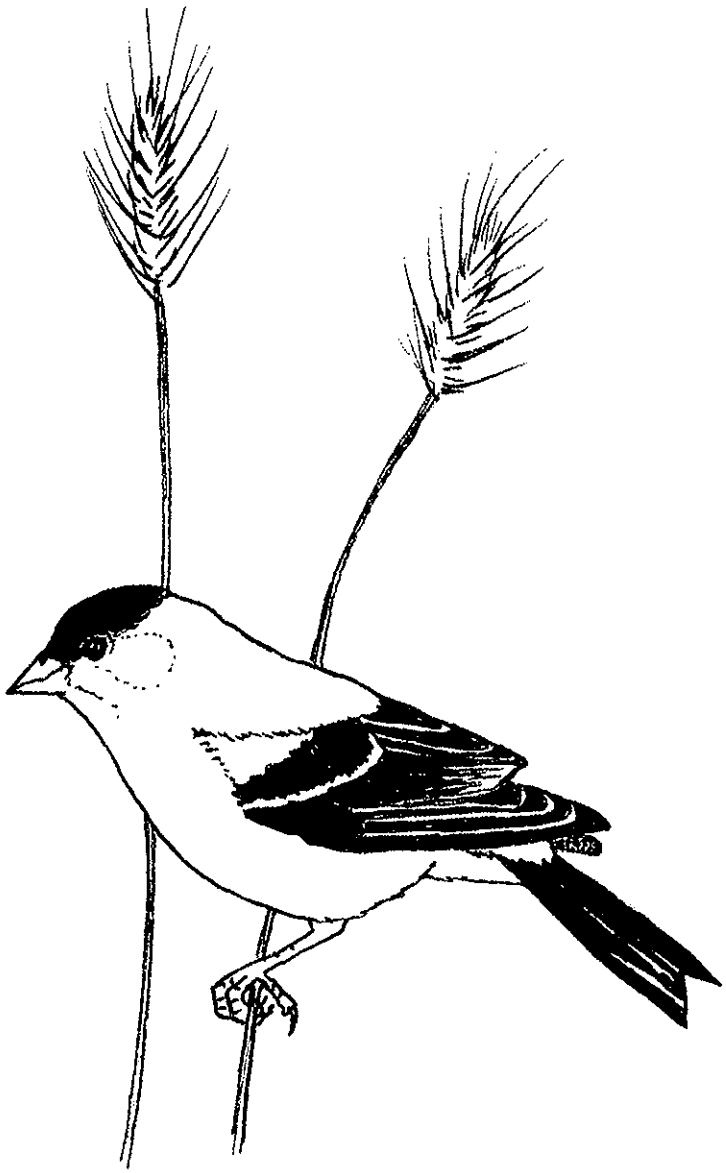
Fall 1985

WILDLIFE JOURNAL

Journal of the International Wildlife Rehabilitation Council



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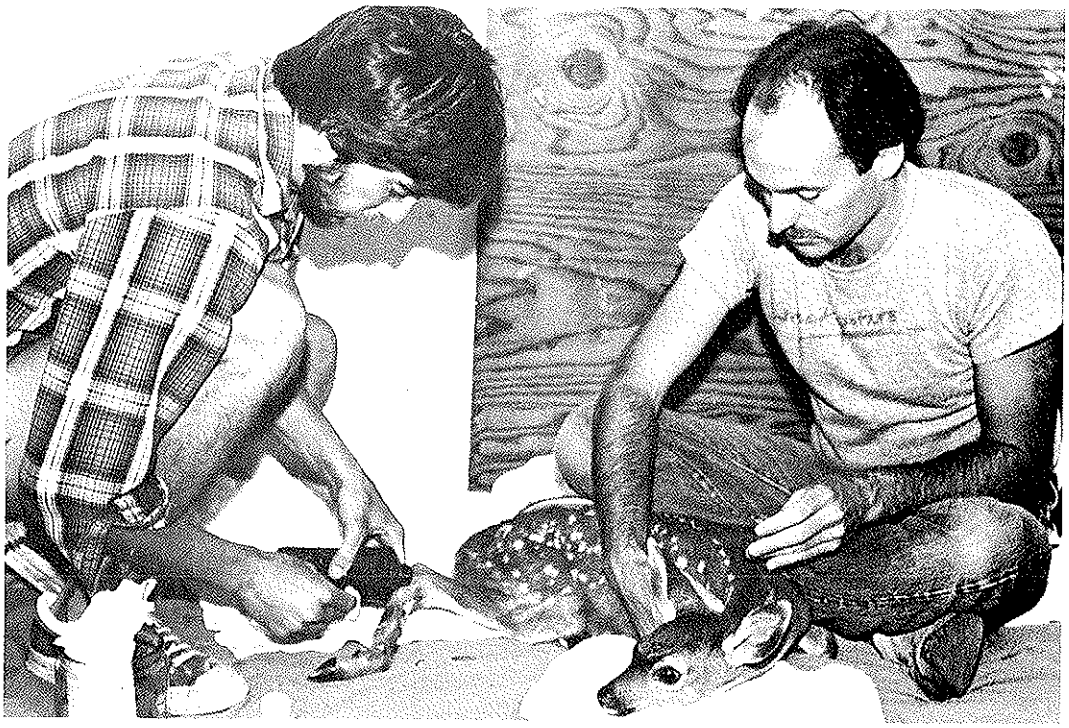
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The following is a guideline for articles to be submitted to the WRC Journal. All manuscripts submitted to the Journal are subject to review and revision by our editors.

1. Submissions should be typed and double-spaced, with 1 inch margins.
2. Full length articles run between 1500 and 2500 words.
3. Fillers and short articles run between 500 and 1500 words.
4. The writer's name and address and organization should be typed on the first page, and name and page number should appear on all consecutive pages.
5. It is the writer's obligation to obtain permission or reprint rights if submitted copy has been published elsewhere.
6. Provide a stamped, self-addressed envelope if you wish manuscript and/or photos returned.
7. We accept black and white glossy photos only, preferably 8 × 10.
8. We pay $25 for any feature article accepted; $5 for any fillers and "Handy Hints" under 500 words.

Articles should be mailed to: Editor, WRC Journal, P.O. Box 3007, Walnut Creek, California 94598.

WILDLIFE JOURNAL

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*This article available as a reprint.

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EDITORIAL . . . .

Are the Wildlife Journal Articles Reviewed?

This is a question I get occasionally from members. The answer is yes, every article is reviewed by someone in the field, usually two people. Who are these people? Well, we chose different folks depending on the type of article. One of our most consistent reviewers has been Dick Evans, D.V.M., M.S., an experienced rehabilitator who has reviewed articles on nutrition and veterinary care. For articles that deal with veterinary medicine we also submit articles for review to Drs. Murray Fowler and Joanne Paul Murphy at the University of California at Davis. Former Board Veterinarian Sandra Emanuelson during her board tenure reviewed veterinary articles as well.

The rehabilitation articles are sent to people who have expertise in the area being addressed. The goldfinch and hummingbird articles were reviewed by Juanita Heinemann who handles these particular species. The opossum rehabilitation notes were reviewed by associate editor and experienced opossum rehabilitator Debbie Marcum. For those miscellaneous topics, we may pass the article on to another IWRC board member. In all cases, the articles submitted are reviewed by the assistant editors, Susan Kelly, Susan Brain and myself.

What does this mean for those of you submitting articles? Well, you will have some help and input in preparing your manuscript for publication. The more eyes that review the paper, the more problems will be ironed out before anyone tries out your ideas on rehabilitation. Will we catch every possibility for problems? Not likely, but we can try to review each paper with an eye for both inshelter and outshelter care. We know the kinds of mistakes new rehabilitators are likely to make and try to make them clear in areas where these mistakes tend to be made. We also rely on feedback from members who read the papers and try working from them. It is very important to us to hear from you about the ideas we print. Take a minute to let us know if you had a good or bad experience with an article. Your input can really make a difference in future article content.

I hope that understanding our reviewing process will encourage rather than discourage those of you considering the submission of an article. We are here to help make the article as complete and accurate as possible. We can work on content as well as grammar. We do not simply reject articles and send them back because they do not meet our format or liking. We do work with authors to get articles where we feel they meet our standards and will assist others in the field.

I know there is a wealth of information to be found in rehabilitation centers all around the country. Those that have been established for many years undoubtedly have manuals, booklets and information sheets for their volunteers to use. I know outshelter facilities need these in particular especially as these people are working mostly out of their homes. Please let us hear from you. Nothing is too basic, even the simplest thing like how to raise mealworms for example, is an important task to the rehabilitator. Submit your species papers, rehabilitation notes or whatever and share your information and expertise with all of us. These articles can then be reviewed and published as feature articles, rehabilitation notes or go in our new section "For The New Rehabber". I also encourage the wonderful veterinarians that work with your centers for their contributions, maybe you have pertinent information that could be published in the "Veterinary Corner". While on the subject of submitting articles, we ask for papers not just on animal care, although obviously that is our primary concern, but we'd also like to hear from experienced administrators in the field. What are your fundraising and public relations ideas for example? Do they work well? How successful are you at volunteer management and making full use of their potential? These are all components that make our rehabilitation work even more successful. So please let me hear from you with your articles and ideas and of course you can always write a letter to the Editor!

Jan White

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Rehabilitation Notes: North American Goldfinches:

American Goldfinch *(Carduelis tristis)*
Lesser Goldfinch *(Carduelis psaltria)*
Lawrence's Goldfinch *(Carduelis lawrencei)*

Bill Stone, International Wildlife Rehabilitation Council
Diana Granados, Alexander Lindsay Junior Museum, Walnut Creek, California

INTRODUCTION

". . . to see the devoted pair, together, billing and singing - is enough to do even a cynic good" (Bradford Torrey 1885).

"The responsibilities of life seem to rest lightly on the Goldfinche's sunny shoulders" (Roger Tory Peterson 1935).

Members of the order Passeriformes and family Fringillidae, Goldfinches are closely related to Pine Siskins, Crossbills, House, Purple, Cassin's, and Rosy Finches as well as Grosbeaks. The American Goldfinch is the state bird of Washington, New Jersey, Iowa and Minnesota.

Carduelis originates from the Latin word *carduus*, for thistle, (a popular food item), *tristis*, from the Latin word for sad (referring to its call). *Psaltria* is latin and means "one who plays the lute" while *lawrencei* is named after George Newbold Lawrence, a Philadelphia ornithologist.

RANGE

All three species are very social and occur in flocks of 30-50 birds during the winter but break up into pairs during the breeding season. Where feeding stations have been set up many flocks winter over instead of moving south (Middleton 1977a).

American Goldfinch: This species ranges from southern Canada, across the United States and south to Baja as well as other areas in Northern Mexico. They are never far from thistle seed.

Lesser Goldfinch: Their range includes southwestern Washington, western Oregon, northern Nevada east to northern Colorado and central Texas, then southerly to South America.

Lawrence's Goldfinch: This species is found in northern California west of the Sierra Nevada south to northern Baja, occasionally into southern Arizona, New Mexico, western Texas, and northern Mexico.

Goldfinches have varying degrees of seasonal movement, ranging from none to wide ranging (Farrand 1983).

HABITAT

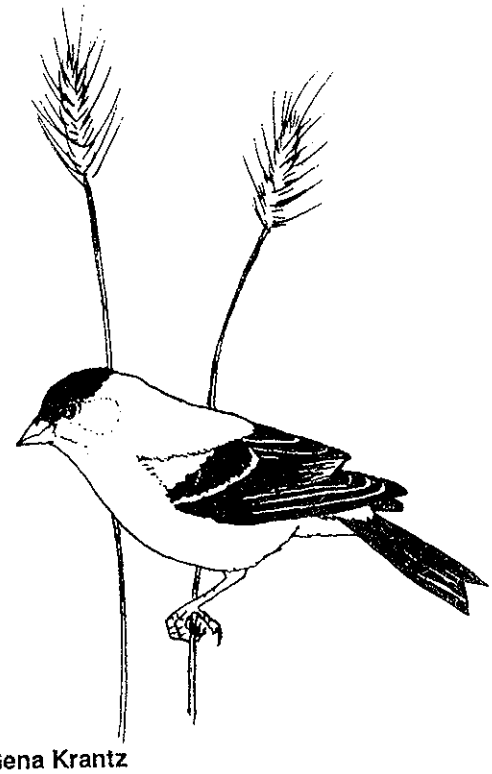
American Goldfinch: This species frequents weedy, shrubby, grassy areas, orchard and meadows with some deciduous trees. They also like openings in coniferous forests, cultivated valleys, and second growth stands (Bull 1977).

Lesser Goldfinch: The preferred habitats for this species are oak savanna, woodland as well as suburban gardens.

Lawrence's Goldfinch: This species frequents dry, grassy slopes with weed patches, chaparral and open woodlands (Udvardy 1977).

DESCRIPTIONS

American Goldfinch: The adult is 4½" to 5½" (11.5-14 cm) in length (Farrand 1983). Plumage is variable. The breeding adult male is bright yellow with a black cap. Their black wings show white bars and they have a yellow shoulder patch. The uppertail and undertail coverts are white and the tail is black and white. The female is duller overall with brown wings, brownish-olive above and it lacks the black cap as well as the yellow shoulder patch. The white undertail coverts are distinguishing. Winter adults and immatures are either brownish or grayish above, and the male may show some black on the forehead. The bill changes color from dark to yellow-orange in spring and back again to dark in the fall. Spring color change is a combination of loss of melanin and deposition of carotene.



Gena Krantz

Juveniles have cinnamon buff wing markings and rump (Scott 1983). Nestlings are altricial and downy. They have pale, grayish down on head and body. The mouth is pinkish-red and the gape flanges are pale creamy-yellow (Harrison 1978).

- *Weights:* In the north, weights vary during the year with a high in January and February and a low in the summer (i.e., inverse relationship to ambient temperature). There is also a daily fluctuation of weight from low in the morning to high at the end of the day. Females weigh between 10.0-17.1 g (.35-.60 oz.), with the average being 12.6 ±.81 g (.44 oz.). Males range from 8.6-20.7 g (.3-.72 oz.) with an average of 13.2 ±1.13 g (.46 oz.). Hatchlings weigh 1.51 ±.06 g (.05 oz.) When twelve days old they weigh 11.05 ±.21 g (.4 oz.) (Dunning 1984; Mayer 1982; Wiseman 1975).
- *Molts:* Adults have two molts: March to May which is a prenuptial molt of contour feathers and September to mid-October which is a postnuptial molt of the primaries. Molt times vary with geographic latitude and are prolonged. Breeding season is the only time molt is not seen. Juveniles do not acquire an adult plumage until after their first breeding season (Foster 1973; Middleton 1978).
- *Lifespan:* In the wild this bird can live 6 to 10 years. In captivity, one was known to have lived 13 years (Terres 1980).

Lesser Goldfinch: The adult is 4" to 4½" (10-11.5 cm) in length. Males have a black crown, green back, yellow underparts, and black wings and tail, the wings have white edgings on the tertials and a white patch at the base of the primaries. The white patch at the base of the tail is visible when the tail is spread. Some males have black upperparts. Females are greenish-yellow overall, with a yellow throat and undertail coverts. They have a dull version of the male's wing and tail pattern.

Juveniles are all greenish with some faint streaks on their breast (Farrand 1983). Nestlings are altricial and downy (Harrison 1978).

- *Weights:* Adult weights are between 8.0 and 11.5 g (.28-.40 oz.) with the average being 9.5 g (.3 oz.). (Dunning 1984).

Lawrence's Goldfinch: The adult is 4" to 4¾" (10-11.5 cm) in length (Farrand 1983 and Scott 1983). Both male and female are gray with a yellow wash on the breast, wings and rump. Males are brighter yellow with a tinge of green on the back, black on the forehead, lores and chin. There are white spots on the center of the inner webs of the tail feathers.

Juveniles are grayish-brown with only traces of yellow, may have faint breast streaks (Farrand 1983). The nestlings are altricial and downy (Harrison 1978).

NATURAL DIET

American Goldfinch: The diet is nearly totally plant with some insects. The seeds of trees and forbs such as ragweed, thistle, shepherds-purse, sweetgum, goosefoot, sunflower, dandelion, alder, goldenrod, and most composites. The insects eaten include aphids and caterpillars. They have been observed to feed on strands of filamentous algae of the group Spirogyra. This species feeds in flocks gleaning food from flower heads, shrubs, and trees (Coutlee 1963; Kilham 1980; Martin 1951; Vared 1980).

Lesser Goldfinch: Some 96% of the diet is thistle and weed seeds. They also eat the seeds of chaparral plants as well as buds and fruits. This goldfinch species is attracted to salt licks and drinks a lot of water. They feed in flocks gleaning food near the ground and rarely in trees (Coutlee 1968a; Martin 1951; Terres 1980; Vared 1980).

Lawrence's Goldfinch: Weed seeds and seeds of seed bearing chaparral plants are principal food items. This species feeds heavily on chamise achenes in winter and heavily on fiddlenecks in summer. It needs water year round. They visit salt licks during nesting season. There are no records of animal food being eaten. Feeds in flocks gleaning foliage and on the ground (Coutlee 1968a; Martin 1951; Terres 1980; and Vared 1980).

Note: See Bent (1968) for American Goldfinch and Linsdale (1957) for Lawrence's and Lesser Goldfinches, for a more detailed list of various seeds eaten.

NESTING AND YOUNG

American Goldfinch: These birds breed from early April to late July, with the peak period being from mid-May to mid-July. Nests are usually in a crotch of a shrub or tree, varying in height from 3-15 ft. (0.9 to 4.6 m). The clutch size ranges from two to seven, with a mean of five. Eggs are 16x12 mm, very pale blue or greenish-blue, and unmarked. The female builds the nest which is so thick-walled it will hold water. Young birds left unsheltered in a rainstorm have drowned. The eggs are incubated continually after the second or third egg is laid until the young are about five days old. The female then occasionally leaves the nest for a feeding period, prior to which she has been fed by the male. The length of incubation is 12-14 days but has been observed to last for up to 23 days. The young are tended by the male and female and leave the nest at 11-17 days. However, they are fed by the adults, at least sporadically until they are two months old. Young are fed entirely on partially digested seeds regurgitated into their mouths (Bent 1968; Berger 1968; Coutlee 1971; Harrison 1978; Holcomb 1967; Terres 1980; Vared 1980).

Lesser Goldfinch: They breed from late March to late July with the peak period being from mid-May to mid-July. Nesting in terminal foliage, they often will utilize drooping branches of shrubs or trees. They do require shade. The nest height may be from 2 to 30 ft (0.6 to 9.1 m). The clutch size ranges from three to five, with a mean of four. The eggs are 15 x 12 mm, very pale blue or greenish-blue and unmarked. Incubation is by the female only. She is fed by the male. The incubation period is from 12-14 days. The young are tended by both parent birds, fed by regurgitation and leave the nest at 11-17 days (Bent 1968; Coutlee 1968b; Harrison 1978; Terres 1980; Vared 1980).

Lawrence's Goldfinch: These birds breed from late March to mid-July, with the peak period being from early May to late June. They generally nest on hillsides which are covered by dense stands of oak, with water nearby. They nest in colonies. The nest height varies from 20 to 30 ft (6.1 to 9.1 m). The clutch size is from three to six, with a mean of four. The eggs are 15-12 mm, white and unmarked. Incubation is by the female only. She is fed by the male.

The incubation period is from 12-14 days. Young are tended by both parent birds and leave the nest at 11-17 days. Fecal sacs are eaten by adults for the first four or five days and then the young void over the edge of the nest (Bent 1968; Coutlee 1968b; Harrison 1978; Terres 1980; Vared 1980).

CAPTIVE CARE AND FEEDING

- *Diet:* The diet being successfully used by the Alexander Lindsay Jr. Museum is listed below:
  - ½ fresh banana (small to medium sized) for consistency
  - 1 tablespoon (rounded) Topper Bird Ranch Diet*
  - 1 hard boiled egg yolk
  - 200 mg calcium
  - Avianized vitamin/mineral supplement per label instruction

  Mix to the consistency of pudding. Unused portions must be refrigerated. Mix fresh daily.

  This diet provides 20-25% protein and has a Ca/P ratio of 2.7: 1.0.

*This product is available from:

Topper Bird Ranch
Rt. 7, Box 63
Lexington, N.C. 27292
or
Topper Bird Ranch Mill West
Kim & Judy Edwards
1466 N. Carpenter Road
Modesto, CA 95351
or

check your local feed and pet stores.

NESTLING CARE (0 to 20 days)

- *Housing:* The main emphasis is to provide a safe, warm, and clean environment. Use a three gallon ice cream bucket or equivalent sized box or cage lined with an absorbant material (i.e. paper towels). Place the birds in a "nest" (margarine container) lined with facial or toilet tissue.
- *Heat and Humidity:* To provide heat place the container on a heating pad set on low or use lights. A small seven watt red Christmas tree bulb will work if close enough or larger watt overhead bulbs can be placed outside the cage. In both cases, the light sources should be placed in such a way as to prevent the young birds from getting too close to them. Place a thermometer in the box to monitor temperature. Humidity, to prevent the bird from drying out, can be provided by placing a wet sponge in a dish or jar inside the cage.

  Nestlings from 2-6 g (0-5 days) have little control over their body temperature. Nestlings from 7-9 g (6-8 days) have more control but are still dependent on a heat source. Birds that weigh 10-11 g (9-11 days) have almost complete control of their body temperature. The ambient temperature should be maintained at 80-90°F depending on condition, age, and feathering of the bird.
- *Feeding:* Use a 1 cc syringe. Goldfinches are messy eaters. They will spit on each other and all over the cage. They also like to "dance" before gaping for food, so you must be patient with this species when it comes to feeding. They are also sensitive to the texture of the diet and will refuse to eat if it is not to their liking. Keep crops full.

  Begin feeding early in the morning and continue throughout the day for a total of 12-14 hours per day. Feeding intervals range from 15 to 40 minutes.

  Generally, intervals can be judged by the length of the tail. Measurement should be taken from the base of the tail. With a short stub to ½" feed every 15-40 minutes. Watch the crop and feed when empty. When the tail length is ½"-1", the interval can be lengthened to 40-60 minutes provided the bird is in good condition and weight.
- *Hygiene:* Goldfinches are very messy and need to be kept clean to prevent feather damage, etc. After feeding, carefully clean each bird and the cage where necessary.

JUVENILE CARE (21 to 42 days old)

- *Housing:* Carefully move the birds to a small wire cage or waxed box with screen windows (at least 12"x12"x10"). Provide flexible perches, small branches work well. Include the "nest" initially. Birds may still require additional heat. Line botton of cage with paper towels and keep clean.
- *Feeding:* The same diet is used but with stiffer consistency. When tail length reaches 1 to 1½" start adding seed (such as Niger seed, dandelion puffs, finch seed or other natural

Table I

Weight Gain in Natural Populations of American Goldfinches

(From Mayer 1982)

Day	Weight in Grams
Hatch	1.5
1	2.0 - 3.5
2	3.0 - 3.5
3	4.0 - 4.5
4	3.6 - 6.0
5	6.0 - 6.5
6	6.0 - 8.7
7	7.7 - 8.2
8	8.5 - 9.5
9	9.5 - 11.5
10	10.5 - 11.0
11	10.5 - 11.5
12	11.0 - 12.0

Sample size is eleven birds. The natural weight will vary depending on condition of the bird, number of birds in the nest, sequence of hatch (first birds are larger) and food supply (Holcomb 1970).

seeds) to the food and in the cage. The type and size of seed preferred may be influenced by learning, hence, the need for natural food in the natural form. These birds will play with the dandelion puffs and eventually catch on that they are food. Provide fresh water for drinking and bathing being careful that it is not too deep. When the tail reaches 1½ to 1¾" they should be feeding on their own and are ready to be moved outside providing that they are self feeding and able to maintain the proper weight.

- *Other:* Goldfinches are very difficult about changes of food and cages so do both slowly, carefully and in stages. If they refuse food make a new batch trying to achieve the right consistency. Mist from the time that they are fledglings (fully feathered) and older to keep them clean and encourage preening.

ADULTS AND PRE-RELEASE JUVENILES (ages 6 weeks and older)

- *Housing:* Birds at this age need a larger cage to gain flight skills with a variety of perches. The size should be at least 3'x3'x2'. Some birds like to crowd and cling to the corners at night. It is stressful for them to be caught in these larger enclosures so if possible, release directly from the cage and hack back into the wild.
- *Diet:* Goldfinches are fussy eaters and need time to adjust to new food items. Provide a variety of seeds, vegetables and fruits. A listing of food items follows.

- Seed Mixture:
  - 1 part Canary Treat Mix (a combination of high oil seeds, niger, lettuce, flax, dandelion etc.)
  - ½ part aviary mix
  - 1 part Canary Seed
  - 1 part basic finch mix

  Well developed millet sprays are also used by the birds. Finely chopped fruits and vegetables can be added for variety such as sweet apples, papaya, grapes, whole broccoli flowers, and other dark green leafy vegetables. Using seed cuttings from your garden where bird seeds have sprouted or dandelions are a good way to introduce the bird to a natural food source. Be sure all cuttings brought to the bi rds are pesticide free. Goldfinches also like to eat the nodes off budding fruit tree branches. Provide fresh water for drinking and bathing.
- *Acclimating:* Begin to acclimatize the birds by moving them outdoors during the day hours and inside at dark for three days. Providing that night temperatures are not too severe, begin to let the birds stay outside during the night. If the bird's feathers are fluffed up during the early evening hours before the temperature has dropped significantly they should come in. Conversely, if they overheat due to the placement of the cage or outside temperature, the cage should be moved to a cooler area. All caging must be predator proof. Birds with low weights should not be acclimatized.

RELEASE

- Juveniles are usually ready for release about 8 weeks of age. They should have spent at least one week in an outside enclosure and are acclimated to outside temperatures, recognize natural foods and be completely self-feeding. An accepted release weight is at least nine to ten grams. They should have an ample fat reserve since this is their primary energy supply (Marsh 1982).
- Their feathers should be in good condition and the bird will have spent several weeks developing their flight skills. Indeed, they will be difficult to catch and if possible it is a good idea to release them directly from the cage if conditions permit.
- Release in an area which is frequented by flocks of goldfinches. Goldfinches are a flock species and it is important that they be released where they can find a flock to join.
- Diurnal; release mid-morning.

DISEASES & PROBLEMS

The most common problem seen in these tiny birds is emaciation. Adult birds presented with any number of injuries invariably are also emaciated. Young birds being hand-reared by people caring for other more aggressive dance species may find the goldfinches poor competitors for the human's attention and therefore receive less food and lose weight.

Goldfinches are one of the hardest birds to raise and rehabilitate and many newly received birds look fine and die for no apparent reason. Upon gross necropsy small punctures may be located on the birds as well as crushed interal organs. Cat caught birds nearly always die. One sign seen in ill birds is "squinty eyes" followed by death within two days.

More research needs to be done on the diseases of these birds. A literature search yielded references to avian pox in goldfinches but little else. Rehabilitators and veterinarians who have received goldfinches with signs of disease are invited to write IWRC about it.

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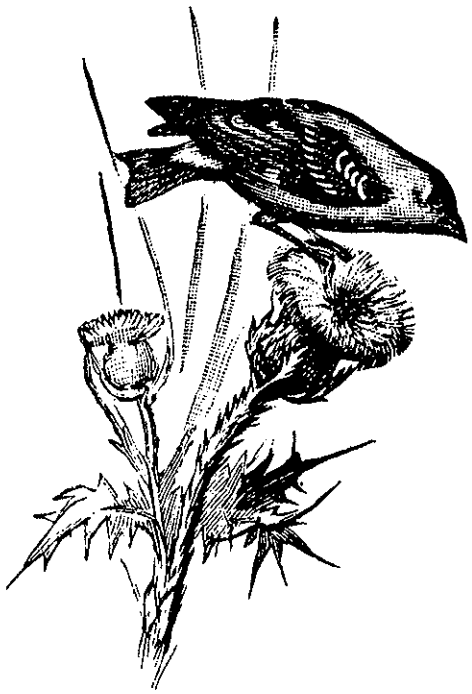
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REQUEST FOR INFORMATION

Over the past few years the Memphis Zoo and Aquarium in conjunction with the Lichterman Nature Center, Memphis, Tennessee, have been working with a technique for repairing turtle shell fractures. The use of fiberglass mat and polyester resin enabled injured specimens to be repaired and released after a variable period or recuperation. This technique has been used in the past for shell defects in tortoises. Up to the present, we have repaired and rehabilitated approximately a dozen specimens of Red-eared turtle *(Pseudemys scripta elegans),* Eastern box turtle *(Terrapene c. carolina),* and the Three-toed box turtle *(T. c. triunguis).* We would like to take this opportunity to invite anyone with experience or interested in this topic to please correspond.

Donna Martin
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For the New Rehabber:

How to Read and Use a 1 cc Syringe

Marty Johnson
Wildlife Rescue, Inc., Palo Alto, California

In view of the fact that many birds requiring oral medications weigh under a pound (454 g), it is likely that the amounts they will receive will necessitate the use of a 1cc syringe. Therefore, it is important for rehabilitators to be able to read accurately the calibrations on a 1 cc (1.0 cc) syringe. The 1 cc syringe is broken down into tenths and marked accordingly. One tenth = 0.10 cc; two tenths = 0.20 cc; and so forth.

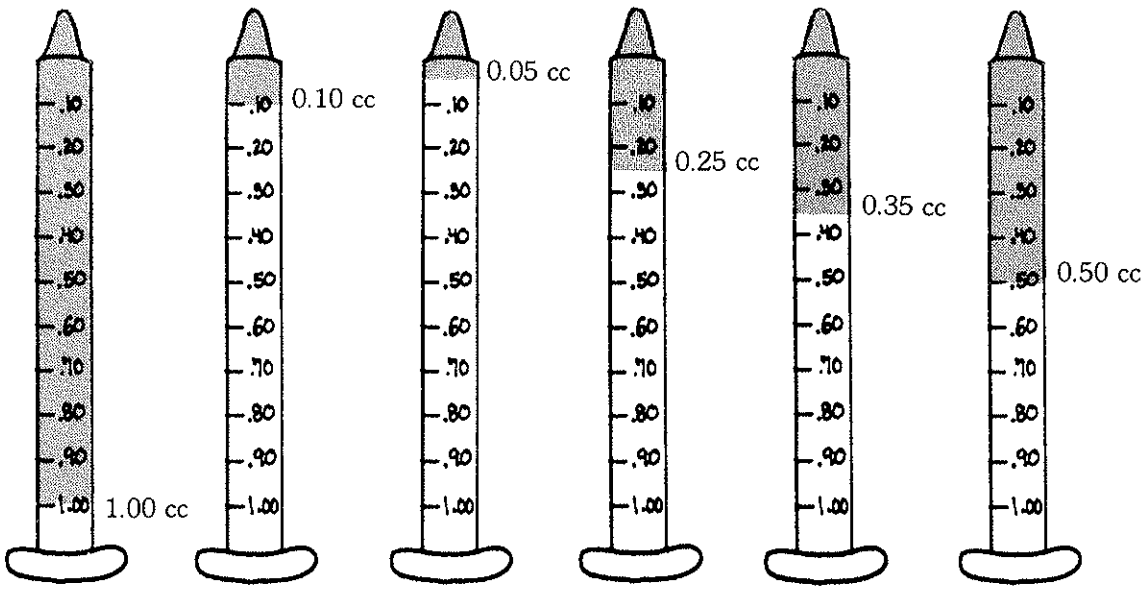
READING THE SYRINGE

Syringe A is completely filled to the 1.00 cc line. Syringe B is filled to the 0.10 cc level (one tenth cc). These two amounts can be confused by people who are just learning the metric system used on the syringes and yet Syringe A has ten times the medication that Syringe B contains. Careful attention must be paid to the position of zeros and decimal points on a dosage chart.

Sometimes a dosage is given as a fraction of the one tenth measure, usually one half. This amount is written with the number 5 in the hundredths column. Thus 0.05 cc is one half of the distance between 0 and 0.10 cc. Likewise, 0.25 cc is halfway between 0.20 and 0.30 cc. See Syringe D. In the examples shown observe that: Syringe C contains 0.05 cc liquid, Syringe D contains 0.25 cc liquid, Syringe E contains 0.35 cc liquid, and Syringe F contains 0.50 cc liquid. Please note how easy it might be to confuse 0.05 cc (a very small amount equal to one drop) with 0.50 cc (one half of a whole cc). Also note that in the metric system 1 cc (a cubic centimeter) is equal to 1 ml (a milliliter).

FILLING A SYRINGE

1. Begin with the plunger pushed fully down.
2. Insert the tip of the syringe (minus needle) into the medication and pull back on the plunger slowly.
3. Withdraw an amount of medication slightly greater than the indicated dosage.
4. Check the syringe for air bubbles.
5. If bubbles occur, point the tip of the syringe toward the ceiling, tap the side of the syringe until bubbles rise to the tip.
6. With the syringe still pointing up, remove bubbles by carefully depressing the plunger.
7. Expel any excess medication by further depressing the plunger until its rubber base reaches the dosage you require.
8. To administer an oral medication, open the bird's mouth, place the syringe on the right side of the mouth avoiding the glottis (opening to the trachea) and expel fluid slowly allowing the bird to swallow.



FALL 1985 WILDLIFE REHABILITATION 1AB GRADUATES FOR WASHINGTON AND CALIFORNIA

Fall classes in Basic Wildlife Rehabilitation 1AB were held in October and November in California and in December in Seattle, Washington. The Washington class was hosted by PAWS (Progressive Animal Welfare League) and the Washington Game Department. All individuals listed below have received a passing score of 70% or better on the WRC Basic Wildlife Care Exam and have completed two sets of homework on nutrition and calculating drug dosages. Additionally, all participants have successfully demonstrated adequate skills in wildlife care and handling in a supervised lab session. These individuals are certified in Basic Wildlife Rehabilitation.

Washington Class Graduates

Martha Albritten
Pullman, WA

Ron Ambuehl
Mc Cleary, WA

Barbara Ann Bland
Oak Harbor, WA

Yvonne Branscomb
Bothell, WA

Terilyn Elliott
Bellingham, WA

Ann Van Der Geld
Seattle, WA

Sandra Gordon
Index, WA

Karen Hyneman
Lynnwood, WA

Louise Mapham
Bellingham, WA

Gregory McDaniel
Seattle, WA

Susan Murphy
Snohomish, WA

Mike Murphy
Snohomish, WA

Mark Izatt
Hoquiam, WA

Julie Knight
Granite Falls, WA

Jane Hunt MacCallum
Redmond, WA

Diann MacRae
Bothell, WA

Steve Penland
Millcreek, WA

Steve Reed
Bellingham, WA

Janet Strong
McCleary WA

Lynne Solomon
Bothell, WA

Julie Wakefield
Woodinville, WA

Jeanne Wasserman
Lynnewood, WA

Patti Wickham
Olympia, WA

California Graduates

Diane Anthony
Yucaipa, CA

Rita Blaine
Novato, CA

Connie Bogosian
Napa, CA

Claudia Bonnet
San Jose, CA

Margaret Brooks
Sacramento, CA

Claire Buckles
Sacramento, CA

Peg Campbell
San Bernandino, CA

Rose Carrillo
Castro Valley, CA

Nancy Dyson
Sacramento, CA

Carol Eyheralde
Napa, CA

Sandy Grulkey
Vallejo, CA

Cathy Hardey
Hayward, CA

Jan Hautala
Martinez, CA

Nicolette Heaphy
San Francisco, CA

Aile Hepburn
Oakland, CA

James Howell
Morgan Hill, CA

Sue Howell
Morgan Hill, CA

Billie Hovey
Rancho Cordova, CA

Bill Ireland
San Anselmo, CA

Frances Johnson
Palo Alto, CA

Judy Johnson
Rancho Cordova, CA

Kathy Krueger
Los Osos, CA

Barbara Lee
Concord, CA

Charlotte Madsen
Atascadero, CA

Dani Martin
Suisun, CA

Pat McClenahan
San Luis Obispo, CA

Amy Morse
Novato, CA

Mary Lou Nordell
Los Altos, CA

George Pine
Fairfield, CA

Carol Reed
Orinda, CA

Donna Runkle
Redding, CA

Christine Scott
San Rafael, CA

Barbara Strehlitz
Concord, CA

Jean Young
San Jose, CA

Natural History Notebook:

Turkey Vulture (*Cathartes aura*)

Terry Preston
Wildlife Education and Rescue Center
Hayward, California

INTRODUCTION

This article is the first in a series designed to focus on the natural history of various species that are commonly presented for care and rehabilitation. Species whose natural histories are especially crucial to their rehabilitation will be highlighted in the series. However, it is essential to have a complete understanding of the natural behavior of any species in order to successfully and efficiently rehabilitate it. Applied techniques of vulture rehabilitation will be presented in the Winter 1985 issue in our regular Rehabilitation Notes series.

The extensive breeding and wintering range of the Turkey Vulture has presented most wildlife rehabilitation facilities with the opportunity to encounter this somewhat notorious but magnificent bird. *Cathartes aura* is the most widespread member of the family Cathartidae, or New World vultures. The genus name *Cathartes* is derived from the Greek word *Kathartes*, which means cleanser, a title well earned by these birds for the service they provide to the environment by removing decaying animal matter.

Turkey Vultures may also be known (incorrectly) as carrion crows, red-necked buzzards or John Crow. Another commonly used name for this bird is buzzard, a British name used for some buteo species. The common name "Turkey" Vulture comes from the bird's close resemblance to the red-headed turkey.

RANGE

The summer range of Turkey Vultures extends from southern Canada to the Straits of Magellan in southern South America. The summer range also includes the West Indies Islands, Trinidad, Jamaica, Cuba and the Margarita Islands.

The winter range extends from northern California east to Maryland and south to the Straits of Magellan. Turkey Vultures may remain further north during the mild winters. They were introduced and have established a population in Puerto Rico. Their habitat includes open country, woodlands, farmlands, deserts, and jungles.

IDENTIFICATION

The Turkey Vulture can be identified by its naked red head, dingy brown body feathers and large size. The flight feathers are dark above and silver grey below. The bird stands approximately 19" (48.3 cm) and has a wing span of approximately 6 feet (1.83 m). The beak and head are black in immature birds. The legs and feet are pale pink with duller straighter claws (unlike the sharp talons of hawks, falcons, and eagles). In flight the bird is most easily recognized by the long broad wings, relatively long two tone tail and small head. Turkey Vultures fly with a characteristic tilting and swaying as they soar. They soar with their wings higher than the rest of their body (at a dihedral angle) and in doing so appear V-shaped.

FLIGHT

Turkey Vultures, like all members of the family Cathartidae, are adapted to soaring flight. Watching a Turkey Vulture soar above leaves one with the impression of a skilled, graceful, highly maneuverable creature. Watching the same bird attempt to take off from the ground fills one with questions whether this species can fly at all.

Turkey Vultures rely on naturally rising air currents to keep them aloft for extended periods of time. Although these birds use many types of air lift (wave lift, frontal lift, slope lift, etc.) thermal lift is the type we commonly observe. The reason this bird relies so strongly on soaring flight is because it is a large, heavy bird, too much so for its flight muscles to sustain the type of flight needed to locate food sources.

Once the bird takes off from the ground it can often be observed following a definite pattern, rising, by circling around the axis or core of a thermal to a desired height. It then glides straight until altitude is lost, at which time the process is repeated. In cold weather, when there are few strong thermals, vultures must rely more on their own muscle power. Flight may be dependent on the degree of hunger in the bird.

When Turkey Vultures rely on updrafts along ridges, canyons or ravines, where more maneuverability is required for food searching, the wing tips are spread and held high to compensate for the irregular air currents. This accounts for the characteristic tilting and swaying flight behavior observed in this species.

VOCALIZATIONS

The most familiar vocalization emitted when approached by humans or otherwise threatened is a hiss. Other vocalizations include grunts and growls.

BEHAVIOR

By day, Turkey Vultures are usually solitary as they search for food, but there are times when up to a dozen birds may be seen circling together. At night they gather in a communal roosting site, usually located in a grove of tall trees. Several hundred may roost at the same site. The vultures will often remain at the roosting site well into the morning waiting for the air to warm up to lessen the amount of energy they must exert in their flight in search for food. They can often be spotted on obvious perches close to the roosting site, with outspread wings, gathering what heat may be available from the morning sun.

There has been much controversy over the means in which the Turkey Vulture locates its food. At one time it was believed that all vultures located their food by sight only. After much research, it has been concluded that of the New World vultures, the Turkey Vulture is the only one who uses a well developed sense of smell aided by keen eyesight to locate a food source.

It has been discovered that both the Black and the Turkey Vulture will use their urine as a method of thermoregulation. When exposed to high temperatures, the birds will urinate on their bare skinned legs to cool themselves. As a result of this discovery, federal banding of these birds was halted, as it was found that urine and bacteria would accumulate around the band leading to severe injury to the leg. As another means of thermoregulation, the Turkey Vulture has the ability to adapt to environmental extremes by lowering its body temperature when roosting, thus saving the energy necessary to maintain a normal body temperature.

Both young and adult Turkey Vultures have the habit of regurgitating foul smelling food when disturbed. This may serve as a defense mechanism to discourage a potential enemy from coming too close. Rehabilitators should take note of this habit.

FOOD

Turkey Vultures are opportunistic feeders, feeding on a large variety of dead animal matter. Their inability to kill prey has led them to their habits of feeding on virtually any dead mammal, bird, reptile, fish, amphibian, and on occasion, rotting vegetable material. The freshness of the food matter seems to be of little importance as they will eat both fresh and putrid.

NESTING

Nesting begins anywhere between February through June depending on the climate of the location. In geographical areas with warmer climates, nesting may begin as early as February and in the more northerly areas of the breeding range, as late as June. Turkey Vultures nest in a variety of areas. The nest site is almost always located on the ground. As in many species, inaccessibility to predators is usually a factor in location, although eggs have been found on floors of abandoned buildings. There are no nesting materials used and eggs are laid on bare ground of cliffs, caves, hollow stumps or under dense vegetation.

Between one and three (usually two) eggs are laid. Both parents participate in the incubation of the eggs which may take between 38 and 41 days to hatch. Young are fed by parents via regurgitation of the foul smelling food that they consume. The young inserts its beak into the parent's beak and drink the regurgitated material. The eyes of the young open very soon after hatching and they are able to move freely about the nesting area within a week. They fledge from the nest between eight and ten weeks after hatching.

PLUMAGES

The plumage of the nestling vulture is a white down which covers the entire body except the head and legs. Primary quills will begin to emerge at two weeks of age. At five weeks, the primaries and secondaries will be approximately 4" long and tail feathers approximately 3" long. At two months, the wings are almost fully developed, back and sides of breasts are feathered and down remains on the neck and undersides. Full juvenal plumage is acquired at approximately 10 weeks.

Juvenal plumage which is worn throughout the first winter, is very similar to the adult plumage with a few minor differences. The edges of the feathers on the mantle are lighter, and the skin of the head is black or dark brown with a crown edged with dark brown hairy down.

The full body molt begins in the winter or early spring and continues through the summer or early fall. Wing and tail feathers are molted in early fall. New feathers covering the body first appear glossy black, eventually fading out to a dull dingy brown.

ENEMIES

Nestling Turkey Vultures are vulnerable to being attacked by predatory species, as are most nestling animals. Adults have few, if any, known enemies with the exception of man. Because of their characteristic slow takeoff, many

Photo by Gerrie Reichard



Turkey Vultures become victims of moving vehicles as they attempt to take advantage of the food source provided to them by road kills. For this reason, it is a nice idea to move road kills off to the side of the road. These large, slow moving birds are easy targets, and often become victims of target practice of ranchers who mistakenly believe they pose a threat to livestock.

REHABILITATION THOUGHTS

Before admitting any nestling or young Turkey Vulture for care with the assumption that it is orphaned, keep in mind that this species does not build a nest and as stated previously, are likely to lay their eggs in totally unsuitable areas. Additionally, the nestling birds move freely at a very early age and are likely to wander away from the nesting location. Special efforts should be made to return them to the area where they were "rescued" while investigating the site for signs of other Turkey Vultures. Adult Turkey Vultures are extremely shy and so it is a good idea to put the young bird down and move a great distance from the area where you can observe unnoticed.

This procedure may take a great deal of time and patience but it is the rehabilitator's responsibility to give these creatures the best chance at learning how to survive independently. Their best chance is with their parents. If the exact parents cannot be located, juvenile birds (i.e., 5 weeks or older) can be placed with others similarly aged within a colony.

If they must be captive raised, it is really necessary to raise them with other similarly aged juveniles. This will often necessitate calling other facilities and transferring one bird to be with another. Once the two birds have adjusted to each other, they should be integrated with one or more adult Turkey Vultures. The group should be in an adequately large enclosure and observed closely for aggression.

The traditional method of hand-raising birds allowing contact only at feeding time will often result in irreversible taming for this species. Puppet feeding has been done with another vulture, the California Condor, in an effort to keep them from imprinting on their human handlers. Raising the bird with members of its own species and keeping human contact to an absolute minimum is essential for successful rehabilitation.

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Book Review

ALL WILD CREATURES WELCOME

Patricia Curtis

Lodestar Books, E.P. Dutton, New York 10016 1985, 130 pp., $13.95

This recently published hard-bound book is written for children ages 10 to 14. It describes the trials and tribulations of establishing Lifeline for Wildlife, a wildlife rehabilitation center in rural New York and tells how the center staff cares for the wildlife that is brought in for treatment. There is a listing of some of the wildlife rehabilitation centers in the United States and Canada for reader reference.

The book is well written, easy to understand, and has a good index. If you are a fan of Patricia Curtis, you will enjoy this book. The young reader will also enjoy the many photos that are presented throughout the book.

While children will probably enjoy reading this book with its reference to kissing injured wildlife and wild animals that follow the people who feed them, many adult rehabilitators will take exception to these practices, especially the feeding of warm milk to birds. Indeed, this book is not a valuable resource for the wildlife rehabilitator, but it was not written to be one either.

There is not enough about Lifeline for Wildlife's veterinarian, Mark Lerman. He offers quality comments on how to care for wildlife. He discusses the options he has available when he receives injured wildlife and admits that "we just don't know enough" about the illnesses that present themselves in these animals.

The majority of *All Wild Creatures Welcome* deals with the reflections of the young student interns (who pay a small boarding fee and live at the facility for a short time) and the work of the staff members. We learn that everyone who works at Lifeline for Wildlife loves animals, but that they get tired of cleaning cages. However, all of their hard work is worth it.

The organization has a novel way of raising money. The director, Betsy Lewis, offers a pet-sitting service. She brings domestic dogs and cats to the rehabilitation center and offers them a "homelike" setting while their owners are on vacation. The cats are kept inside while the dogs "lounge around outdoors, watching the activity." Most wildlife rehabilitation centers could not implement this program because the indoor cats would harass the birds and mammals that are housed inside and the animals caged outdoors would become familiar with the sights and sounds of dogs, which could hamper their survival in the wild.

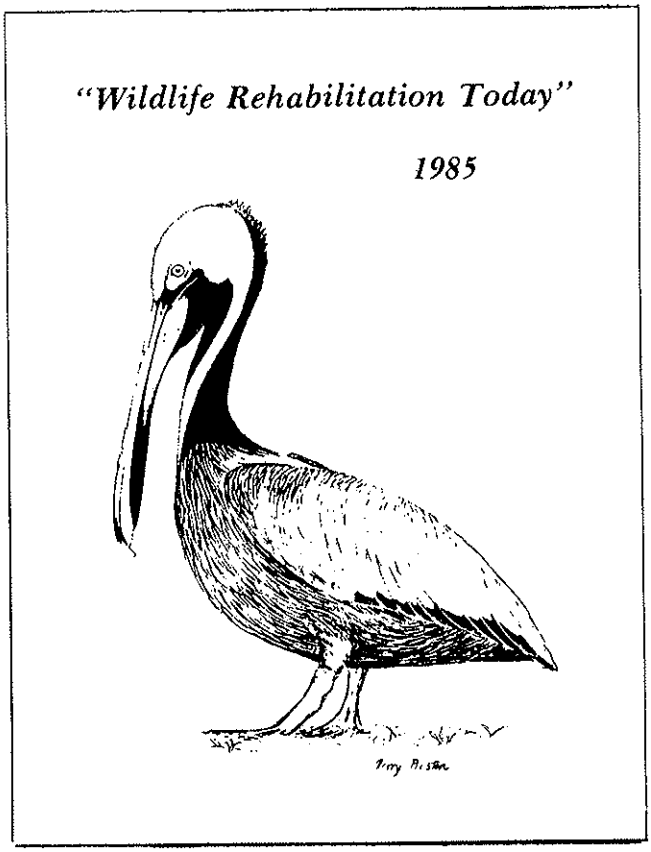
When writing a book for children, it is especially important that issues of safety be addressed clearly and that they understand that wild animals can be very dangerous to their health. When rehabilitating skunks especially, the possibility of rabies should be mentioned. Unfortunately, it was not.

If you decide to read this book or purchase it for your children, keep in mind what author Curtis says, "When reading about wildlife, it's a good idea to take into consideration the point of view the authors represent." That is the best advice this book has to offer.

Kirstine M. Thorne
Marin Wildlife Center
San Rafael, California

AVAILABLE NOW

WILDLIFE REHABILITATION COUNCIL'S 1985 CONFERENCE PROCEEDINGS



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