REHABILITATION WILDLIFE COUNCIL

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PUBLIC ATTITUDES TOWARD WILDLIFE

The first phase of a four part document entitled Public Attitudes Toward Critical Wildlife and Natural Habitat Issues has been released by the U.S. Fish and Wildlife Service. The study is being conducted by Dr. Stephen R. Kellert of the Yale School of Forestry and Environmental Studies.

Phase I is called "Public Attitudes Toward Critical Wildlife and Natural Habitat Issues" and covers public opinion on endangered species, animal control, damage control issues, habitat protection, consumptive use of wildlife, questions about wildlife management, backcountry use and parks and several related miscellaneous questions.

The statistics presented were obtained from a total of 3,107 interviews conducted in 1978 with randomly selected persons in the 48 contiguous states and Alaska. Kellert also interviewed members of special interest groups such as sheep producers, hunters, humane group members, trappers, etc. Their responses are presented in the charts along with those of the general public.

The following is a sampling of the statistics gathered from the general public interviewed in the study:

-In answer to the question of which endangered species the respondent would favor protecting even if it resulted in higher costs for an energy development project, 89% favored protecting the bald eagle, 73% the mountain lion, 64% the silverspot butterfly, 48% the furbish lousewort and 34% the Kauai wolf spider.

-Those most in favor of protecting endangered wildlife were under 35 years old, people with graduate school education, respondents residing in areas of one million or more population and residents of the Alaska and Pacific coast regions. Those least inclined to support endangered species were respondents 56 years of age and older, people from the south and those with less than an eighth grade education.

-The general public has a very limited knowledge of endangered wildlife. No more than 33.3% of the entire national sample correctly answered any of several basic true-false questions on endangered species, e.g. "Pesticides were a major factor in the decline of Brown Pelicans".

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-In a section of eight questions on self-perceived knowledge of wildlife management concerns, more people felt knowledgeable about the harp seal issue than any other, but that was just 43% of the respondents. Only 14% felt knowledgeable about the issue of the use of steel shot versus lead shot by waterfowl hunters.

-On predator control 74% of the respondents supported the idea of hunting only individual coyotes known to have killed livestock, and 94% felt that poisoning was an unacceptable method of predator control even though it was one of the least expensive methods.

-76% agreed that cutting trees for lumber and paper should be done in ways that help wildlife even if this results in higher lumber prices.

-82% and 85% respectively approved of hunting as traditionally practiced by some Indians and Eskimos and hunting for meat, while only 18% approved of trophy hunting.

-On funding of wildlife management, 82% approved of a sales tax on fur clothing, 75% approved entrance fees to wildlife refuges and other public wildlife areas and 71% were in favor of a sales tax on off-road vehicles.

-87% of the people felt that illegal killing of wildlife should result in stiff fines and, if done repeatedly, even prison sentences.

-71% disagreed with the statement that "Americans should have automobile access to scenic public areas even if the wildlife are disturbed by the traffic and noise."

The 138 page study makes fascinating reading and should prove helpful to wildlife rehabilitators who are writing grant proposals, looking for support for public education about wildlife, giving presentations, etc.

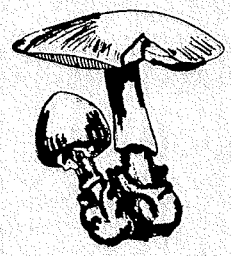
No more free single copies are available from the U.S. Fish and Wildlife Service, but it may be ordered for $10.00 from:

National Technical Information Service
5285 Port Royal Road
Springfield. Virginia 22161

(Ask for Accession Number PB-80-138332)

A.B.

Ed. Note: WRC has one copy of the study and is willing to loan it for price of the postage and the assurance that it will be returned!



ATTORNEYS FOR ANIMAL RIGHTS

Attorneys for Animal Rights (AFAR) is an organization of San Francisco Bay Area attorneys and law students who donate time to help animals and animal groups with legal problems.

AFAR has assisted the Peninsula Humane Society in San Mateo, CA in sponsoring a county ordinance that would outlaw steel jaw traps. On behalf of the International Primate Protection League, AFAR has filed a petition with the Secretary of the Interior demanding that his agency carry out its legal duty either to put a stop to using endangered gibbons in research or at least require that a permit be sought for use in any research. AFAR has also been working on the state and federal level to strengthen the Endangered Species Act.

Larry Kessenick, an AFAR attorney, spoke at the spring WRC meeting and said that his group is willing to help wildlife organizations on such mundane but necessary matters as by-laws as well as more far reaching issues such as those mentioned above.

If you have a legal question related to animal welfare or would simply like to learn more about this organization, write: Attorneys for Animal Rights, 333 Market Street, 23rd Floor, San Francisco, CA 94105.

IMMOBILIZATION OF SIMPLE AND COMPOUND FRACTURES IN SONGBIRDS AND RAPTORS



By
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Wildlife Rehabilitation Council
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INTRODUCTION

Purpose: The purpose of this article is to offer the wildlife rehabilitator various methods for treating simple and compound fractures in raptors and songbirds. While each of these methods has been used successfully, it should be stressed that they remain guidelines and not mandates. Experience, creativity and an increasing knowledge of species, in combination with these and other techniques will produce further progress in the field of rehabilitation.

Handling the animal: Any animal suffering from stress, shock or bleeding should be treated first for these problems and allowed to calm before treatment of the fracture. Proper immobilization of the bird during the treatment is, in every case, a two-person operation and occasionally requires three people. Calming techniques, such as covering the head of the bird with a hood or towel, should be employed whenever necessary.

Materials: It is important to have a clear idea of how you will treat a specific injury before you start. Prepare and place within reach any materials needed for the treatment to be used prior to starting. Making a habit of collecting and centrally storing splinting materials of different weights and sizes will cut preparation time, as well as improve treatment creativity.

Definition of terms:

Simple fracture: a break in the bone without an accompanying wound at the fracture site.

Compound fracture: a break in the bone with an accompanying wound at the fracture site. Often this includes shattered bone where pieces may be missing.

Debridement: the act of cutting away or otherwise removing dead or infected tissue.

Reduction of the fracture: the act of pulling firmly at the joint beyond the fracture to reduce the overlap of the bone and bring about alignment prior to splinting.

GENERAL TREATMENT

1. Cleaning and Disinfecting Wounds

In the case of a compound fracture, the wound should be cleaned with a disinfectant, such as Betadine, by cleaning from inside the wound toward the outer edges. Cut or pluck feathers from the wound area. Debride the wound and treat with a topical antibiotic, such as Furacin, or equivalent, and cover with a sterile dressing.

2. Anesthetics and Oral Antibiotics

No anesthetics or oral antibiotics should be used without prior consultation with a veterinarian. It is extremely important to ascertain the weight of the bird prior to administering any drug to avoid overdosing. Avian dosages are

administered in inverse proportion to the weight of the bird.

Weakened birds may need a light dose of anesthetic, such as Ketamine, prior to treatment. Galvin (1976) cites the following guidelines for Ketamine:

NOT APPROVED BY DR E. FOR WRS

Bird Weight:	Dosage:
<100 gms (finch-size)	.1-.2 mg/gm body weight (45-90 mg/lb)
250-500 gms (pigeon-size)	.05-.1 mg/gm body wt. (22-45 mg.lb)
100-250 gms	.075-.15 mg/gm body wt. (34-68 mg/lb)
500-3000 gms (owls, hawks)	.02-.1 mg/gm body wt. (9-45 mg/lb)
>3000 gms (ducks, swans)	.02-.05 mg/gm body wt. (9-22 mg/lb)

Consult Galvin's Avian Drugs and Dosages for further information and precautions.

Often oral antibiotics are administered in the case of compound fractures. Some commonly used for birds include Hetacin-k, Amoxicillin, Ampicillin, Chloromycetin and Minocycline HCl syrup. Consultation with a veterinarian before administering an antibiotic is important due to the various side effects, such as vomiting, depressed eating and kidney stress, which may accompany some antibiotics.

Galvin's Avian Drugs and Dosages provides dosage guidelines and conversions. According to Galvin, in general, birds under 1 lb. are dosed 3-5 times the dog dose; 1-4 lbs. 2 times the dog dose; and over 4 lbs. at the dog dosage per unit of weight. For example, Chloromycetin administered at 30 mg/lb 3 times a day is equal to 3 times the dog dose. Under no circumstances should you administer an antibiotic to a bird if you are unsure of the dosage. Consult a veterinarian.

SONGBIRDS--INJURY AND TREATMENT

3. Wing Fractures

3.1 HUMERUS (Fig. 1). Due to the location and size of the humerus, it is difficult to splint or pin. In addition, often the fracture is compound. Two suggested treatments are offered for consideration. In the absence of healing with either of these methods, euthanasia may be advisable.

3.1a *Airplane Splint.* Place cotton balls or gauze around the fractured bone. Support the underside of the wing in an extended position with cardboard cut and molded to the extended wing shape, including the feather tips. Place a gauze layer over the feathers and tape the wing to the cardboard with Scotch Mystic Tape, masking tape, cloth tape or wrap with Coban. (Coban or Vetrap, used interchangeably in the article, is a self-adhering elastic wrap, which, when wrapped too tightly, will remain so. Therefore, any wrap with Coban or Vetrap should be checked frequently for swelling. It should also be noted that masking tape placed on feathers removes easily only for a short period of time, after which it begins to harden and stick more strongly. For this reason, a layer of gauze between feathers and any type of tape is advisable.) Due to the wing extension, this splint creates some awkwardness; therefore, a larger-than-normal confined area will be needed.

3.1b *Figure 8 Wrap* (Fig. 3). Wrap wing as shown in a flexed position using either Vetrap or Coban. Padding under the wrap can also be used for added support, if needed, and the wing fully wrapped with Coban. See Fig. 4.

Tape the wing to the body (Fig. 5) using gauze and tape or Coban. (Caution: hummingbird feathers are too fragile for the use of tape. Vetrap or equivalent, or gauze and Scotch Mystic Tape are good alternatives.) The body wrap should be snug, but allow for normal respiration.

3.2 RADIUS and/or ULNA (Fig. 1). Pinning fractures of the radius or ulna in songbirds is discouraged since damage to joints, especially the wrist joint, can occur. Where only one bone is broken, the other acts as excellent support with the splint. If the injury is compound, the area around the wound should be plucked, debrided and cleaned (Sec. 1). The following treatments are offered.

3.2a *Airplane Splint*. See Section 3.1a.

3.2b *Padded Splint*. Reduce the fracture by gently pulling at the wrist joint (see Introduction: *Reduction of the Fracture)*. Fold the wing to the body in a natural position and place rolled cotton or gauze padding under the wing. Place a piece of cardboard, cut in the shape of the folded wing, or tongue depressor (with the ends taped), on the underside of the wing on top of the padding. Place a gauze layer over the feathers and tape the wing to the cardboard, or use a Figure 8 Wrap (Fig. 3.). If the wing droops, a snug body wrap can be added (allow for normal respiration) (see Fig. 5). The undamaged humerus gives additional support, especially when both bones are broken.

3.2c *Figure 8 Wrap* (Fig. 3). See Section 3.1b.

3.3 METACARPALS (Fig. 1).

3.3a *Figure 8 Wrap* (Fig. 3). For small songbirds, the Figure 8 Wrap alone may be adequate. For Medium-sized songbirds (i.e. pigeon), a swab stick with the ends wrapped can be taped under the fracture for added support. Caution: flexing the wing too tightly, may cause displacement of the fracture.

3.3b *Feather Tape* (Fig. 6). For small birds, such as finches, a small piece of tape (over a layer of gauze) can be placed under and around the primary and secondary feathers. Part of the tape can touch the feathers to secure the wrap to the wing tip. Do not apply a body wrap so the wing may stretch out.

4. Leg Fractures

4.1 FEMUR (Fig. 2). Because of the location of this bone, splinting is very difficult. The bone may heal adequately without treatment if the bird is placed alone in a confined area with easy access to perches, food and water.

4.2 TIBIOTARSUS (Fig. 2). Fractures of this leg bone are the most common. The easiest break to immobilize occurs midshaft, with the difficulty increasing as breaks occur closer to a joint. (For breaks occurring in fledglings, see Sec. 4.4 PIN-FEATHER BABIES.) When using any of the three suggested techniques which follow, always immobilize the injured bone beyond the joint to reduce rotation of the fracture.

4.2a *Modified "L" Splint*. Reduce the fracture by pulling just above the ankle joint. Extend the tibiotarsus and metatarsus to form an angle greater than 90^{o}, still allowing the bird to perch. Place telfa pads or cotton around

the break. Support with a piece of cardboard on the outside of the leg cut to the angle of the tibiotarsus and metatarsus. Tape snugly with cloth tape or Vetrap. Be sure the ends of the cardboard do not rub on any unprotected area of the leg or body. See also, Sec. 4.2d *Foot Boot* for recommended foot boots.

4.2b *Rubber Tubing Splint.* Cut a length of soft rubber tubing (e.g. aquarium tubing) equal to the length of the tibiotarsus and metatarsus. Slit the tubing and round the edges at each end. Adjustments down to the circumference of the leg may be made by removing more tubing along the length of the slit. Reduce the fracture and form a greater than 90^{o} angle, still allowing the bird to perch. Place the rubber tubing on the leg with the slit to the front, adding some gauze padding, if needed, to form a snug, uniform fit. Two cuts in the tubing made perpendicular to the slit at the joint will aid the fit. Wrap the tubed leg at this angle with cloth tape or masking tape. Frequent checks for swelling are advisable. See also Sec. 4.2d *Foot Boot* for recommended foot boots.

4.2c *Straight Leg Splint.* Cut a swab stick equal in length to the tibiotarsus and part of the metatarsus. Tape the stick completely and set aside. Reduce the fracture by firmly pulling above the ankle joint. While holding the leg at full extension, wrap the fractured area with cotton padding past the ankle joint. Place the taped swab stick on the outside of the leg and wrap the splinted leg with Vetrap. See also Sec. 4.2d *Foot Boot* for recommended foot boots.

4.2d *Foot Boot* (Figs. 7 & 8). Often, due to the awkwardness of the splinting treatment, a bird will drag or stand improperly on the toes of the injured leg. To avoid future deformity or injury to the toes, a foot boot may be employed. Fig. 7 illustrates a foot boot for small songbirds consisting of two or three pieces of adhesive tape applied as shown. Fig. 8 illustrates a foot boot for larger songbirds, as well as small raptors. The bottom of this boot can be made from a piece of cardboard cut to the fan-like shape of the open foot so that the toenails will just hang over the edges. Adhesive tape is placed on the top of the toes, molded around each, and wrapped around to the underside of the cardboard. Also, 1-2 inch heavy adhesive tape alone can be cut to the shape of the open foot to form the bottom of the boot, with a second piece of tape molded over the top of the toes. The foot boot should remain for the length of the splinting time, approximately 10-14 days.

4.3 METATARSUS (Fig. 2).

4.3a *Straight Leg Splint.* See Sec. 4.2c with the modification that reduction of the break be made by firmly pulling just above the toes to align the bone. It is also advisable to place a padded foot wrap (Fig. 9) on the bird for 1-2 days. After removal of the foot wrap, a foot boot (Fig. 7 or 8) may be used for the length of the splinting time (10-14 days). The initial padded foot wrap helps to reduce swelling in the foot and equalize the pressure of the wrap.

4.3b *Rubber Tubing Splint.* See Sec. 4.2b.

4.3c *Modified "L" Splint.* See Sec. 4.2a with the modification that reduction of the break be made by firmly pulling just above the toes.

4.3d *Simple Taping*. Small songbirds with simple fractures of the metatarsus may also be splinted alone by reducing the fractures and placing a toothpick (with snipped and taped ends) on the outside of the leg. Tape the splinted bone with cloth tape. See also Sec. 4.2d *Foot Boot* for recommended foot boots.

4.4 PIN FEATHER-BABIES. Breaks occurring in very young birds can be treated by wrapping the leg in a bent perching position with cloth tape or masking tape alone. The ability to perch is equally important to the uninjured developing leg as the injured leg. Due to the high metabolic rate and hence high growth rate in songbirds, a wrap, whether it be on the wing or the leg, may need to be redone every 1-2 days to avoid deformity. This wrap gives lightweight, low pressure support to the fracture.

5. Healing Time and Post-treatment Rehabilitation

Due to the high metabolic rate in songbirds, healing time is fairly rapid--approximately 10-14 days. After the treatment has been removed, the bird should be placed in a mesh cage, alone, for about a week for observation. The bird should then be transferred to a flight aviary until it demonstrates its ability to be released.

RAPTORS--INJURY AND TREATMENT

6. Wing Fractures

6.1 HUMERUS (Fig. 1). Pinning fractures in this bone has been met with mixed success. In the case of compound fractures, pieces of bone may be missing. Also, x-rays may not show minute cracks which tend to break when pinning. Finally, raptors have a tendency to be hesitant to resume use of a previously injured wing, thereby reducing their recovery potential. The following suggested methods are offered.

6.1a *Figure 8 Wrap with Body Wrap or Stocking* (Figs. 3,4,5 and 10). This wrap should be used only where pinning is inadvisable or unavailable. Reduce the fracture and align the break. Carefully flex the wing, placing cotton padding on the inner and outer sides of the wing and wrap with Vetrap in a Figure 8 as shown in Fig. 3. Then wrap the entire wing snugly, but not too tightly, as shown in Fig. 4. (Due to their elastic properties, Coban and Vetrap have a tendency to wrap too tightly. Be sure to periodically check the wrap for any sign of swelling.) The combination of padding and wrap helps to equalize the pressure on the wing and allow circulation. Immobilize the wing further through the use of a body wrap or stocking. Vetrap works well as a body wrap (Fig. 5), with the exception of owls, where the wrap slips down the feathers. A combination of gauze (next to the feathers) and masking tape or cloth tape works better for owls. The body wrap should not restrict normal respiration or casting. A body stocking (Sec. 6.4 and Fig. 11) may be used in place of a body wrap.

6.1b *Pinning*. A veterinarian will x-ray the wing and insert a pin which will remain in the bone approximately 3 weeks. Since bacteria may form where the pin protrudes, a topical antibiotic and sterile dressing should be applied. Further immobilization of the wing after pinning may take the form of a Figure 8 Wrap (Sec. 6.1a and Fig. 3) and body wrap (Fig. 5) for

small raptors and accipiters or body stocking (Sec. 6.4 and Fig. 11) for large hawks and owls.

6.2 ULNA and/or RADIUS (Fig. 1). A veterinarian will x-ray the wing. Where one bone or the other is fractured, proper alignment should be attempted without pinning (see Sec. 6.2a). If both radius and ulna are broken, pinning of one bone is required (see Sec. 6.1b). Regardless of the treatment used, periodic examinations should be made to detect any swelling.

6.2a *Figure 8 Wrap with Body Wrap or Body Stocking* (Figs. 3,4,5, and 10). See Sec. 6.1a for instructions on this wrap. The uninjured bone provides excellent fixation for proper alignment. After the first week, the treatment may be removed. If calcification has begun, the bird should be kept in a small confined area with a rope wrapped perch a few inches off the floor for the remainder of the treatment period. If proper healing has not sufficiently begun, the treatment should be replaced.

6.3 METACARPELS (Fig. 1). Pinning is not usually employed. The greatest problem with metacarpal fractures is non-union of the injured bone. The following treatments are offered.

6.3a *Airplane Splint*. If the fracture is close to the joint, an airplane splint may be used (see Sec. 3.1a and modify by splinting only half way up the humerus). Watch out for too much tightness in the wrap causing a loss of blood supply to the area. Extension of the wrist in this treatment reduces the accompanying stiffness after the treatment is removed.

6.3b *Figure 8 Wrap* (Fig. 3). See Sec. 3.1b and modify by adding extra cardboard support under the fractured area, cut and molded to the shape and underside of the wing.

6.4 BODY STOCKING (Fig. 11). This form of immobilization has advantages and disadvantages. While it holds the wing in a natural position, keeps the bird and the injured wing warm, protects plumage and removes easily, it can also make the bird too warm, cause stress due to the restriction, and create a hazard to very active raptors (e.g. barn owls) when toes get caught in the material. If after 12 hours the bird is still exhibiting stress from the stocking (i.e. lying down, crouching unnaturally or struggling), remove and use a body wrap (see appropriate portions of Sec. 6.1a and Fig. 5). For more docile species, such as marsh hawks, a stocking may work well.

Materials for the stocking can be cotton tubular bandage, nylon stocking, sock, etc. Cut material to be used $1\frac{1}{2}$ times the bird's body length and cut one hole midline (for uninjured wing). Hold the flexed, wrapped injured wing to the body, slip the stocking over the body, pulling the wrist of the undamaged wing through the hole (2 person operation). Place adhesive tape snugly around the neck hole and turn the excess tubing down over the tape like a turtle neck sweater. Cut holes on the side of the tube at the upper femur joints and draw each leg through. Form an X-shaped cross with masking tape starting from behind and under each leg, crossing the abdomen and finishing above the opposite leg hole on the side of the body. This pattern of tapes forms an inverted "V" above the vent. Clip the tube up to the "V" to insure all fecal material is eliminated clear of the tube. Also cut any excess tubing over the legs. A very snug fit which still allows for normal respiration is critical to the success of this method.

7. Leg Fractures

7.1 FEMUR (Fig. 2). Splinting is seldom satisfactory and pinning should be done, if possible. The following treatments are offered.

7.1a *Folded Splint*. When pinning is not possible, fold the leg in a natural sitting position, pad and splint as follows: tape the tibiotarsus to the metatarsus, then wrap or tape the leg up to the body so the femur is in alignment. To prevent the leg from rotating under the body, place a roll of knitted gauze on the underside of the body next to the inside of the folded leg and tape securely in place. Periodically check the splint to be sure the leg stays directly under itself.

71.b *Pinning*. A veterinarian will x-ray and pin the fracture, flexing the patella of the knee sufficiently to avoid the protruding pin (treat area of pin protrusion with a topical antibiotic and sterile dressing to reduce incidence of infection). After pinning, the leg of small raptors may be taped in a natural bent position; large raptors may need a plaster cast. The pin will remain in place for about 3 weeks. During this time, a body sling which, by supporting the bird's body, takes weight off the injured leg, may also be used. Se Sec. 7.4 for suggestions and cautions in its use.
If a pin is removed before complete calcification has formed, a thick padded splint described in Sec. 7.2a and Fig. 10 may be used for one week, or the pin may be left in until the fracture is fully calcified. Some stiffness in the leg may be evident after treatment, but should work out during post-treatment rehabilitation.

7.2 TIBIOTARSUS (Fig. 2). Fractures of this bone can be splinted, pinned or immobilized by a cast.

7.2a *Padded Splint* (Fig. 11). Reduce the fracture and align the broken bone in the normal position. Wrap the leg in rolled or sheet cotton. Place two tongue depressors on each side of the leg and secure the splints in two or more places with adhesive tape. The splints should reach from joint to joint of the broken bone. Be sure the ends of the splints are rounded and padded to prevent bruising or irritation to joints or body. Wrap the entire treatment snugly with Vetrap or Coban. To equalize pressure and reduce swelling as a result of the splint, a padded foot wrap (Fig. 9) is recommended for the first 24 hours. Check the foot often for the appearance of swelling after the foot wrap is removed.

7.2b *Pinning*. After x-raying the fracture, a veterinarian will insert a pin for 3-4 weeks. During this time a body sling may also be used. See Sec. 7.4 for suggestions and cautions on its use. If the pin is removed before complete calcification has formed, a thick padded wrap similar to the padded splint described in Sec. 7.2a and Fig. 10 may be used for one week, or the pin may be left in until the fracture is fully calcified. Stiffness in the leg after treatment should work out during post-treatment rehabilitation.

7.2c *Adhesive Cast*. This method provides substantial immobilization without excess weight and rigidity. Reduce the fracture and align the bone. Wrap and tape a layer of gauze around the leg, then layer wide adhesive tape lengthwise on the bone to create two built-up vertical vanes of excess tape on opposite sides of the limb. Gently crimp the vanes with pliers along the contours of the leg to create a closer-fitting "cast" and prevent bending.

7.2d *Plaster Casts*. Leg fractures in raptors, in most cases, should be pinned. However, if the bird cannot be examined by a veterinarian within a few days, a temporary plaster cast may be used. Discuss the advisability of casts with your veterinarian before attempting their use. A cast does have advantages; however, if it is put on improperly, you are essentially committed to the results it will produce. Instructions for a basic plaster cast are as follows:

Three people are necessary for proper application of plaster casts. One person restrains the bird, one extends the leg to the fullest to prevent overlap of the bone ends, and one applies the cast. Soak gauze bandage strips with quick-drying plaster and apply lengthwise to the injured leg. Do not wrap gauze around the leg, since the drying plaster will shrink and impede circulation. Build up the cast into a shell around the fractured limb. The final layer may be wrapped around the leg, as it will not compress the material underneath.

7.3 METATARSUS (Fig. 2). Since this bone is an evolutionary fusion of three long bones, a central pin is not satisfactory. Use a padded foot wrap (Fig. 9) with each of the following suggested treatments for the first 24 hours.

7.3a *Masking Tape Wrap*. This method works well for simple fractures in small raptors. Reduce the fracture by firmly extending the leg. Place a layer of gauze around the leg and wrap with masking tape until enough stiffness is formed for adequate support. See also Fig. 9 for padded foot wrap.

7.3b *Padded Splint*. See Sec. 7.2a.

7.3c *Adhesive Cast*. See Sec. 7.2c and Fig. 9.

7.3d *Plaster Cast*. See Sec. 7.2d and Fig. 9.

7.3e *Modified "L" Splint*. See Sec. 4.2a with the exception that reduction of the fracture be made by firmly pulling just above the toes. See also Fig. 9 for padded foot wrap.

7.4 BODY SLING OR HAMMOCK (Fig. 12). A sling, along with a padded perch for grasping, has the advantage of reducing the body weight on an injured leg until healing begins. The greatest disadvantages of this method are atrophy of muscle due to extended use of the sling, and the tendency for wild birds to struggle out of the restriction. Experience seems to show that lightweight birds will struggle out of the sling faster than heavier birds. Also, characteristically aggressive or active birds tend to reduce the success of the sling due to their continual struggle to free themselves. In addition, the weight of the bird rests entirely on the abdomen and chest and, therefore, the position of the bird must be adjusted every 1-2 hours. Evaluation of whether the sling is doing good or harm (i.e. body sores or atrophy) should be made after two weeks. Struggling or other forms of intolerance will usually be apparent within 12 hours after the treatment is employed. Note that some weight on a healing bone mobilizes calcium faster, and is therefore beneficial to healing.

Materials appropriate for a sling are: qiana nylon, foam rubber or any material with elastic properties to allow for bounce and changes in pressure. The sling should have holes cut to accommodate legs, vent and wings. Modification of the set-up shown in Fig. 12 may be necessary depending on the bird.

7.5 TOES (Fig. 2). Fractured toes are usually self-healing, but may be booted or wrapped in several ways, if needed.

7.5a *Foot Boot* (Fig. 8). The bottom of the boot can be made from a piece of cardboard or styrofoam (covered with adhesive tape to eliminate slipping) cut to the fan-like shape of the open foot, so that the toenails will just hang over the edges. Adhesive tape is placed on the top of the toes (molded around each) and wrapped around to the underside of the cardboard. Also 1-2 inch heavy adhesive tape alone can be cut to the fan-shape of the open foot to form the bottom of the boot, with a second piece of tape molded over the top of the toes. The foot boot should remain for the length of the splinting time, approximately 3-4 weeks.

7.5b *Padded Foot Sandal*. Place cotton ball(s) on the underside of the foot forming an arch. Separate each toe and tape individually to a piece of fan-shaped cardboard cut to the size of the open foot, allowing the toenails to hang over the edge.

8. Healing Time and Post-treatment Rehabilitation

Healing time in raptors takes about 3-4 weeks. After the treatment has been removed, the fractured area should be x-rayed or examined to determine if a hard, solid callous showing good calcification has formed. The bird's movements should be restricted by confinement, alone, in a large cardboard box or other suitable container for one week for observation. Avoid any additional body suspension in a sling or hammock arrangement, since weight on a healing bone mobilizes calcium faster. If satisfactory healing is observed, transfer the bird to an appropriately-size flight aviary until it is ready for release. (Note: certain species do not mix well together in an aviary setting. Consult Garcelon and Bogue, Raptor Care and Rehabilitation for assistance in mixing species.)

9. Tolerating Wing Impairments

The length of the flight feathers generally makes a difference in the amount of impairment a species can tolerate. The longer the feathers, the better the chance a bird will tolerate impairment. A gull, for example, will tolerate more impairment than raptors or grebes. Seedeaters can compensate for some shortening of wing extension, where raptors will have a more difficult time. In addition, the closer to a joint the fracture occurs, the less likelihood of successful healing. Considerations such as these may aid in determining the prognosis for a particular bird.

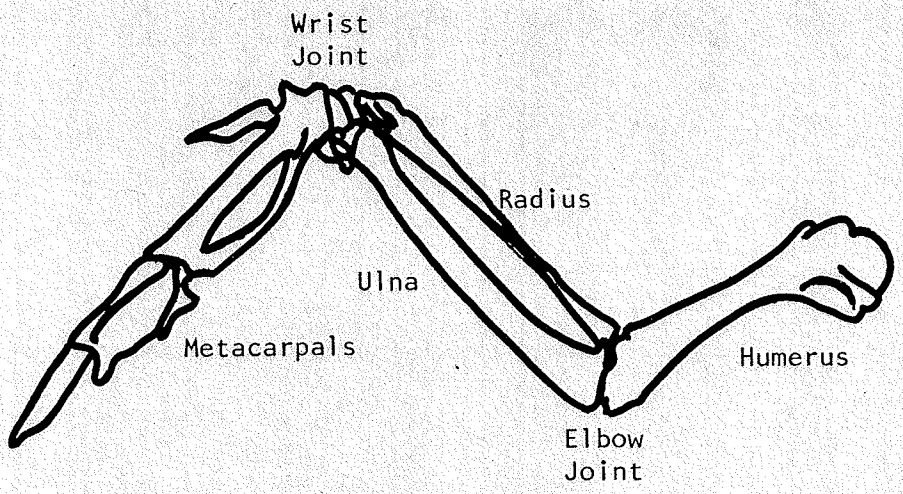


Fig. 1 Wing Anatomy

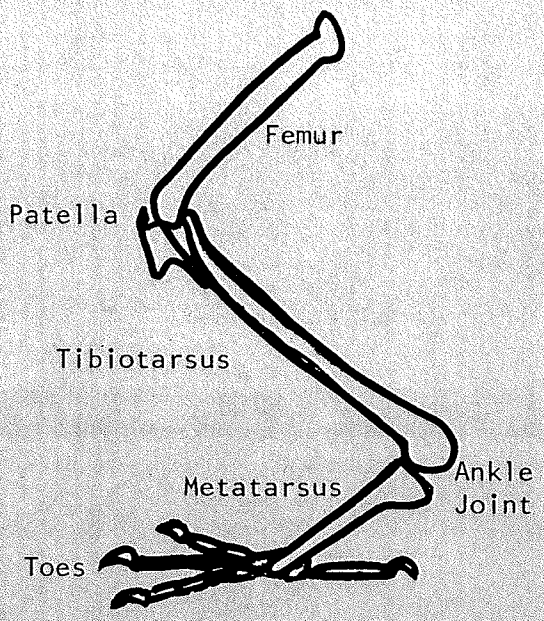


Fig. 2 Leg Anatomy

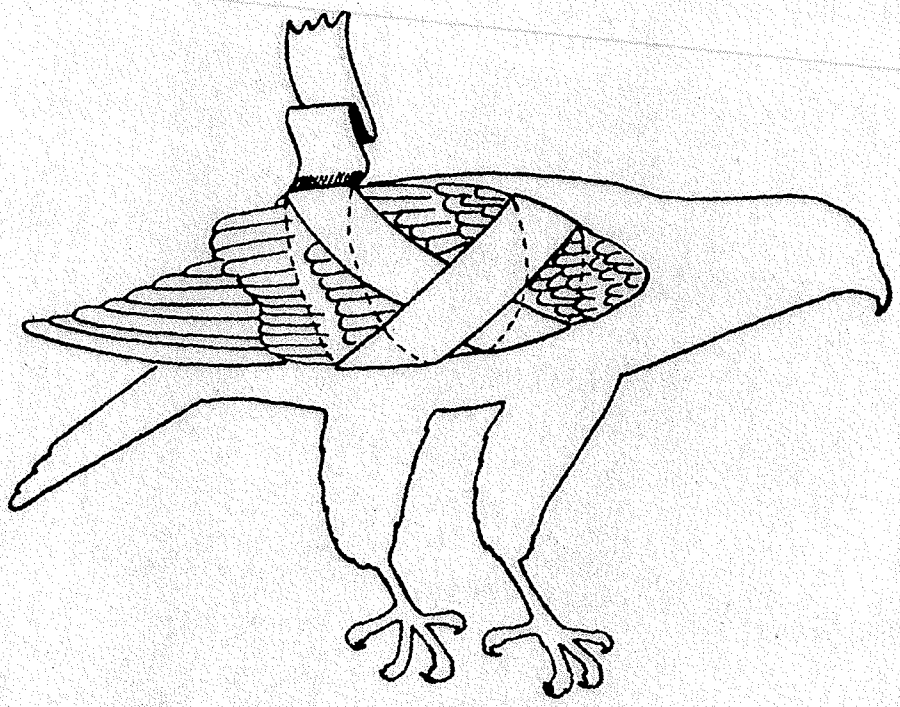


Fig. 3 Figure 8 Wrap

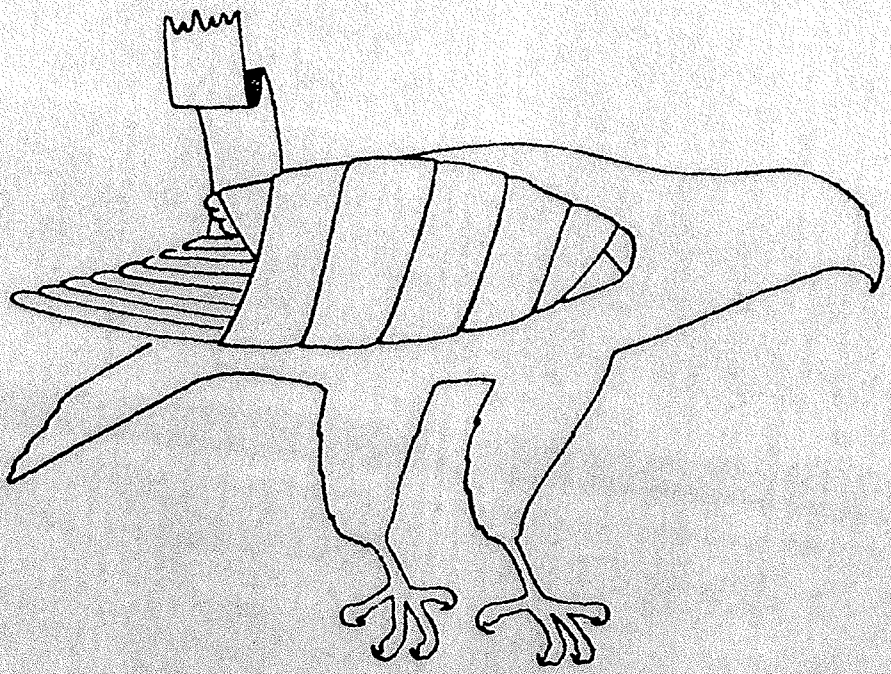


Fig. 4 Padded Wrap on Wing

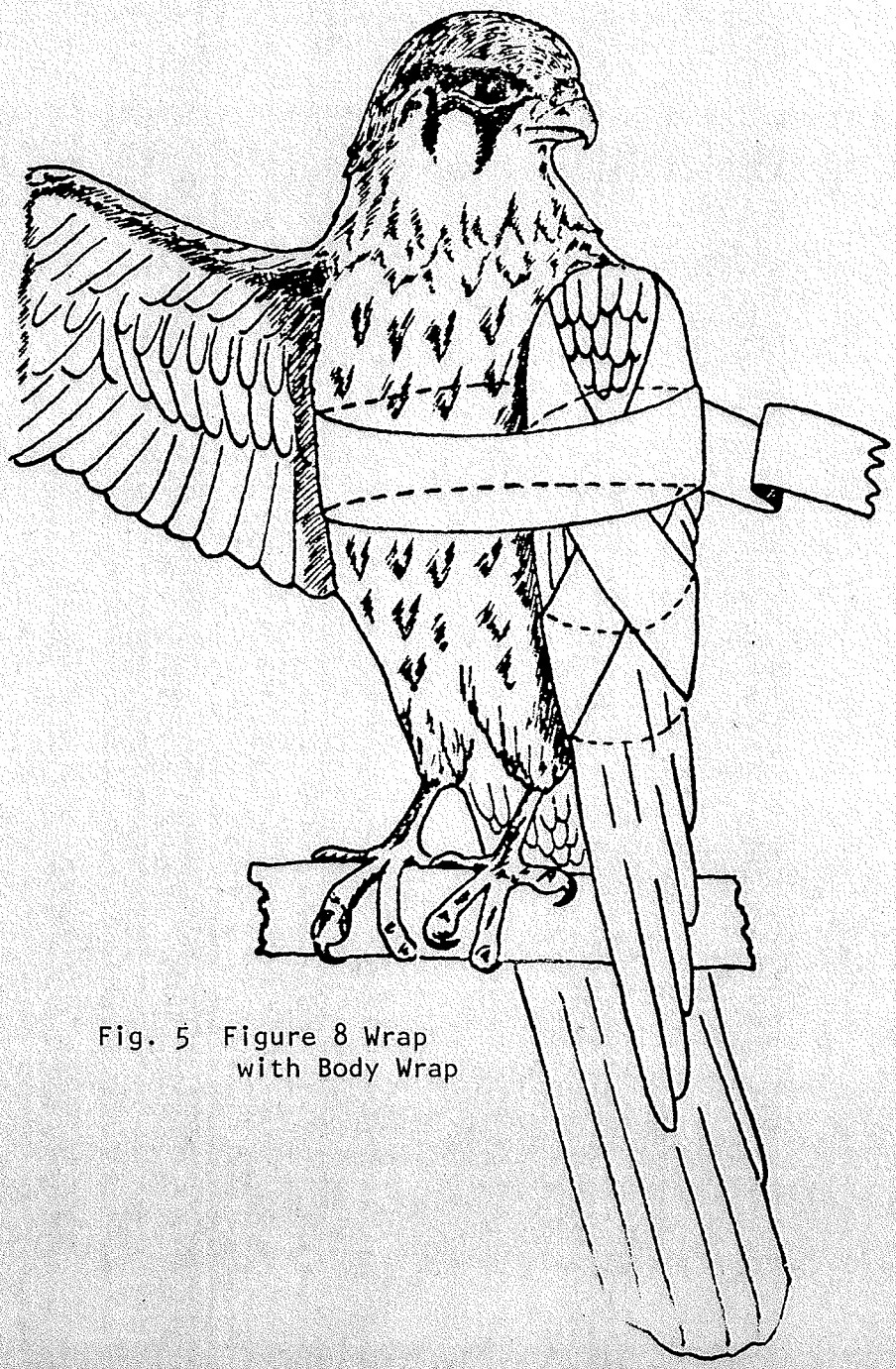


Fig. 5 Figure 8 Wrap
with Body Wrap

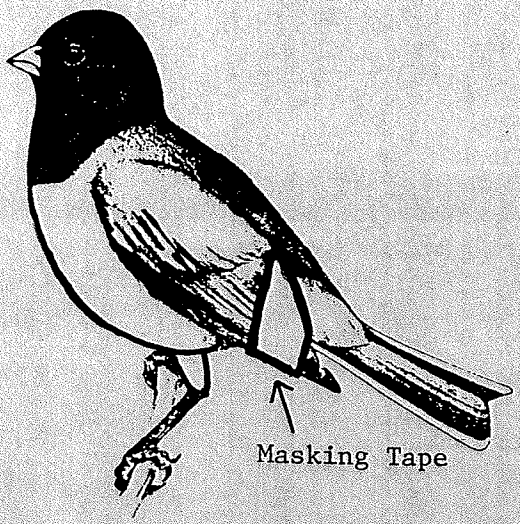


Fig. 6 Feather Tape for Small
Songbirds

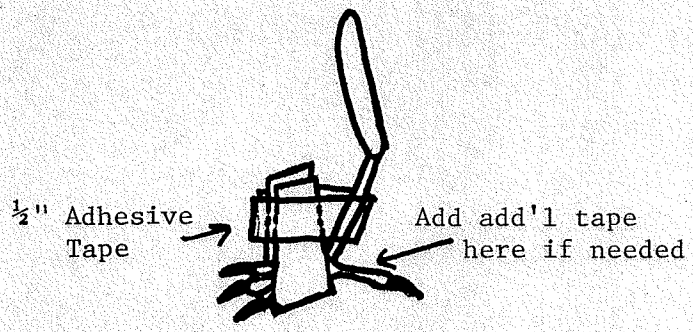


Fig. 7 Foot Boot for
Small Songbirds

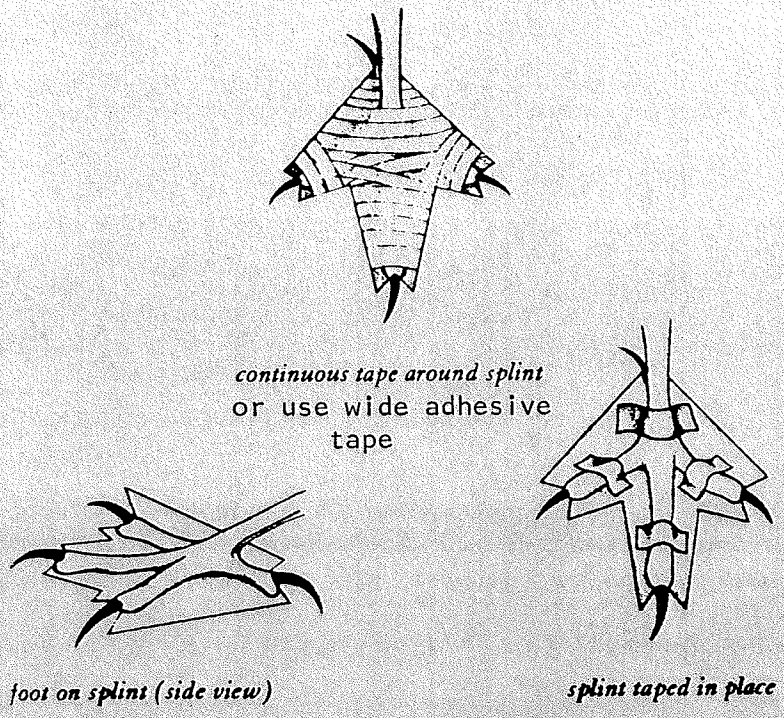


Fig. 8 Foot Boot for Med.-Lrg.
Songbirds and Small Raptors

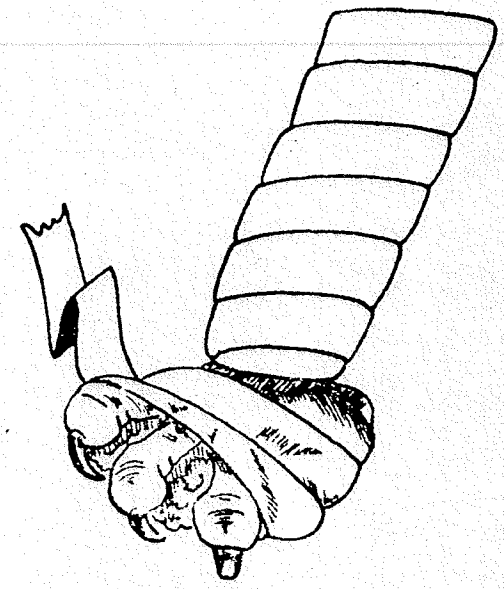


Fig. 9 Padded Foot Wrap
(with leg splint)

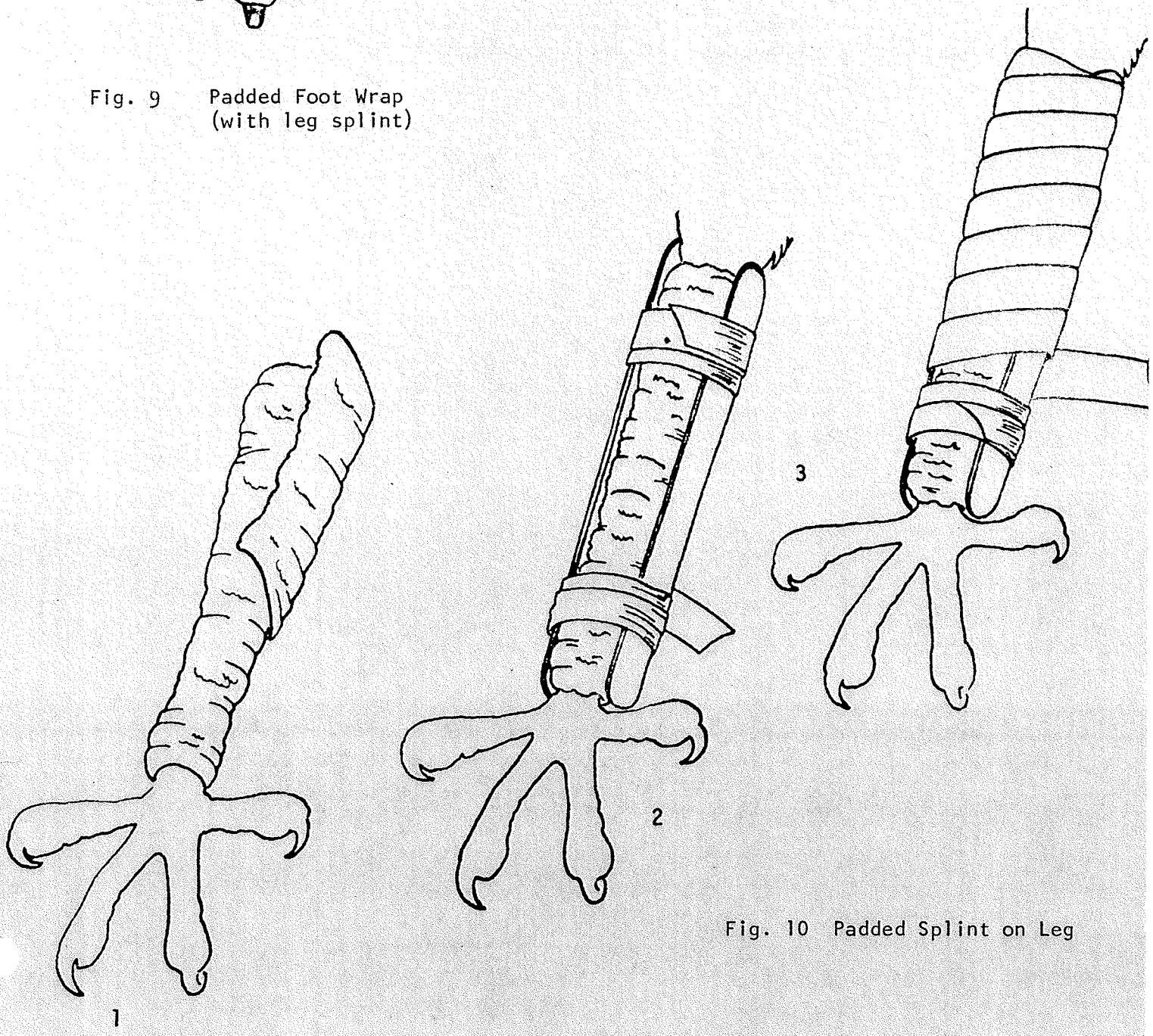


Fig. 10 Padded Splint on Leg

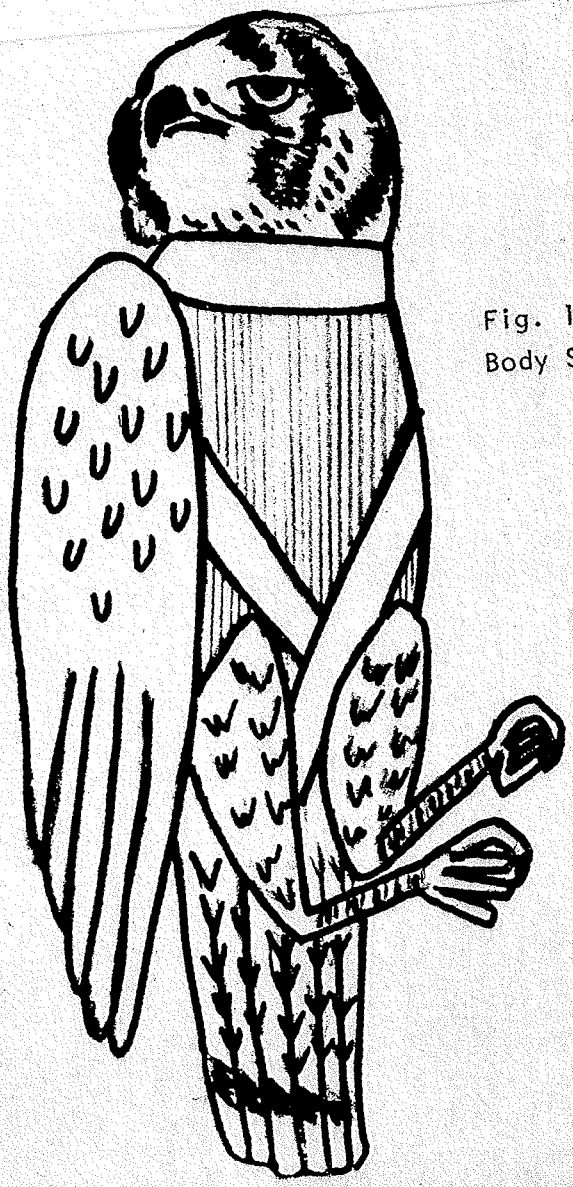


Fig. 11
Body Stocking

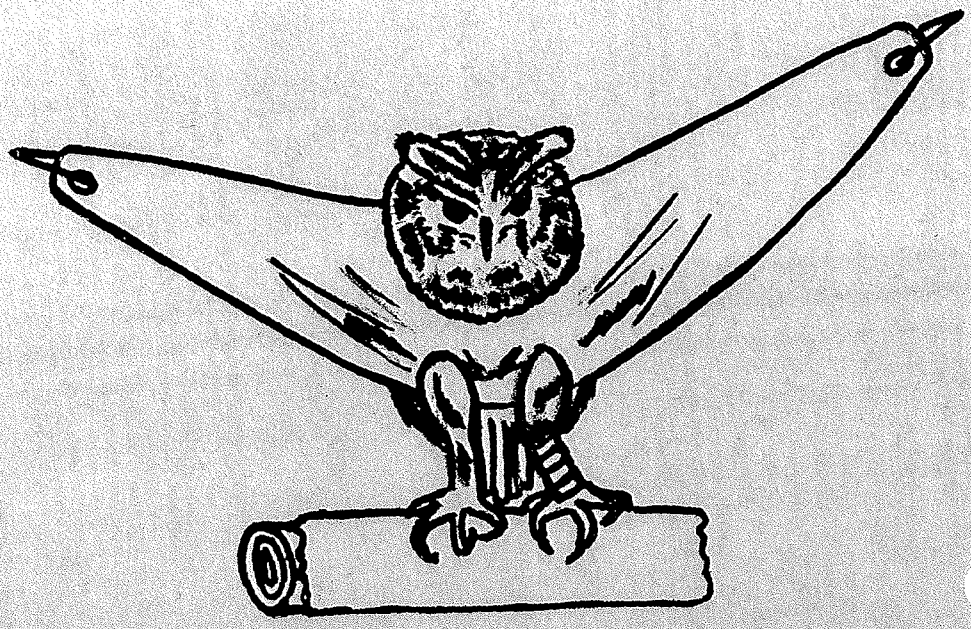


Fig. 12 Body Sling or Hammock

ACKNOWLEDGMENTS

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In addition, I wish to express my appreciation to Unity Press for permission to use the illustrations on the cover and in Figures 6 and 8, from Hickman and Guy, Care of the Wild Feathered and Furred: A Guide to Wildlife Handling and Care. I wish also to express my appreciation to Gary Bogue for granting permission to use the illustrations in Figures 3, 4, 5, 9 and 10 from Garcelon and Bogue, Raptor Care and Rehabilitation.

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Date: October 11, 1980

Place: Wildlife Rehabilitation Services, Inc.
524 Delaware
Fairfield, CA

Time: 10:00 a.m. Business Meeting
12:00 p.m. Guest Speaker

Speaker: David Phillips, Friends of the Earth

Topic: Film and discussion on the recent death of the California Condor chick.

This issue of the Wildlife Journal is small so that we could send you Immobilization of Simple and Compound Fractures in Songbirds and Raptors by Victoria Welsh. The next issue will return to its normal format. Additional copies of Victoria's article may be ordered from WRC for $1.50 plus postage.

The Wildlife Journal staff inadvertently omitted the names of the co-authors of Raccoon Rehabilitation--Jan White and Debbie Marcum--in an article about the paper in the last issue. The staff regrets this oversight.

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