LOUISIANA NATIVE PLANT SOCIETY

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Under the direction of LNPS member Linda Chance, volunteers help with bog restoration in Kisatchie National Forest. See related stories on pages 3 and 7. (photo by Linda Chance)

Rare Orchid Restoration Project Uses Local Know How On USFS Lands

By Peter Nilles

The southern Lady's slipper orchid (CYKE) (*Cypripedium kentuckiense* C.F. Reed), standing up to two feet tall, and notable for it's yellow, 3-inch pouchlike lip (or labellum), is one of the most spectacular species in central Louisiana's flora. This very rare orchid is found in rich, moist woods on terraces and low slopes in small stream valleys of pine hardwood forests. Although it is found Virginia west to east Texas, and south to our sites in central Louisiana, it only grows in a few isolated regions, and is a rare find indeed for any outdoorsman. In fact, there are only two known sites, totaling 5 plants, on all of the Kisatchie National Forest's 600,000 acres. Louisiana's natural heritage program ranks the orchid as "critically imperiled (LNHP 2004)", globally it is considered "vulnerable to extinction throughout its range" (NatureServe 2001), and the USFS assigns it the protected rank of a regionally "sensitive" plant.

The decline of the Kentucky ladyslipper orchid most likely follows the impacts of European settlement, such as loss of habitat due to logging and grazing, non-native plant competition, wild hog predation, and illegal orchid collection. In fact, over the last twenty years, 50 percent of known sites throughout the CYKE's range have been eliminated (Medley 1985). Medley (1985) says that "…most of the [previously known] Louisiana, Oklahoma, Texas, and many Arkansas populations are extirpated [locally extinct, but present in other parts of its range]."

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The Orchid Hunter
It is in the grim context of the southern Lady's slipper's declining populations that an exciting development took place on the Kisatchie N.F. in 2004. Kevin Allen, an amateur botanist with an interest in native orchids, collected a southern Lady's slipper seedpod on Kisatchie N.F. lands. This was not a chance discovery: for some time Kevin had monitored populations of this orchid on forest land. Kevin was repeatedly disappointed in his attempts to find the plant in flower, probably due to naturally infrequent flowering cycles. But persistence paid off: after three years of monitoring, Kevin found a flowering Lady's Slipper on the KNF's Catahoula ranger district, and caused it to be self-pollinated. Weeks later he was rewarded with a seed pod, which he had a USFS permit to collect.

Orchid seedpods contain thousands of powder-grain sized seeds that are virtually impossible to grow outside of a lab. Consequently, Kevin sent the CYKE seed pod to orchid growing experts at the Spangle Creek Labs in Bovey, Minnesota. The seeds were found to be fertile, and the lab successfully grew them out to seedlings in agar medium using tissue culture methods. This viable orchid seed now represented an opportunity to revegetate forest lands with this dramatic orchid.

It is critical that a revegetation project of this nature use locally collected seed. Seed from remote sites would not carry the genetics of local orchids: the specific signature of thousands of years of evolution in central Louisiana. This is what made Allen's work with local orchid populations so important to the Kisatchie N.F.

The Kisatchie National Forest
Kevin Allen met the Peter Nilles - the KNF's forest botanist - and described his vision of orchid restoration. Nilles was interested, and set out to secure the resources needed to undertake the restoration. Nilles sought out the help of the Cental Louisiana Orchid Society: a group of local orchid growers based in Alexandria. His goal was to see if they would be interested in "growing-out" the seedlings if they could be purchased. Growing out the seedlings would require sophisticated greenhouse facilities and expert care for up to 18 months. Nilles pitched his idea during a presentation at the January 2006 monthly CLOS meeting.

The Central Louisiana Orchid Society
Although CLOS members usually work with horticultural orchids of exotic origins, CLOS enthusiastically agreed to participate in the CYKE project, committing expertise and facilities worth over $10,000. But that was not all. Byron McGraw, CLOS founder, was aware of a funding source from a regional orchid organization: the Southwest Regional Orchid Growers Association (SWROGA). Providentially, this new grant challenged local orchid societies to involve themselves in native orchid conservation projects. Nilles, McGraw and Jim Barnett (a CLOS member and retired USFS-SRS director of research) wrote a grant proposal and submitted it to SWROGA on February 22, 2006. The response was positive: CLOS was awarded the first ever SWROGA grant in the amount of $1390.00: enough to buy 200 CYKE seedlings. The final piece of the puzzle had fallen into place.

Nilles took the shipment of seedlings from Sprangle Labs on May 19th, and distributed them among 4 CLOS growers and Kevin Allen (who is still involved with the project). Results thus far are better than anticipated: over 95% of the seedlings have successfully established themselves and already grown to over 3" in height. The final step will occur 18 months from now, when Kentucky ladyslipper orchids are returned to the USFS lands where they have grown for thousands of years.

Time will tell if – working together - a student, a local orchid society, and the U.S. Forest Service, can restore a spectacular part of Louisiana's natural heritage.

Pitcher Plant Bogs of Western Louisiana

By Charles Allen

Bog vegetation is also called pitcher plant bog and develops in open areas along the edges of baygalls or in low areas in savannahs and flatwoods. Some bogs are restricted to the lower elevations adjacent to the baygall while others extend upslope. The bogs on slopes are often termed perched bogs. Bogs range in size from a few acres down to a few square feet and are usually intermittent with patches of other vegetation interspersed. The smaller bogs are also unpredictable from year to year and appear and disappear depending on fire and disturbances. The soils are typically quite sandy and very acid (ph 4.5-5.0). They are underlain by an impervious sandstone or clay layer, that where conditions are right, causes ground water to constantly seep to the soil surface. Bogs are restricted to central and western Louisiana and southeastern Louisiana. Frequent fire is essential to preclude invasion and site dominance by woody species and with fire exclusion will change to the adjacent vegetation, in particular, baygall downslope and pine forest upslope. Bogs are wet and almost all have a layer of peat moss (***Sphagnum***) right at the soil level.

The diversity of herbaceous species is extremely high--more than 100 species may be present in a bog. Many of the attention getting plants in the bog are carnivorous including pitcher plants (***Sarracenia alata***), sundews (***Drosera*** spp.), butterworts (***Pinguicula lutea***), and bladderworts (***Utricularia*** spp.). These carnivorous plants capture insects and other small animals by a number of subtle methods but do not use the movement technique employed by the Venus flytrap. The Venus flytrap lives in very similar bogs in North and South Carolina. The pitcher plants have a tubular "pitcher" shaped leaf with downwardly pointing hairs. Insects and other small animals are attracted to the opening at the top of the leaf by odors and upon entering the leaf, cannot escape due to the downward pointing hairs. Soon, the insect or other animal is being dissolved in the watery mix in the base of the pitcher plant. Both sundews and butterworts have sticky hairs on their leaves and small insects and other animals get stuck on the hairs. The leaves then release enzymes and other compounds to digest the animals. The bladderworts produce bladders along the roots that open and "suck in" small animals including mosquito larvae. The captured animals are digested inside the bladders. All of the bog carnivorous plants capture animals not because of a dislike for animals but to obtain nutrition, in particular nitrogen. Remember that the bog is very acid and under acid conditions, nitrogen and other nutrients can not be taken in by plants. So, carnivorous plants have adapted this ingenious way to capture small animals and obtain their needed nitrogen and other nutrients from the digested animals.

There are a number of obvious flowering plants in bogs with the obviousness created by the size and color of the flowers. A bog is constantly changing with some plants coming into flower while others are going out of flower throughout the growing season. Orchids, if not the most obvious, are the most interesting plants in the bogs. These include the rose pogonia (***Pogonia ophioglossioides***) which begins flowering in April in the center portion of bogs while about the same time or slightly earlier, the Oklahoma grass pink (***Calopogon oklahomensis***) is flowering along the upper edges of bogs. Oklahoma grass pink is rare and unpredictable from year to year (finicky) while rose pogonia is reliable to be in flower in most bogs every year. As the rose pogonias start to shut down, tuberous grass pink (***Calopogon tuberosus***) begins to flower in mid May. Tuberous grass pink produces large flowers and some bogs become purple with the many grass pink orchids in flower. In late June, the snowy orchids (***Platanthera nivea***) begin to flower and make some bogs look like a field covered with snow with the white flowers.
(Continued on page 4)

Then in late July thru September, three species of the genus ***Platanthera*** show off their yellow to orange flowers and tend to prefer the upper edges of the bogs and may even extend into the adjacent pine forests. These include the largest flower and most common of the group (yellow fringed orchid, ***P. ciliaris***) that produces a large mass of orange flowers (don't know where the common name of yellow fringed orchid came from as the flowers are definitely orange). The other two species (crested yellow orchid (***P. cristata***) and yellow fringeless orchid (***P. integra***)), produce smaller flowers that tend to be more on the yellow side of the color spectrum. Both are less common than yellow fringed orchid and yellow fringeless is considered a rare species. There are two bog species of ***Platanthera*** (small green wood orchid (***P. clavellata***) and palegreen or southern rein orchid (***P. flava***)) in bogs that produce small white to light green flowers, are usually limited in number of plants, and thus are not very obvious. Both flower from June to September and tend to be on the lower edges of bogs often extending into the adjacent baygalls. A real spectacular but very rare bog orchid is the white fringed orchid (***P. blepharaiglottis***) that tends to flower late in the year with September seeming to be its month. During the year, one may also observe scattered plants of the ladies tresses or cork screw orchid (genus = ***Spiranthes***) in bogs. The small white flowers are arranged in a tight spiral at the top of the plant.

The other obvious flowering plants include many species from the Asteraceae (sunflower) family plus several each from the carrot (Apiaceae) and Lily (Liliaceae) families and the genus ***Rhexia***. The sunflower family begins the year with sunbonnets (***Chaptalia tomentosa***) in flower in late January and ends the year with swamp sunflower (***Helianthus angustifolius***) and several species of the genus ***Aster*** in flower in late November. The genus ***Eupatorium*** (also in the Asteraceae) includes ***E. leucolepis*** (justiceweed) that is a common plant of almost every bog, boneset (***E. perfoliatum***) that is readily recognized with its sessile and connate-perfoliate leaves, and roundleaf thoroughwort (***E. rotundifolium***) that has ovate leaves. Boneset tends to prefer the lower edge of bogs and extends into baygalls while roundleaf thoroughwort prefers the upslope edge and extends into the pine forest. These ***Eupatorium*** species all produce white flowers while joepye weed (***E. fistulosum***) produces pink to purple flowers. Joepye weed is similar to boneset in preferring the downslope edges of bogs and extending into baygalls. Other members of the Asteraceae family include sweet coneflower (***Rudbeckia subtomentosa***) and the rare species Sabine blackeyed Susan (***Rudbeckia scabrifolia***). Both have a tendency to extend into the baygalls but Sabine blackeyed Susan inhabits the wetter spots while sweet coneflower tends toward the drier sites. The genus ***Coreopsis*** (Asteraceae) has three species in the bog including coastalplain tickseed (***C. gladiata***), Texas tickseed (***C. linifolia***), and tall tickseed (***C. tripteris***). Coastalplain tickseed and Texas tickseed are very similar with simple shiny glaucous leaves and tends to be in the bog proper while tall tickseed has mostly compound leaves with three leaflets and the plants tend to hangout on the edges of bogs toward the baygalls. In late summer to early fall, prairie blazing star (***Liatris pycnostachya***) and narrowleaf Barbara's buttons (***Marshallia graminifolia)*** (both Asteraceae) pop up in and color the bogs purplish. Baygall goldenrod (***Solidago patula***) is the goldenrod of the bogs. The carrot family (Apiaceae) is well represented in the bog with five species fairly common in bogs. The common white flowering tall species include ribbed mock bishop's weed (***Ptilimnium costatum***), water cowbane (***Oxypolis filiformis***), and stiff cowbane (***O. rigidior***). The short growing species with greenish flowers is centella (***Centella erecta***) and the taller species with blue flowers is blue eryngo (***Eryngium integrifolium***). The lily family (Liliaceae) includes the early blooming yellow sunnybells (***Schoenolirion croceum***) which can turn a bog into a brilliant yellow overnight and disappear just as quickly. Another lily of the bog is the genus ***Aletris*** with two species: golden colicroot (***A. aurea***) white colicroot (***A. farinosa***). Golden colicroot is very common and has yellow flowers while white colicroot has white flower (duh) and is much less common. (Continued on page 5)

A common but not very noticeable due to its short height and tendency to produce a single yellow flower is yellow star-grass (***Hypoxis***), which includes several, but ***H. hirsuta*** is the most common species. Death camasa (***Zigadenus densus***) and bunch flower (***Melanthium virginicum***); are mostly plants of baygalls but can extend into the bog edge. Many of the species of the genus ***Rhexia*** (Meadowbeauty) spend most of their time in bogs. The easiest to spot is the only yellow flowered species, with the common name of yellow meadowbeauty (***Rhexia lutea***). All other species have purple to pink flowers and include savannah meadowbeauty (***R. alifanus***), Maryland meadowbeauty (***R. mariana***), Virginia meadowbeauty (***R. virginica***), and fringed meadowbeauty (***R. petiolata***). Fringed meadowbeauty produces flowers that are parallel or almost parallel to the ground and has straight anthers that are shorter than 2 mm. The other three produce flowers that are perpendicular to the ground and have curved anthers that are longer than 2 mm. Savannah meadowbeauty has a glabrous stem and both Maryland meadowbeauty and Virginia meadowbeauty have pubescent stems. Maryland meadowbeauty has a stem that is unequal in cross section and wingless and leaves without a distinct pair of lateral veins while Virginia meadowbeauty has a stem that is equal in cross section and winged and leaves with a distinct pair of lateral veins. Yellow, savannah, and fringed meadowbeauties tend to occupy only bogs or adjacent savannahs while Maryland and Virginia meadowbeauties range into other habitats. The genus ***Sabatia*** (rosepink) has two species (pinewoods rosepink (***S. gentianoides***) and largeleaf rosepink (***S. macrophylla***)) commonly observed in bogs. Pinewoods rosepink has more than five pink petals and ranges throughout the state while largeleaf rosepink has five white petals and is only reported from St. Tammany, Vernon, and Washington parishes. Longleaf milkweed (***Asclepias longifolia***) is a common greenish white flowered milkweed of the bogs while red (common name should be pink) milkweed (***A. rubra***) is more commonly seen in baygalls but can extend into the bog edge. The genus ***Linum*** (flax) and St. John's Wort (***Hypericum***) often produce yellow flowers across the bog; the genus ***Linum*** includes all herbaceous species while ***Hypericum*** species can be herbaceous or woody. The mint family is represented in the bog by bush mint (***Hyptis alata***) and helmet flower (***Scutellaria integrifolia***). Very small plants of the genera ***Burmannia*** (bluethread) and ***Bartonia*** (Screwstem) are often present in bogs but difficult to spot unless one looks very closely.

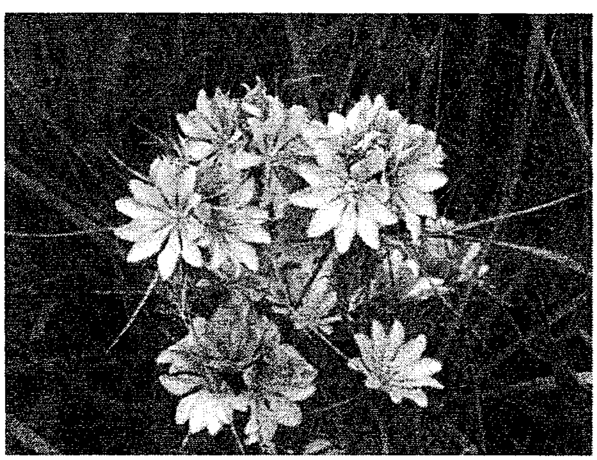
The less obvious but the most dominant plants from the standpoint of numbers and biomass are the graminoids (grasses, sedges, rushes, and the grass-like plants). The true grass (Poaceae, Gramineae) include bluestems (***Andropogon***), silkyscale (***Anthaenantia***), three awn grasses (***Aristida***), wrinkled jointgrass (***Coelorachis rugosa***), several species of rosettegrass (***Dichanthelium***), lovegrass (***Eragrostis***), shortleaf skeletongrass (***Gymnopogon brevifolius***), panic grass (***Panicum***), and plumegrass (***Saccharum*** syn = ***Erianthus***). Some grass species are characteristic bog species including toothache grass (***Ctenium aromaticum***), tall swamp rosettegrass (***Dichanthelium scabriusculum***), cushiontufted rosettegrass (***D. strigosum***), slender rosettegrass (***D. tenue***), savannah muhly (***Muhlenbergia expansa***), switchgrass (***Panicum virgatum***), early paspalum (***Paspalum praecox***), little bluestem (***Schizachyrium scoparium***), and gaping panicgrass (***Steinchisma hians*** aka ***Panicum hians***). The sedge family (Cyperaceae) is well represented in bogs with many species of beak rush (***Rhynchospora***) and several species of nut sedge (***Scleria***), umbrella sedge (***Fuirena***) and fimbry sedge (***Fimbristylis***). The most spectacular and obvious sedge is white topped sedge (***Dichromena latifolia***) and is now in the genus ***Rhynchospora.*** Most rushes (Juncaceae genus = ***Juncus***) are found in disturbed areas along the edges of bogs but redpod rush (***Juncus trigonocarpus***) is a common species in the undisturbed central part of most bogs. The grass like plants are an important portion of the vegetation in most bogs. These include yellow eyed grass (***Xyris***), pipeworts
(Continued on page 6)

(***Eriocaulon)*** and bog buttons (***Lachnocaulon***). The genus ***Xyris*** include many species and all with characteristic grass-like leaves and yellow flowers in short head-like tapering spikes on the tips of naked scapes. The pipeworts and bog buttons also have grass-like leaves and flowers in short head-like spikes but the spikes are round and the flowers white.

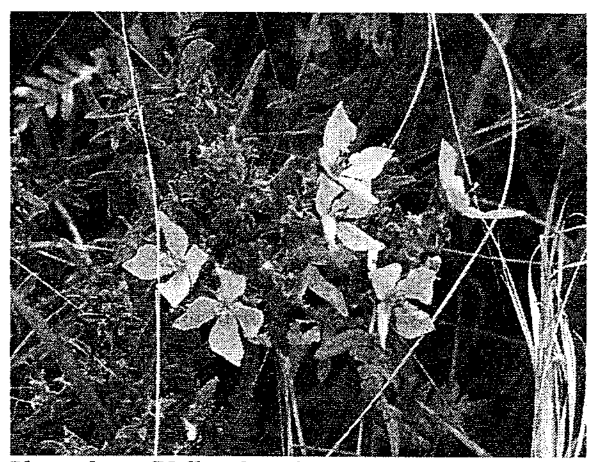
Some species of ferns can be found in bogs, especially when the bog is adjacent to a baygall. Royal (***Osmunda regalis*** var. ***spectabilis***), cinnamon (***Osmunda cinnamomea***), netted chain (***Woodwardia areolata***), and Virginia Chain (***Woodwardia virginica***) often creep out of the baygall into the edge of bogs. Some bogs contain bracken fern (***Pteridium aquilinum***) that creeps downhill from the adjacent pine forest. Almost all bogs contain plants of the fern ally genus ***Lycopodium*** aka ***Lycopodiella.*** These plants creep along the ground and send up spikes that produce spores; the spikes look like miniature pine trees hence one common name of ground pine but also is called club moss. These ***Lycopodium*** spores were ignited to produce a flash for early cameras.

Bog plants are almost all herbaceous but clumps of woody plants are scattered in most bogs. These woody species could include any of those found in the savannah or baygall in the lower portion and upland pine forests in the upper elevations. The two most common baygall woody plants that are found in bogs are white bay (***Magnolia virginiana***) and large gallberry (***Ilex coriacea***) and other baygall woodies often seen in bogs include poison sumac (***Toxicodendron vernix***), possum haw (***Viburnum nudum***), baygall waxmyrtle (***Myrica heterophylla***), waxmyrtle (***Myrica cerifera***), baygall blueberry (***Vaccinium arkansanum***), and white azalea (***Rhododendron oblongifolium***). Scattered clumps of lowland bamboo vine (***Smilax laurifolia***) are found in almost all bogs.

One of the more intriguing observations is the absence of legume (Fabaceae) species in the bog and also baygalls; a few legume species may be found in the bog, especially the upper edge toward the pine forests. If you move upslope a short distance into the pine forests, many species of legumes are seen. Perhaps this absence in the bogs is linked to the nitrogen fixation by bacteria on the roots of many legumes. Remember that the ph in the bogs is acid and nitrogen uptake is restricted? And two woody non-legume plants of the bog/baygall (***Myrica*** and ***Alnus)*** are reported to have roots that harbor bacteria that can fix nitrogen? Interesting.



Sabatia gentianoides (Pink Gentian) Linda Chance



Rhexia lutea (Yellow Meadow Beauty) Linda Chance

Bog Restoration Methodology is Focus of Study by Linda Chance

LNPS member Linda Chance says she has been interested in bogs and baygalls since at least 1999. In fact, the adverse impact of development on these rare and sensitive areas was the subject of her thesis for her landscape architecture degree while at LSU in 2000.

With these unique and little known areas under threat from continued development, Chance set out to establish a restoration methodology that could be used to mitigate the destruction of these sensitive wetlands. In 2005, she received a grant from the Coypu Foundation for her bog restoration proposal which was based on the four-step process outlined below. She is now in the second year of her study, having targeted eight pitcher plant bogs in the Kisatchie National Forest for restoration research.

I. Inventory & Assessment: Chance located, inventoried, and evaluated several pitcher plant bogs that were "in distress." (I.e. highly disturbed due to past logging operations, land development, and recreational activities or due to feral hog intrusion, plus those almost completely lost due to lack of control burning and overstory growth) She also identified high quality "donor" pitcher plant bog sites where materials could be collected for propagation and revegetation efforts.

II. Erosion Correction; Collection/Outplanting and/or Propagation: This step involved mulching and sandbagging where necessary to control erosion. Donor species were recovered and propagation with seedling and direct transplanting took place were practicable.

III. Monitoring/Management Plan Development: Following the revegetation effort, the restored areas are monitored monthly. Ongoing management options (i.e. burning vs. mowing) are now being studied to establish a "best practices" plan for long-term preservation of the area.

IV. Educational Outreach: Recognizing education as the key to preserving our natural heritage for the future, Chance recruited a number of different volunteer groups to assist with her restoration efforts and continues to publicize the results of her work at various conferences, meetings, and publications.

Chance reports that her pitcher plant bog restoration project in Kisatchie National forest is progressing on schedule. This past spring and summer, several of the restored bogs bloomed successfully. She also credits numerous volunteers and donors for their valuable assistance. Pictures of those efforts can be seen throughout this newsletter.

The Louisiana Native Plant Society was founded in 1983 as a state-wide, non-profit organization.

Its purposes are:

- To preserve and study native plants and their habitats.
- To educate people on the value of native plants and the need to preserve and protect rare and endangered species.
- To promote the propagation and use of native plants in the landscape
- To educate people on the relationship between our native flora and wildlife.

Membership form: Checks payable to LNPS

Name ______________________________ Phone ________________ Email ___________________

Address ____________________________ City ____________________ State ______ Zip __________

Annual dues: Student/Senior $5 _____ Individual $10 _____ Family $15 _____

Organization $25 _____ Sustaining $50 _____ Corporate $100 _____

Mail to: Jackie Duncan, LNPS treasurer, 114 Harpers Ferry Road, Boyce, LA 71409

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NOTE TO MEMBERS: If you would like to be on the LNPS email group, contact Tracey Banowetz at banowetz@bellsouth.net.

Events of Interest to LNPS Members:

Nov. 11: Crosby Arboretum 20 Year Anniversary Celebration, 9am to 1 pm, Picayune, MS. Call 601-799-2311.
Dec. 2: Native plant rescue project due to widening of Hwy. 167 north of Alexandria. Meet 9am at the Pearson Hunter Camp, 3 miles north of Williana on the east side of U.S. 167. Bring shovel, gloves, lunch, water, bags, and pots. Plants needing rescue include Big Leaf Magnolia, Mapleleaf Viburnum, Silverbell, Snowbell, Christmas Fern, Spider Lily, Wild Comfrey, and more. Contact Charles Allen (native@camtel.net) or 337-328-2252.
Feb. 9 – 11, 2007: LNPS Annual Meeting, Camp Hardtner, Pollock, LA. Details in the next issue of the LNPS Newsletter!

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c/o
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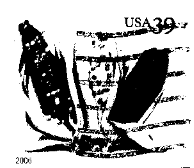

Please check date on your label. If the date is 12/05 or later, your dues are current. A few members owe dues and this may be their last issue of the newsletter. Membership form is on pg. 7

Last dues paid: 04-12-05

Larry and Anne Raymond (Fam 07)
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Shreveport, LA 71107