratory birds would be standardized at 50 individuals per species per permit per year (although

direction). Individual permits for particular research projects would still be issued. One could apply for a permit to work in several FWS regions with a single application to one regional office.

Interestingly, the Migratory Bird Office has elected to identify "bona fide" scientific institutions differently from the Division of Law Enforcement's definition for its import-export regulations. Those regulations specifically mention ASC membership. For migratory bird purposes, a scientific institution would be one that "fulfills the conditions of" accreditation with AAM or registration with CITES, although it would not necessarily have to be formally accredited. ASC is not sure how an institution would demonstrate that it fulfills such conditions unless it has gone through the accreditation process. ASC was not mentioned in the Migratory Bird definition because we suggested that the FWS adopt the CITES registration rather than a notion of ASC accreditation. We will suggest that the Migratory Bird Office and Enforcement Division get together on a common definition, if at all possible.



## **U.S. Fish and Wildlife Service Response to Griffin's Comments On The Closure of Bonanza King Mine Canyon to Butterfly Collecting (continued)**

**(Continued from page 74)**

section of the range, other than the one known location, the U.S. Fish and Wildlife Service would appreciate specimens, records, or other documentation. Recognizing the appeal of collecting new specimens from new locations, the U.S. Fish and Wildlife Service hopes Mr. Griffin would be able to provide full verification from his pre-Desert Protection Act collecting trips. Knowledge of new populations would benefit ongoing efforts by the U.S. Fish and Wildlife Service to monitor the status of this rare butterfly.

The U.S. Fish and Wildlife Service would welcome any new information on specific locations, threats, and current population status from Lepidopterists' Society members, or other individuals knowledgeable of the Martin's swallowtail butterfly. Please address correspondence to the Field Supervisor at the address listed under the title, above.

# Status of Martin's Swallowtail: Another Perspective

by Jack N. Levy, Ph.D., Research Associate, Entomology Section, Natural History Museum of Los Angeles County, 2411 Brigden Road, Pasadena, California 91104

During the past year there has been considerable discussion regarding the status of Martin's swallowtail butterfly (*Papilio indra martini* Emmel & Emmel), known only from portions of the Providence Mountains in eastern San Bernardino County, California. Discussion has been stimulated by the indictment of several Lepidopterists for poaching the related Kaibab Swallowtail (*P. indra kaibabensis* Bauer), and by the closure of Bonanza King Mine Canyon to collecting. Interest in this issue is evidenced by such articles as those by Sam Sun [News of the Lepidopterists' Society No. 2, 1994; Network (newsletter of The Lorquin Entomological Society) Vol. 5(5), 1994], and by Bruce Griffin (*On the Closing of Bonanza King Canyon to Butterfly Collecting*) and Anonymous (*Butterfly Smuggling Case*) (both News of the Lepidopterists' Society No. 1, 1995).

The most accessible areas in which Martin's swallowtail butterfly has been found are Gilroy Canyon and Bonanza King Mine Canyon, both on the eastern slope of the Providence Range. Gilroy Canyon lies almost entirely within Mitchell Caverns State Recreation Area; all wildlife, including Martin's swallowtail, has formal protection within this unit of the State Park system. Thus, Bonanza King Mine Canyon, which until recently was on lands managed by the Bureau of Land Management, was the principle source of "legal" specimens for collections. With the creation of the Eastern Mojave National Preserve earlier this year, Bonanza King Mine Canyon and other portions of the Providence Mountains outside the State Recreation Area came under jurisdiction of the National Park Service. In most National Parks, insects are protected from collecting

except under special permit; collectors should probably assume that collecting without a permit is now illegal in this area, unless the National Park Service announces otherwise. Thus, Martin's swallowtail is now protected from collecting throughout its entire known range.

During the past three years, I have been attempting to gather data bearing on the distribution, biology, and population status of Martin's swallowtail butterfly and of its larval host plant *Lomatium parryi* (Watson) Macbr. One of the goals of this study has been to estimate population size. Because of the very rugged terrain of the Providence Range, and other factors, a mark-recapture approach to estimating population size for this butterfly seems impractical. I have therefore adopted the approach of monitoring all of the host plants within a delimited area for the presence of eggs and larvae, and extrapolating from the numbers of individuals in that area to an estimate of total population size. I would like to emphasize that I consider the conclusions from this work to be tentative, in part because the data sets are small, and in part because the validity of assumptions upon which the approach relies merits further testing.

In 1993, I established a study area in Gilroy Canyon, where I have been monitoring the numbers of eggs and larvae of Martin's swallowtail during the Spring (presumably major) flight period of the butterfly. Because the areas within which *L. parryi* grows are almost entirely within the Pinyon-Juniper zone, and because this zone can be identified and measured from aerial photographs, the size of this zone has been taken as a maximum estimate of available habitat area. However, ground

surveys have shown that the plant is absent from much of the area, and in particular is uncommon on non-marine (non-limestone) strata and on south-facing exposures. Ground surveys have also indicated that in many areas where *L. parryi* does grow, it is utilized little if at all for ovaposition by *P. indra martini*. The study area was chosen in part because it was known to contain *L. parryi* plants, and it was known that the plants in this area were used by *P. indra martini* for ovaposition. Because of the manner in which the study area was selected, extrapolating from the population size within the study area to an estimated population size for the total available habitat would tend to overestimate the total population size.

It could be that certain individual larval host plants and possibly certain areas in which the plants occur are preferred sites (areas) for ovaposition, and there is some evidence to support such contentions. In particular, Bonanza King Mine Canyon appears to be a favored area for ovaposition, since collectors report removing on the order of 80 eggs and larvae in each of several recent years, a number considerably in excess of that which I have been able to locate in the entirety of Gilroy Canyon (the population density in Bonanza King Mine Canyon appears to be about three times that in Gilroy Canyon, based on numbers available). If there are other substantial "strongholds" of the butterfly outside the study area, the estimates based on population density could be underestimates of total population size. However, my own survey efforts in areas outside the study area, including other portions of Gilroy Canyon and other drainages on both the east and west slopes of the Providence Mountains,

# Status of Martin's Swallowtail: Another Perspective (continued)

have failed to locate other preferred areas.

The extrapolations from population size within the study area, including other portions of Gilroy Canyon and other drainages on both the east and west slopes of the Providence Mountains, have failed to locate other preferred areas.

The extrapolation from population size within the study area to that of the total available habitat has been done both on the basis of an "areas" comparison, and on the basis of a "length of drainage bottoms" comparison. The latter approach may be more appropriate, given the observation that *L. parryi* grows preferentially in drainage bottoms [e.g., Emmel and Emmel (1968) *Journal of the Lepidopterists' Society* 22(1), 46-52]. I have assumed that the average female Martin's swallowtail lays 100 fertile eggs during her lifetime. Estimates for the total number of adult pairs so derived may be summarized as follows:

	Basis of Estimate	
	Gilroy Canyon (study area)	Bonanza King Mine Canyon
Areas Estimate	100	300
Linear or Drainage Length Estimate	22	65

Note that the high estimate (300 pairs) assumes an average population density throughout the "available habitat" (entire Pinyon-Juniper zone) comparable to that of the Bonanza King Mine Canyon drainage bottom, the area of highest known population density. Even this largest estimate is small from the standpoint of conservation needs; if the smaller estimate (22 pairs) is more nearly correct, it seems clear that collection

of a few females each year could have a substantial impact on the population, as could collection of a hundred or more eggs and larvae. Even this estimate of 22 pairs could be an overestimate. It assumes that the average population density in all drainages is equal to that of the study area (and that there are no "strongholds" outside drainages), whereas only one drainage (Bonanza King Mine Canyon) is apparently higher, and many others have no eggs or larvae at all.

Data bearing on the population size of Martin's swallowtail in recent years relative to its "historic" size are scanty. Emmel and Emmel (*op. cit.*) reported collecting over 60 eggs of *P. indra martini* in Gilroy Canyon in a single day in May 1966. This is about four times the number of individuals found in this same canyon by this investigator in either 1993 or 1994, after repeated visits in both years. Collectors have commented on the apparent decline in numbers of Martin's swallowtail, but have tended to attribute the decline to a series of drought years. However, rainfall data for the Providence Mountains do not support this conclusion:

Year	Total Precipitation In Inches
1963	09.36
1964	04.55
1965	12.46
1966	05.33
1991	12.75
1992	19.61
1993	14.35
1994	04.36

The average annual precipitation over a period of about 30 years has been 10.75 inches. The years 1966 and 1994 were both years of low precipitation, and the butterfly was

apparently substantially more numerous in 1966. These two years were each preceded by a year of relatively high rainfall. Thus there is no apparent positive correlation between annual precipitation and population size of Martin's swallowtail butterfly either in the same year or the year subsequent to the rainfall measurement. Similarly, there is no clear correlation when precipitation is considered in three-month intervals (data not shown here). That weather can have a considerable impact on the Martin's swallowtail population, was underscored by a hailstorm on April 28, 1994, which apparently killed all of the immatures present within the study site on that date (one egg and two second instar larvae, an obviously small sample). The effects of other parameters, such as temperature, have been considered, but meaningful correlations will require monitoring the population over a larger number of years. So far, it does not appear from data of this study that the growth of host plants is significantly affected by rainfall patterns.

What can one conclude from these preliminary results? My tentative conclusions are (1) the population size of Martin's swallowtail butterfly is probably small, and possibly critically small; (2) the population size has probably been smaller in recent years than it was in the mid-1960's; (3) collecting might have a significant impact on such a population, but it has not been proven to have had such an impact; (4) weather might have a significant impact on such a population, but no appropriate long term correlation, let alone causal relation, has been demonstrated.

The closing of Bonanza King Mine Canyon to butterfly collecting by the Bureau of Land Management in May,



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1994, probably had little impact on collecting of Martin's swallowtail, as most of the eggs and larvae had apparently been removed by (at least) three parties of collectors who visited the canyon prior to the closure date. The practical question of whether collecting has a significant impact on the population of this butterfly may be a moot issue, given that it is (probably) now protected from collecting throughout its range. If collecting has had a significant impact, we might expect the population to show signs of recovery over the next few years. The results of continued monitoring of Martin's swallowtail butterfly may provide valuable insight into the potential effects of collecting of other butterfly species (or subspecies), for which collectors have assumed the existence of inaccessible and protected core populations. This is an important issue, given the increasing (and already substantial) number of butterfly species that are or should be considered "sensitive," in particular in California.

I would appreciate hearing from other Lepidopterists who have data bearing on the abundance, distribution, or biology of the Martin's swallowtail, or from those who may wish to volunteer as participants in an expanded monitoring program for the butterfly. It would be my personal hope that collectors and others would value the continued existence of each type of butterfly in the wild above its presence in their (or another) collection. Such a philosophy dictates that when there is a reasonable possibility that collecting could impact a butterfly population, we err on the side of caution. For those who like to have a tangible result of their field efforts, butterfly photography is a challenging and rewarding alternative to butterfly collecting, and photographs provide a preferable means by which a love for, as well as the conservation needs of, these wonderful creatures can be communicated to others.

## U.S. Fish and Wildlife Service Response to Griffin's Comments On The Closure of Bonanza King Mine Canyon to Butterfly Collecting

by Donald W. Steffeck, Acting Field Supervisor, U.S.D.I. Fish and Wildlife Service, Ecological Services, Ventura Field Office, 2140 Eastman Avenue, Suite 100, Ventura, California 93003

The Fish and Wildlife Service appreciates the opportunity to respond to the Lepidopterists' Society regarding the letter by Mr. Bruce Griffin of Tucson, Arizona. Mr. Griffin's letter (*News of the Lepidopterists' Society* No. 1, 1995) is in regard to the status of the Martin's swallowtail butterfly (*Papilio indra martini*), and the steps which led the Service to recommend the closure of Bonanza King Mine Canyon to the collecting of any part of the life cycle, or the host plant of the Martin's swallowtail butterfly. Bonanza King Mine Canyon is located in the Providence Mountains of the eastern Mojave Desert, California, on lands formerly managed by the Bureau of Land Management. The area is now under the jurisdiction of the National Park Service.

The U.S. Fish and Wildlife Service is required to make decisions based upon the best scientific and commercial data available. In response to a report that a rare butterfly, the Martin's swallowtail, was being threatened by illegal collecting on State lands and overcollecting on Bureau lands, the Service initiated a status review. The U.S. Fish and Wildlife Service solicited information on the population status, distribution, and known threats to the butterfly from several entomologists familiar with the species group, Service biologists, other agency personnel, published

literature, as well as butterfly collectors.

From these sources, the U.S. Fish and Wildlife Service received information that the Martin's swallowtail butterfly is only known to occur at three locations in the Providence Mountains. The host plant, *Lomatium parryi*, has a patchy distribution and is found in several canyons in the Providence Mountains and in other nearby mountain ranges. However, no Martin's swallowtails are known to occur in these other areas where the host plant is found. Occasionally, swallowtails have been found in nearby mountain ranges.

Because of the rugged terrain and limited vehicle access in the Providence Mountains and other nearby ranges, and a recognition that some collectors prefer to conceal their collecting locations, the Service considered the possibility that other populations of Martin's swallowtail may exist, yet remain undiscovered, or possibly unreported. No scientific, or otherwise verifiable, information was available to indicate that the Martin's swallowtail is more widely distributed. With the available information, the U.S. Fish and Wildlife Service moved forward with its assessment that the butterfly is very limited in distribution.

The U.S. Fish and Wildlife Service would agree with Mr. Griffin's statement that the population

## U.S. Fish and Wildlife Service Response to Griffin's Comments On The Closure of Bonanza King Mine Canyon to Butterfly Collecting (continued)

responds to "the usual interaction of climatic factors, predators, and parasites that regulate annual population activity." Fluctuations in population size as a result of such factors are considered natural. Such natural fluctuations would usually be of much greater magnitude than any effect due to collecting, for larger, more widely distributed populations. However, the Martin's swallowtail butterfly is very limited in distribution, and is susceptible to stochastic extirpation or other density independent population reductions in addition to natural population fluctuations. A recent study of one population of Martin's swallowtails by Dr. Jack Levy (see accompanying article on pages 71-73), documented low larval survivorship and low number of adults in his study site on State Preserve lands, which are closed to collecting. These results suggest that the recent extended drought period may have had substantial adverse effects on that population.

Thus, the butterfly may be more vulnerable to local extirpation or complete extinction due solely to natural causes or stochastic events. The effect of natural mortality factors on small populations may be further aggravated by the activities of collecting, which results in not only removal of adults, but of larvae and larval host plants as well.

In his letter Mr. Griffin stated that overcollecting is not a

problem for the Martin's swallowtail. However, no information was given to support his assertion. Attempted, and possibly actual, illegal collecting, recently occurred at least twice on State Preserve lands, where collecting is prohibited. Collecting pressure has been reported to be intense at times in the Bonanza King Mine Canyon, the most accessible of the three known sites. Collectors can pose a threat to a population because individuals may be unable to recognize when they are depleting a colony below the thresholds of survival and recovery, especially when they visit an area for a short period of time.

Given the popularity of butterflies as subjects of study and collection, recent reports of low larval survivorship, low number of adults, recent adverse climatic factors, and the limited number of known occurrences, the U.S. Fish and Wildlife Service determined that this butterfly may become threatened or endangered in the foreseeable future. In an effort to reduce threats to the species and avert the need for listing under the Endangered Species Act of 1973, as amended, the U.S. Fish and Wildlife Service worked with the Bureau of Land Management to close Bonanza King Mine Canyon to collecting of all life stages of the Martin's swallowtail butterfly, and its host plant.

In response to Mr. Griffin's assertions regarding the existence of additional populations in the western

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SUPPLEMENT TO THE CATALOGUE/ CHECKLIST OF THE BUTTERFLIES OF AMERICA NORTH OF MEXICO (Memoir #3). Clifford D. Ferris, editor, 1989. General notes, plus corrections and additions to the original Memoir #2. 1989. Members and subscribers: \$6; non-members \$10.

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