



APPRENTICE STUDY GUIDE

THE PURPOSE OF THIS ORGANIZATION SHALL BE TO PRESERVE BIRDS OF PREY
AND TO ADVANCE THE ART AND PRACTICE OF FALCONRY BY:

- The improvement of the qualifications and abilities of falconers through the high standards of practice, experience, ethics, conduct and achievement.
- The dissemination of knowledge through research, meetings, reports, papers, discussion and publications.
- The active promotion of the public image of falconry to the end of having falconry viewed as an art and sport, to be preserved for future generations.
- The preservation of all birds of prey through the active education of the public as an appropriate and effective conservation measure.

FREDERICK W. HOLDERMAN, EDITOR

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READ FIRST

Congratulations. Strange as it may seem, you have actually overcome the hardest part of becoming a falconer. Many people with the notion they want to be falconers find, first, that the art of falconry is alive and well, and, secondly, how to get started. You've done all that. There aren't a lot of us. Only about 400 active license holders in California out of approximately 7,000 nationwide. About ten new apprentices start every year in California. About the same number of falconers drop out of the sport.

To become a falconer you must prove to your state and to one general or master falconer, that you have the book knowledge, facilities, equipment and ambition to become a falconer. This is not as hard as it sounds. The book knowledge is tested in the form of your state's falconry examination and is the first and most difficult "gate" you must pass through to become a falconer. Even though **THE TEST** is the "most difficult part" that does not mean that the test is all that hard.

The test is composed of about fifty to fifty-five questions about falconry, natural history of the birds of falconry, equipment, facilities, laws and regulations, and so on. The questions are fairly evenly split between true/false and multiple-guess. The test has been approved by the federal government. The states are free to vary the questions. Utah is widely thought to have the toughest.

This guide asks questions in the same way the states ask test questions. If you can answer all the questions in this manual, you will likely pass the test. Most do. It is not a guarantee. If you want a guarantee, buy a toaster-oven. The guide is based on the Socratic method of teaching, wherein you the students are asked a question by the teacher. Answers are proposed. After the student mulls over the options, the teacher gives the correct answer, and discusses why the other choices are wrong. Words in the main sections in **bold** are further discussed in the glossary. Numbers in brackets, i.e. [34], are the references, which are listed after the glossary.

While you can skip around from section to section, the existing format, first, introduces you to the birds used in falconry and something of their hunting and falconry techniques. Following this is the section on keeping hawks: raptor care and maintenance, equipment and facilities, and health. Then comes the section on training and hunting. The last section covers regulations, laws and administration. If you are seeking your license in a state other than California, be aware that you must be able to answer **YOUR** state's questions on **YOUR** state's test. Bear in mind that the regulations do evolve over time. The regulations' section is up-to-date as of Spring 2010.

When I started my studies to become a falconer, I memorized the New York manual creating a glossary as I went. (It is the basis for the glossary in the back of this manual) By the seventeenth reading, I could answer all the New York questions, and realized, while I knew a lot of facts about falconry, I didn't know much about falconry. Following the California Hawking Club's Apprentice contact's (Mike Faircloth) advice, I absorbed Frank Beebe's *A FALCONRY MANUAL*, the CALIFORNIA HAWKING CLUB'S *APPRENTICE MANUAL*, and memorized the laws and regulations package sent me by the Department of Fish and Game. These two books and the packet of laws helped me put my newly learned facts in order and I passed the test the first time.

The early parts of becoming a falconer are tedious, but not difficult. Every falconer went through this in one form or another. If I had to do it over again, if I had any inkling of the satisfaction of hunting with my first red-tail, I would have done it sooner. Thirty-four years and an Air Force career passed between the time I became interested in falconry and when "Mosby," my apprentice red-tail, flew free to me.

When you meet and talk to falconers, take care not to dismiss wild sounding stories as "fishing tales" about "the one that got away." There are many skilled falconers and many talented hawks. In concert they accomplish the extraordinary. While it's true that much of falconry is the falconer learning to work within the hawk's natural inclinations, it seems that some individual hawk of some species can be trained to do something not only not expected of the species, but wildly at odds with "conventional wisdom".

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AN INTRODUCTION TO FALCONRY

The British Falconer's Club defines falconry as the taking of wild quarry in its natural state and habitat using trained birds of prey. As the beginner soon learns, hunting with their hawk is both a requirement and a necessity. Without hunting a person with a hawk merely is nothing more than keeping a pet.

Falconry is a one-on-one relationship based on trust. A dedicated, patient human joins with a bird of prey and the result is a unique linking of diverse beings in a sport called falconry. Two basic requirements for success as a falconer are time and patience.

Birds of prey are known as raptors. The root comes from "rapacious" and describes their living on captured prey. Raptors include eagles, hawks, falcons, accipiters, buteos, owls, kites, and harriers. Hawks (accipiters and buteos), owls, and falcons are the normal birds used in falconry, but eagles are sometimes flown (with special permits) where open spaces permit their far ranging flights. Falconry has a long tradition in the Middle and Far East, and a shorter history in Europe. In the United States, approximately 7,000 active falconers currently take part in this sport.

Falconry is closely regulated by both state and federal law. One must meet the legal age requirement, take and pass a written examination administered by the State Department of Fish and Game, construct and have inspected an appropriate housing facility for the raptor, and purchase the necessary equipment. It is then necessary to locate a sponsor for the two-year apprenticeship program. Only after all of these steps are completed may a raptor be obtained for falconry during the legal trapping season.

At this point the hard work really begins. It may take upwards of two hundred hours to train a bird for falconry purposes, though it most often takes much less. When the apprentice's first bird (or actually any raptor) is trained, the only modification to wild behavior is that the bird now allows a specific human being to approach it on its quarry. The birds remain wild and are capable of returning to the wild at any time they are flown. They often do. Two years under the guidance of a general or master falconer are necessary for the apprentice to become a general falconer. Five years more as a general and he or she can become a master falconer. All of those years are filled with learning experiences. In truth no hunt is like any other and it is a rare falconer that learns nothing new each time they go hunting.

Birds of prey are trained entirely by reward. The bird's natural response to food is the key and no punishment is ever used, nor is it effective. While dogs will respond to a tone of voice and horses to the touch of the reins, raptors have no desire to please their human companions. Raptors are definitely not pets and a part of every raptor remains forever aloof, reserved and wild.

Wise falconers come to realize that they don't train the birds to hunt. Hawks and falcons are, by nature, successful hunters. As a part of the predator/prey balance, hawks chase, capture and kill with no training from their human companions. The training in falconry involves having the hawk learn to accept the human as an aid to more successful hunting and to a more dependable food supply.

The human provides a carefully measured, nutritious diet, designed to keep the bird at its optimum flying weight and top form. The falconer plans the hunts so that the raptor has the greatest chances of success in each situation. A skilled, experienced falconer encourages the bird to develop its skills and to improve with each flight. Time, patience, and persistence are necessary in order for the falconer to be a good hunting partner to the bird.

The reward is the emotional satisfaction of being close to a wild creature as it successfully follows its instincts. The falcon or hawk allows the falconer to be close to the flight, the chase, the capture of the prey. They can leave when they choose, but they choose to stay. Walking the edge of freedom and flight can be a beautiful experience.

ACKNOWLEDGMENTS

The original template of this document was the Falconry Examination Manual published by the Division of Fish and Wildlife, Department of Environmental Conservation, the State of New York with assistance from the New York State Falconry Association. We added new subject matter to supplement and compliment New York's work. The only overt change to the New York source material was format change, sketches, some sample tests, and in the laws and regulations sections where, since this is written for California, the questions and answers reflect current California statutes, regulations and Department of Fish and Game policies as well as the standard federal questions.

Then it got away from me. I started out to create an update of the New York Manual to merely include California rules and regulations; but was reminded of all those "dumb" questions that I had when I began falconry and added those in. While the additions may not necessarily help you pass the Falconry Exam, they'll help in more subtle ways by filling in the gaps between the bare facts. By the time I was done, nearly everything was rewritten.

About the art work: the exceptional artwork is Johnny Meitz's, who in addition, was my sponsor. Johnny's ability to get a point across with humor and a few lines of ink is incredible. My son Bradley Holderman did the portraits of the peregrine, the goshawk, the red-tail on the bow perch, the hunched-over Harris' hawk, the merlin on the block perch, some of the worm's-eye-views (view of a hawk as they pass overhead) and several others. The so-so, amateurish melding together of the worm's-eye-views is mine and Peter Dunne's *HAWKS IN FLIGHT* inspired me. I credit Frank L. Beebe for his inspiration on the artwork. Frank does such an excellent job in his books it makes it difficult for us amateurs to try to get the same anatomically correct point across without it looking like his work.

I am indebted to:

- Debbie Osborn of the Wildlife Protection Division, California Department of Fish and Game, for her review of the regulations section.
- Dr. William Ferrier who updated and reviewed the health section.
- Mike Faircloth and Craig Culver for their reviews, comments, and continuing support.
- Anna Lewis and Larry Mulls, both of whom found and helped correct inconsistencies in the text and answers.
- Lastly, I am deeply obligated to Lynn Straight for her review, copy editing, proofreading, and unrelenting support of the original effort. She caught my split infinitives, dangling participles, misplaced commas and periods, poor humor, and outright wrong information. She gave me fresh insight to my understanding of the art of falconry, and in general, polished this manual into a professional effort. At one point very late in the original editing of this guide, her words of encouragement kept me going when I was willing to leave out the sketches and the glossary just to get the thing done. Lynn passed away suddenly in the Spring of 2004 leaving a void that will never be filled. We are all better people for having known her.
- Finally, I would not have written this document nor would I be a falconer without the unending patience, cooperation, understanding, and sense of humor of my sponsor, Johnny Meitz, and my mentor, Mike Faircloth.

This Spring 2010 edition of the Apprentice Study Guide is dedicated to all of you.

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Regulations Worksheet

SECTION 1.0 RAPTORS

SECTION 1.1 GENERAL

1. A hawk is . . .

- a. a generic term describing a non eagle, non vulture, diurnal bird of prey.
- b. a member of the genus *Accipiter*.
- c. a diurnal raptor with short rounded wings, long tail and light eyes.
- d. all of the above.

Answer d. The word **hawk** can be confusing for a beginner. Strictly speaking a **hawk** is a member of the genus *Accipiter* and includes the goshawk, Cooper's hawk and the sharp-shinned hawk of answer "b" and described in answer "c." The terms "raptor" and "bird of prey" are interchangeable. The term "hawk" is often used as in answer "a" to include, besides the species of genus *Accipiter*, the species of the genera *Falco*, the longwings or falcons; *Buteo*, also called broadwings and buzzards in Europe; the *Pandion* or osprey; *Ictinia*, *Elanoides*, *Elanus*, *Rostrhamus* and *Chondrobierax*, known collectively as kites; and the genus *Circus*, the harriers.



2. A "bird of prey" or "raptor" is . . .

- a. any bird that preys on other living creatures.
- b. a bird with powerful taloned feet for grasping and killing, a hooked beak for tearing flesh and includes all members of the Orders *Falconiformes* and *Strigiformes*.
- c. a member of the Order *Falconiformes*, but not the Order *Strigiformes*.
- d. a member of the Order *Strigiformes*, but not the Order *Falconiformes*.

Answer b. The Order *Falconiformes* includes kites, vultures, hawks, eagles and falcons. The distantly related Order *Strigiformes* includes all owls. Both share the common characteristics of talons and beaks and are considered "birds of prey" or "raptors." Answer "a" is incorrect as the definition is too broad and would include everything from the ponderous fish-eating pelican down to insectivorous, insect-eating, warblers. [2]

3. A **falcon** is . . .

- a. a female of the species *Falco peregrinus*.
- b. a generic term to include all hawks with long, pointed wings, long tails, small heads and broad shoulders.
- c. any bird used in falconry.
- d. "a" and "b" but not "c"

Answer d. Strictly speaking the term **falcon** applies only to the female peregrine; the male is called a tiercel by Europeans and classical falconers. However "falcon" has become a generic term referring to all of the members of the genus *Falco*, also called longwings and described in answer "b." Answer "c" is incorrect as *Accipiters* and *Buteos* are also used in the sport of falconry and are never referred to as **falcons**.

Editor's comment: falconers describe birds of prey with terms such as "long, pointed wings" or "longwings"; these terms detail characteristics relative to other birds of prey. A goshawk's wings are twice the length of the American kestrel's, but, regardless of the actual length, a kestrel has relatively long, pointed wings and is known as a longwing; while the goshawk with relatively short, rounded wings is known as a shortwing.

4. A buzzard is . . .

- a. a member of the Genus *Buteo* and has wide core wings, a heavy body, and a short or "stubby" tail and superb soaring capabilities.
- b. a carrion-eating raptor with a featherless head and superb soaring capabilities.
- c. the European vernacular for the Genus of raptors that includes the red-tailed hawk, the red-shouldered hawk, the ferruginous hawk, the common buzzard, and the broad-winged hawk.
- d. "a" and "c" but not "b"

Answer d. Answer "b" is incorrect. When the English arrived and started naming the creatures around them they called the vulture family "buzzards." By the time the naturalists arrived to sort out the true names, the damage had been done. Thus to most Americans the terms "buzzard" and "vulture" mean the same thing as in answer "b." To the Europeans "buzzard" strictly refers to the *Buteos*. This does not mean that *buteos* will not eat carrion, but it is not their normal diet. [2]

5. An eagle is . . .

- a. a member of the Genus *Aquila* with long, broad wings and a medium tail.
- b. a large hawk-like bird.
- c. any hawk-like bird larger than the female gyrfalcon.
- d. all of the above

Answer a. Strictly speaking the sixteen members of the genus *Aquila* are the "true" eagles. However, there are more than fifty species of large hawk-like and eagle-like raptors with the term "eagle" in their name. They vary in size from the Wallace's hawk-eagle which is about the average size of a red-tailed hawk and therefore smaller than a gyrfalcon (Jeer (rhymes with "cheer")-falcon) (making answers "b" and "c" incorrect) to the monkey-eating martial eagle which averages over thirteen pounds. Currently, there are sixteen species of *Aquila* or true eagles but that may change as taxonomists continue to move them around from time to time. Sea eagles feed on fish to some extent; some species are strictly fish-eaters. The bald eagle is a sea eagle (*Haliaeetus*) of which there are many species of worldwide distribution.

6. What's the difference between falcons and hawks?

- a. "Falcons" include only members of the Family *Falconidae*.
- b. "Hawks" is a generic term like "raptor" that includes all the species in the Order *Falconiformes*.
- c. Anatomical and behavioral differences.
- d. all of the above

Answer d. The term "hawk" is both a generic term that is almost interchangeable with the term "raptor." Yet at the same time "hawk" specifies those birds of the Genus *Accipiter* (goshawk, Cooper's hawk and sharp-shinned hawk—the "true" hawks). There are anatomical and behavioral differences that will be discussed later in detail, please refer to the summary chart on page 47. The point is to reiterate that the term "hawk" is confusing in the sense that it covers nearly all falconry birds while specifying a certain group of hawks at the same time.

7. True or false. Hawks have long, pointed wings, long tails, small heads and broad shoulders.

False. This is a trick question and is asked the same way many states pose questions on their test. While it's true that if the term "hawk" in the question is the generic term including all birds of prey as described in question one, then the longwinged raptors (Genus *Falco*) are included and the answer is partially true. However, if the answer is only partially true then the answer is "false." If "hawk" in this question refers strictly to the members of the Genus *Accipiter*, the true hawks, which have short rounded wings, then the answer is clearly "false."

8. True or false. In Genus *Falco*, the third and/or fourth primary from the leading edge of the wing is/are the longest.

False. In Genus *Falco*, the second primary from the leading edge of the wing is the longest, thus giving the impression of "long, pointed" wings. In the buteos, accipiters, and other hawk like birds, it is the third and/or the fourth feather that is the longest or they are of the same length. See chart on page 11.

9. Initial selection of a nesting area by migratory raptors, such as the prairie falcon, accompanied later by aerial display, is generally made by the . . .

- a. male, who returns first to the nesting area.
- b. female, who remains year round.
- c. neither hawk—it just happens.
- d. none of the above.

Answer a. The male usually returns to the area first and chooses the nesting site. Further, the male hunts and provides most of the food after the young have hatched, while the female provides close-in protection, care and feeding. Answer "b" is incorrect. Generally if one sex of a species migrates, both sexes migrate. [5a]

10. Adult raptors are most likely to desert a nest . . .

- a. just prior to egg laying.
- b. during late incubation.
- c. during hatching.
- d. just prior to fledging.

Answer a. Once eggs are laid, most raptors, though not all, are likely to stick with their clutch despite disturbances. [12] Goshawks and ferruginous hawks viciously attack intruders to their nest site.

11. True or false. If the first clutch of eggs is destroyed, many hawks and falcons will lay a second clutch.

True. This tendency is used by captive breeders to maximize offspring of breeding pairs. The system is called "double clutching." Some raptors, if disturbed on eggs in the wild, abandon their nests and close down the reproductive systems for the season. In the wild, double clutching has been observed in bald eagles, goshawks, Harris' hawks, red-tails, kestrels, merlins, peregrines, gyrfalcons, and prairie falcons, but it is an exceptional event and not the norm.

12. True or false. The falconer is most likely to encounter a **brancher** in June.

True. A **brancher** is a young hawk capable of hopping from branch to branch testing its wings but not yet flying free. A **fledgling** is a young hawk that has taken its first flight but remains in the vicinity of the nest and its parent's care.

13. Young hawks, particularly longwings, tend to take prey considerably larger than is typical for adults of the same species. This is because . . .

- a. the youngsters are still growing and need more food than an adult.
- b. the young hawks are stronger and out-compete their elders for larger, more nutritious prey.
- c. more skill is required to catch a smaller bird.
- d. all of the above.

Answer c. Large birds are less maneuverable than small birds but are more dangerous quarry. As the hawk develops flying skill and dexterity, smaller, less dangerous quarry is taken with increasing frequency. This also accounts for the common phenomenon of small birds hassling large hawks with virtual impunity be it a kestrel driving a red-tailed hawk from near its nest or three red-tails harassing a golden eagle. [1a]

14. *Falconiformes* generally come into their adult plumage at the first moult which is at . . .

- a. six months of age.
- b. about one year of age.
- c. about two years of age.
- d. none of the above.

Answer b. For most hawks, but not the eagles, adult feathers and “adulthood” come in during the hawk’s first moult at about one year of age. The American kestrel is an exception which comes into partial adult plumage at about six months. Eagles, however, go through several moults—each a year apart—before reaching full adult plumage and sexual maturity at age five.

15. You can tell the difference between male and female raptors by the . . .

- a. faster speed of the females.
- b. faster speed of the males.
- c. larger size of the females.
- d. larger size of the males.

Answer c. In most raptor species the plumage coloration of the sexes is the same. There is not much difference in speed, but especially in the bird-eating species, there is a great difference in the size of the sexes. Unlike most avian species, male raptors are generally one-third smaller than the females. As this is the reverse of the norm, the characteristic is called “reverse size dimorphism.”

16. Hawks in immature plumage appear to be . . .

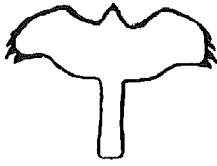
- a. smaller than when they become adults.
- b. larger than when they become adults.
- c. the same size as when they become adults.
- d. larger or smaller than the adults, depending on how well they were fed as nestlings, and on how successful they were as hunters after leaving the nest.

Answer b. Juvenile flight feathers tend to be longer than adult feathers to compensate for less developed muscles, less ossified bones, and less flight experience. Hawks are, in essence, full-grown when they leave the nest.

17. True or false. Hawks hunt by sight and hearing. Their sense of smell is not well developed.

True. Yet some of the jungle vultures, such as the king vulture, have a highly developed sense of smell with which they locate carrion. [12]

GLIDING



ACCIPITERS

SOARING



Known as "shortwings" or "true hawks" with long tails and short rounded wings. Often flies with several rapid, strong beats and a short glide. Rarely seen soaring. Adapted for high-speed maneuverability hunting avian prey in the forests. The goshawk, Coopers' hawk, and sharp-shinned hawk are legal falconry hawks for master and general falconers in California.

BUTEOS



Known as "broadwings" with wide-core wings, a heavy body, and short "stubby" tails. Adapted for energy saving soaring. Often seen soaring and wheeling high in the sky. Primarily ground-orientated hunters. Only red-tailed hawks and ferruginous hawks are legal in California for falconry. Apprentices are limited to the red-tailed hawks.



FALCONS



Known as the "longwings" with long pointed wings, long tail, small head and broad shoulders. They fly with strong, shallow, rapid strokes. Power fliers, they are rarely seen soaring or gliding. Primarily avian hunters. The gyrfalcon, peregrine falcon, prairie falcon, merlin, and American kestrel [formerly known as the American sparrowhawk] are all legal for falconry, though apprentices are limited to the kestrel.



COMPARATIVE SILHOUETTES OF THE CLASSIC BIDS OF PREY

HARRIERS



The single American species is the marsh hawk or northern harrier. Slender body, long tail, and long wings with rounded ends. Flies with a vulture-like languidness. Hunters of small rodents, they fly low over open fields using senses of both sight and hearing. Not legal for falconry in California, nor very useful for falconry.



KITES



The white-tailed kite can be easily mistaken for the prairie falcon in shape and body size, but not in coloration or flight style. They are gray in color and often hover while hunting small ground quarry. Not legal for falconry in California nor very useful for falconry.



Note: terms such as "longwing," "shortwings," "broadwing," "long, pointed wings," "short, rounded wings," "wide, core wings," "short" or "long tails" are all relative to the other birds of prey proportions. Do not begin to think that the wings of a kestrel are longer than those of a goshawk, even if the kestrel is a "longwing" and the goshawk is a "shortwing."

18. If baby raptors are in the nest and one parent raptor is lost . . .

- a. the remaining parent of either sex takes over all parenting duties.
- b. if only the male survives, he abandons the nestlings.
- c. if only the female survives, she finds another male to take over hunting.
- d. none of the above.

Answer a. Observations indicate the remaining parent will go to extreme efforts to care for the offspring. However, male raptors will not tear apart kills for the nestlings. If the female is lost before the young learn to rip food apart on their own, survival prognosis is not good and the young can starve surrounded by whole food. There are reports of the surviving parent of either sex bringing in a member of the opposite sex to help care for the young. Watchers in Portland, Oregon, observed a single tiercel peregrine hunting for two nests, complete with separate females and clutches of young. There are additional reports from England of female owls bringing in a non-parent male when the parent male is lost. These reports make "c" an occasional correct answer, but a rare exception.

19. In which species of longwing is there sexual dimorphism as to coloration and pattern?

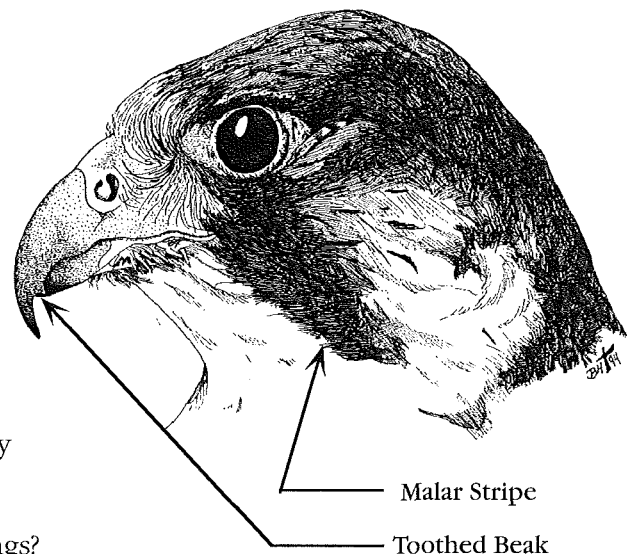
- a. peregrine.
- b. kestrel.
- c. gyrfalcon.
- d. none of the above.

Answer b. Sexual dimorphisms are defined as differences in coloration or size between the sexes. In adult plumage both the American kestrel and the merlin demonstrate obvious coloration differences between the sexes. Immature merlins of either sex look very similar. [12] The peregrine and the gyrfalcon exhibit little difference between the sexes except in size, the females being larger.

20. A **malar stripe** is likely to be found on . . .

- a. a peregrine.
- b. a ptarmigan.
- c. a Mollen hood.
- d. an ornate hawk eagle.

Answer a. In any plumage, the real mark of the peregrine is the face bar, known as the **mask** or **malar stripe**. This is a broad dark mark extending downward from the crown across the eye. See the sketch at right. Subspecies vary from a clearly defined malar strip on the tundra peregrine to a nearly black head of the Peale's peregrine to the completely black head of the Fijian peregrine.



Peregrine Falcon

21. Which of the following does not have long, pointed wings?

- a. tiercel.
- b. jack.
- c. jerkin.
- d. musket.

Answer d. A **musket** is a male European sparrowhawk. Accipiters have rounded wings. A **tiercel** is a male of the species *Falco peregrinus*. The **jack** is a male merlin of the genus *Falco*. The **jerkin** is the male gyrfalcon, also of the genus *Falco*. The keys to answering this question lies in your knowledge of falconry's classical name for the male of the species of hawks used in our art.

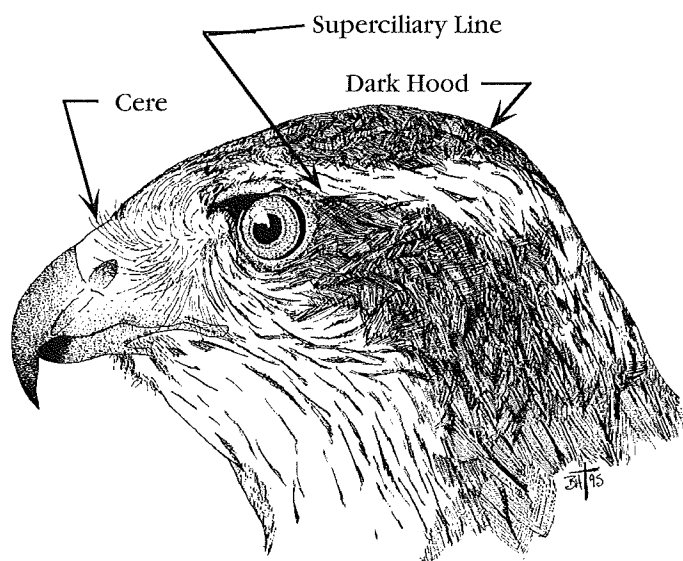
22. Which of the following is the largest hawk?

- a. jerkin.
- b. jack.
- c. falcon.
- d. tiercel.

Answer a. There is some overlap in size between the **jerkin** (a male gyrfalcon, weight range is 35 ounces to 46 ounces or 1000-1300 grams), and the female peregrine, the **falcon** (26 ounces to 40 ounces or 735-1135 grams). However, the **jerkin** is larger on the average at 40 ounces (1135 grams) as compared to the falcon's 29 ounces (820 grams). The **jack** (a male merlin, 5.5 ounces or 155 grams) and the **tiercel**, (a male peregrine at 21 ounces or 581 grams) are both considerably smaller than either the **falcon** or the **jerkin**.

23. True or false. A dark hood and a white **superciliary line** are the field identification markings of the adult goshawk.

True. The thick white superciliary line appears as an extended "eyebrow" above the goshawk's eye. [4] See sketch to right.



Northern Goshawk

24. One is most likely to find the cere . . .

- a. on the head of a raptor.
- b. on the feet of a raptor.
- c. on the wings of a raptor.
- d. around the breast area of a raptor.

Answer a. The cere is the waxy yellow, gray or green skin at the top of the beak in which the nostrils (or nares) are situated. See sketch right.

25. The **tarsus** of a raptor is part of the hawk's . . .

- a. wing.
- b. leg.
- c. tail.
- d. head.

Answer b. The **tarsus** is that part of the leg between the foot and the first joint. **Jesses**, **bewits** with **bells** are attached to this part of the leg. See the sketch on page 61.

26. A hawk's **train** is its . . .

- a. head.
- b. wing.
- c. foot.
- d. tail.

Answer d. All twelve feathers of the tail make up the **train**. The only specifically named tail feathers are the two central feathers called **deck feathers**.

27. **Deck feathers** are the . . .

- a. central pair of tail feathers in the train.
- b. feather tuft on top of a longwing's hood.
- c. feathers used in imping broken tail or wing feathers.
- d. row of feathers which run down the wing above the primaries and secondaries.

Answer a. The rows of feathers described in "d" are called **coverts**. [12] Answer "b" describes the **plume** or **tab**.

28. A good indication of completed growth in eyasses is when the hawk is . . .

- a. **full summed**.
- b. **hard panned**.
- c. both of the above.
- d. none of the above.

Answer b. **Hard-panned** and **full-summed** are often used interchangeably but are not the same thing. **Hard-panned** refers to the point at which the newborn hawk's feathers are fully grown in for the first time. **Full-summed** refers to the end of the moult. In both instances, blood has withdrawn from the newly-grown large feathers of the wings and tail, the new feathers have hardened, and the base of the feather turns from blue to white.

29. Your hawk is likely to **mantle** . . .

- a. when relaxed and contented.
- b. when standing over prey.
- c. both "a" and "b".
- d. neither "a" nor "b".

Answer c. **Mantle** is the stretching of one wing and one leg on the same side. It is an indication of a relaxed and contented hawk. The term **mantle** also describes the spreading of wings and tail over food or quarry. This latter is defensive behavior used to conceal food from a hawk's siblings, other hawks or animals, or the falconer, as in **mantling over**. [12] Other signs of relaxation and contentment are the hawk standing on one foot with the other drawn up as well as **preening**.

30. A hawk that is very comfortable with its surroundings and has a full crop is likely to . . .

- a. **gorge**.
- b. **hack**.
- c. **rouse**.
- d. **rangle**.

Answer c. **Rouse** is an action common to all birds in which all the feathers are slowly erected, then the bird shakes itself, and the feathers slowly settle back into place—a sign of tameness and well-being. **Gorge**, answer "a," is permitting a hawk to eat all it can until it refuses to eat more. **Hack**, answer "b," is the state of complete liberty, sometimes permitted to imprinted eyasses during the first few weeks after they can fly, but before they learn to hunt on their own. The young hawks are **taken up** as soon as they return after missing a scheduled meal from the falconer (this assumes they successfully hunted on their own). **Rangle**, answer "d," is small stones given orally to a hawk. The stones get coated in the stomach with indigestible grease and fat, and when cast up, will be coated with the fat and grease.

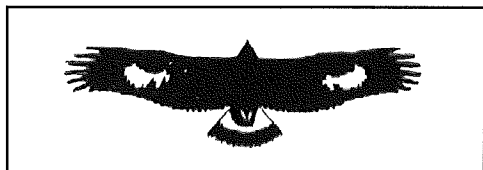
31. A hawk is likely to **preen** . . .

- a. following a bath.
- b. when it's content.
- c. when it is under stress.
- d. both "a" and "b".

Answer d. **Preening** is the act of straightening and dressing the feathers. It is a sign of contentment and good adjustment in a trained raptor. A hawk will often preen following a bath, or when it is content and comfortable. [12] They rarely, if ever, **preen** when ill or under stress.

32. True or false. After leaving the care of their parents, raptors gain upwards of twenty-five percent body mass and ten percent more wingspan.

False. In general, raptors maintain at or at slightly less than the weight as when they leave (or are driven away from) the nest area. Further, wingspans shorten during the first moult. In the case of the editor's red-tailed hawk, wingspan dropped from forty-eight to forty-four inches after the first moult and the tail shortened by nearly two inches.



33. True or false. A large dark raptor soars overhead. It is mostly dark but has large white patches under wings. It is most likely an immature bald eagle.

False. The "large white patches" mark this as an immature golden eagle. The immature bald eagle has a great deal of white on the underbody giving a "mottled" appearance up close. At a distance the immature bald eagle looks "pale." The mature bald eagle's white head and tail are easily-seen field markings. Looking from below at a high-soaring bald eagle, the white head and tail almost disappear. The mature golden is mostly dark. The undersides of a vulture's primary and secondary feathers are white with wing-long clearly defined triangular markings on the trailing edge as seen from below. From a distance vultures can be identified from the eagles by the strong dihedral or "vee" of the wings in a soar where the eagles soar on nearly flat wings.

34. True or False. There are seven species of harriers in North America.

False. There is only one harrier (genus *Circinae*) in North America. They are widely distributed and much more diversified in the Old World where there are seven distinct species. On this continent there is only the American marsh hawk or northern harrier. Like all harriers, marsh hawks are slim, lightly built with big wings that make them appear much larger than they really are. Their natural prey is primarily field mice, though they take many small birds, especially young waterfowl, as well as wounded or injured birds. They nest on the ground. [12]

35. Which of the following species locates prey by sound?

- a. marsh hawk.
- b. osprey.
- c. swallow-tailed kite.
- d. Audubon's caracara.

Answer a. The marsh hawk hunts open grasslands and marshes. They fly low to the ground in a slow owl-like manner and seem to locate much of their prey by sound. They have facial disks, feathers arranged in the same manner as owls to assist hearing. These are much less prominent or as developed as in owls. Marsh hawks have an angular acoustic resolution of 2°, which is within the range known for owls and at least four times as acute as most hawks. Once prey is located, the marsh hawk will hover and drop. Goshawks and others also seem to locate prey by sound, but to a much lesser extent.

36. Which of the following raptors can grip with two toes in front and two behind?

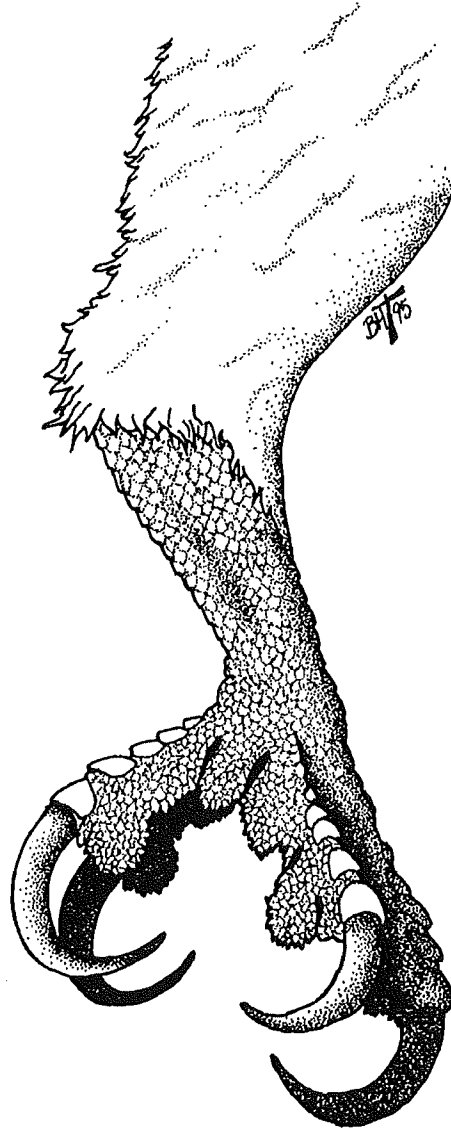
- a. gyrfalcon.
- b. bald eagle.
- c. osprey.
- d. ferruginous hawk.

Answer c. The osprey's foot is adapted for catching fish. The toes can swivel from the usual raptor conformation of three forward—one back so they are positioned two forward—two back. The under surfaces of the toes have special scales, called spicules, that grip slippery surfaces. [12] Owl feet have a fixed two forward—two back arrangement, but lack the ability to swivel one forward.

37. Longwings are uniquely different from other members of the *Falconiformes* in that they . . .

- a. possess extra large feet.
- b. have a "notched" beak.
- c. feed only on birds.
- d. are the most maneuverable.

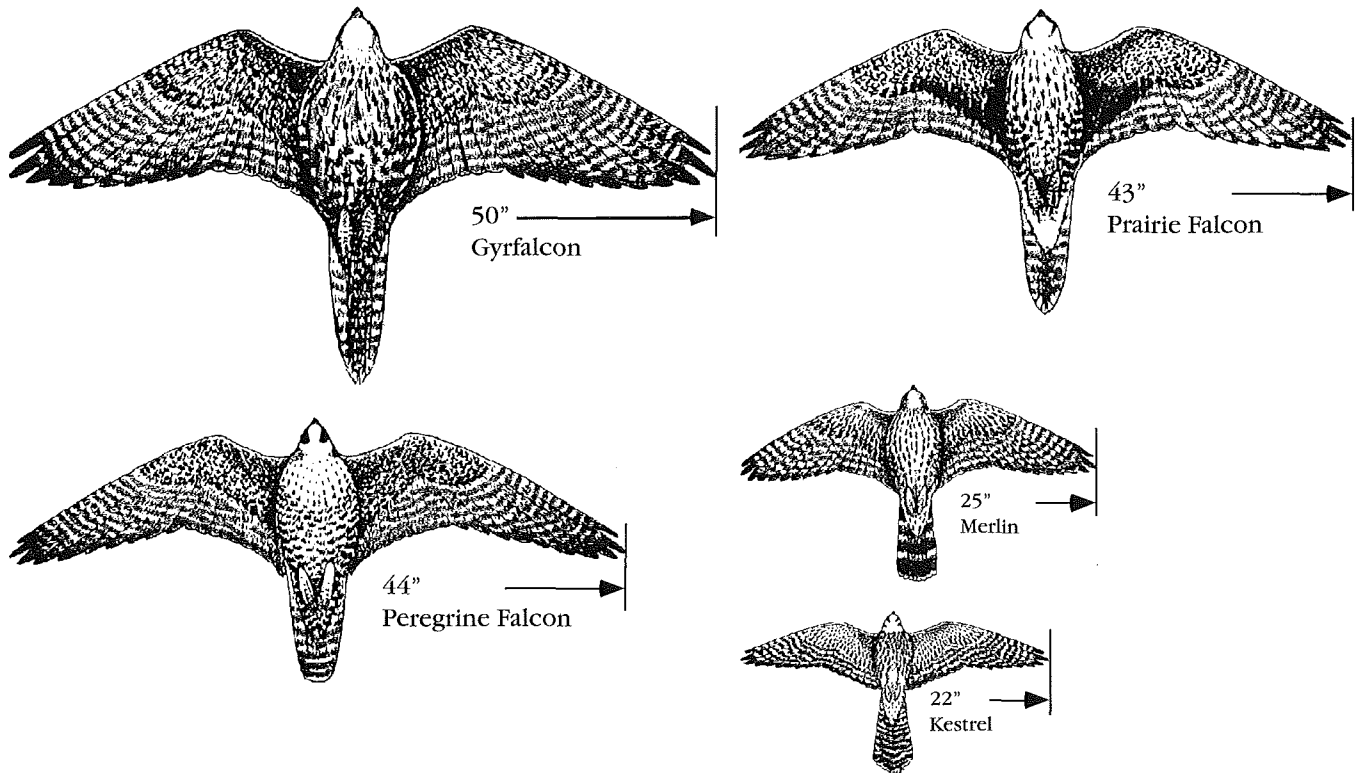
Answer b. All longwings have a toothed or notched beak (see the sketch on page 12) which is used to break the neck of prey. The characteristics described in "a" and "c" are common among longwings, but not universal. For example, kestrels are longwings but have proportionally very small feet, indicative of a primarily mammalian and insect diet. Peregrines and merlins have extra large feet, indicative of an avian diet. However, about fifty percent of the wild prairie falcon's diet consists of ground mammals. Accipiters are the most maneuverable because of their short, rounded wings and long tails.



Editor's comment: strictly speaking a "falcon" is a female peregrine while birds of the entire genus *Falco* are referred to with the generic "longwing." Americans falconers have come to use the term "falcon" instead of the generic "longwing." You will never be wrong calling a female peregrine a "longwing," but you will technically err in calling anything but a female peregrine a "falcon." In like manner, many falconers often refer to any male raptor as a "tiercel." Strictly speaking, the "tiercel" is the male peregrine. The editor's male red-tailed hawk is a "male red-tailed hawk" not a "tiercel red-tailed hawk." As with any sport, art, or endeavor with a unique technical jargon, using the proper vocabulary is crucial to your complete education. You'll learn and use the slang soon enough.

38. True or false. Longwings subdue their prey with the tremendous gripping power of their feet.

False. Longwings often kill using the force from their tremendous speed striking their prey. Generally they rake their prey with sharp talons and an open foot. [12] Accipiters and buteos most often kill with the gripping and compression power of their feet.



39. The hawks that are the most efficient at killing their prey after catching it are the . . .

- a. longwings.
- b. buteos.
- c. accipiters.
- d. eagles.

Answer a. The notches on a longwing's beak (two on the upper and two on the lower, see the sketch on page 6) shear or sever the spinal cord of its prey with one well-placed bite. Death is instantaneous, even on larger birds. It takes longer to dispatch prey with talons alone as other hawks do.

40. The hawk least likely to **slice** is the . . .

- a. peregrine.
- b. red-tailed hawk.
- c. golden eagle.
- d. goshawk.

Answer a. **Slicing** is the forcible discharge of excrements by accipiters, buteos, and eagles. Most, but not all, longwings drop their mutes straight down in the action called **muting**.

41. True or false. Nests are not built by longwings.

True. In general, both longwings and owls use ledges, hollow trees or old nests of other species. They do not build their own nests.

42. The basic requirements for nest sites of all the large longwings are . . .

- a. nearby supply of ptarmigans, lemmings or other rodents.
- b. desert areas.
- c. isolated woodland.
- d. cliffs.

Answer d. The prairie falcon likes medium to high cliffs overlooking stretches of arid or semiarid country. Peregrine cliffs are generally in the vicinity of, or overlooking open water, lakes, estuaries, wide rivers, bays, and the like. Peregrines seem to be unable to stand as much heat or dryness as the desert longwings. In the southern arctic, gray gyrfalcons (which share their range with migrant peregrines) prefer cliffs in open country far from water. In the high arctic, the gyrfalcon behaves more like the coastal peregrines, breeding high on sea cliffs and feeding on sea birds. Large longwings rarely nest in trees and then only in nests built by other birds.

43. True or false. Male hawks do the bulk of the hunting after the young hatch.

True. When the young are quite small, the male does most of the hunting while the female protects the nest and cares for the young. As the young continue to grow and their demands exceed the capability of the male, the female will also hunt for food. This is the only time birds of prey have been observed to hunt in excess of their own immediate needs.

44. True or false. Some gyrfalcons nest in trees.

True. Generally though, gyrfalcons nest on cliff ledges. However, egg-collectors in the nineteenth century took a considerable number of gyrfalcon eggs from eyries along the Anderson River in subarctic Canada, most of them from nests in spruce trees. Recently, however, nest-dwelling gyrfalcons have been seen in the lower arctic producing young. [1]

45. Which hawk is apt to occupy and defend the largest territory?

- a. gyrfalcon.
- b. marsh hawk.
- c. Cooper's hawk.
- d. American kestrel.

Answer a. Generally, the larger the hawk the more territory is needed to provide food and shelter for a nesting pair and their young. Golden eagle territories in Europe have been measured at sixteen square miles and those of gyrfalcons in the northern latitudes at fourteen or fifteen square miles. Marsh hawks, Cooper's hawks and kestrels generally need less than one square mile. The far-ranging habits of gyrfalcons require more territory.

46. True or false. The gyrfalcon seems closely related to the desert saker falcon.

True. Some experts consider the saker and the gyrfalcon as subspecies of a single species. [1] Sharing the same hunting style, the saker is generally smaller and lighter than the gyrfalcon and is adapted to desert climates, while the gyrfalcon tolerates heat poorly.

47. True or false. The attack style of the gyrfalcon is similar to the peregrine.

False. The peregrine overtakes and attacks directly. The gyrfalcon catches up, climbs and goes to one side or the other, flies along for a wing beat and then twists abruptly to cross over the victim with a slashing diagonal strike. If it misses, it pops up in the same relative position on the other side. The zigzag of quick-succession, diagonal and shallow **stoops** to fast-moving prey is unique to the gyrfalcon. [1]

58. The longwing with the most accipitrine hunting style is the . . .

- a. merlin.
- b. prairie falcon.
- c. peregrine.
- d. gyrfalcon.

Answer a. Most of the time merlins hunt active-flying prey in open country in classic longwing fashion. Other times, they fly at high speeds close to the ground, making lightning single grabs for anything in their path, and passing on with no decrease in speed if they miss, the so-called “snatch and grab”. They are the only longwing that regularly pursues prey through trees at high speed and makes sneak attacks around and about tree trunks like the sharp-shinned hawk or the Cooper’s hawk. [12]

59. True or false. The attack style of the merlin is similar to the gyrfalcon.

False. The merlin overtakes and attacks directly like the peregrine. [1]

60. The longwing most likely to be found nesting in a deserted crow’s nest is the . . .

- a. peregrine.
- b. prairie falcon.
- c. gyrfalcon.
- d. merlin.

Answer d. The Richardson’s merlin habitually nests in trees. They may use any deserted hawk, crow or magpie nests, or they may nest in the deserted hole in a tree trunk cut by a flicker or pileated woodpecker. Rarely will they build their own nests. [1a]

61. True or false. Merlins have much the same measurements of wingspan and tail length as the kestrel, have a similar form of plumage sexual dimorphism, but weigh more.

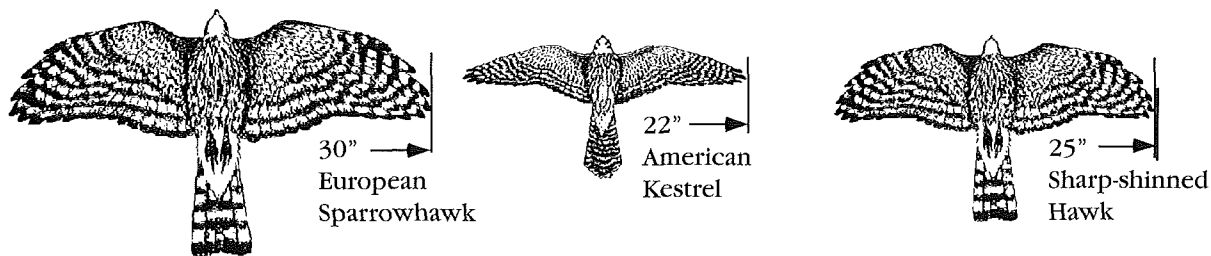
True. While sharing the same measurements, merlins weigh about one-third more than kestrels. All first-year merlins and adult females are brown. Adult males develop blue-gray dorsal (upper wing and back) plumage during the first moult. [1] The additional mass is all flight muscle.

62. Which of these birds lack highly distinctive “immature” plumage during their first year?

- a. goshawk.
- b. red-tailed hawk.
- c. peregrine.
- d. kestrel.

Answer d. Kestrels differ from other hawks in this respect. First-year plumage is closely similar to their mature plumage. The first moult differs also. Body plumage, but not the large wing and tail feathers, is moulted and replaced in the late summer of their first year. Thus, the first body plumage is scarcely fully grown before moulting. This type of moult is characteristic of passerine (song birds) but no other longwing. There are minor differences in the wing and tail feathers of passage and **haggard** (adult) kestrels during the hawk’s first winter.

Shown for size comparison only.



63. True or false. The American kestrel or American sparrowhawk is closely related to the **European sparrowhawk**.

False. The sparrowhawk (*Accipiter nisus*) is a small accipiter or shortwinged hawk and is very similar to the sharp-shinned hawk in appearance, though somewhat larger. The American kestrel (*Falco sparverius*), formerly known as the American sparrowhawk, is a longwing, not an accipiter. On this side of the Atlantic the prefix "European" was tacked on to prevent confusion with the American sparrowhawk. However, after the kestrel's name change, we retained the term out of habit.

64. A small hawk alights nearby, and immediately pumps the tail up and down several times. This "tail pumping" is a good field identification mark of a . . .

- a. sharp-shinned hawk.
- b. kestrel.
- c. merlin.
- d. male Cooper's hawk.

Answer b. In addition head bobbing and hovering are excellent field recognition characteristics of the kestrel. These traits are particularly useful in identification if the plumage is difficult to see.

65. A small raptor **hovering** in place twenty feet over a field by a well-traveled road is most likely a . . .

- a. sharp-shinned hawk.
- b. kestrel
- c. merlin.
- d. male Cooper's hawk.

Answer b. The kestrel is not shy, living, hunting, nesting and perching right out in the open for all to see. The most typical hunting method of the species is a direct attack from an exposed perch—like a red-tailed hawk—though the kestrel is most noted for hunting from a hover and is a characteristic of the species. Even when hunting from atop a pole, it may not make a direct flight to the prey. Instead, it may fly out over the spot where it saw something move, then **check** and **hover** before **stooping**. [11b]

66. This hawk utilizes a summer buteonine hunting style adapted to catching grasshoppers and mice, wintering individuals often show a more falconine style capturing small birds. This is the . . .

- a. marsh hawk.
- b. kestrel.
- c. merlin.
- d. sharp-shinned hawk.

Answer b. At such times kestrels hunt so much like merlins that it is difficult to tell the difference by action alone. The only really significant variance is that kestrels seldom use the snatch-and-carry style typical of the merlin, tending instead to pin a victim to the ground and kill it on the spot. [4]

67. The strongest foot for its size is found on the . . .

- a. peregrine.
- b. merlin.
- c. kestrel.

Answer c. Kestrels feed primarily on mice and have the shortest toes. Due to physical laws of leverage, these are stronger than the very long, relatively weaker toes found on merlins and peregrines, which feed exclusively on birds.

68. A raptor that will often accept a man-made bird house for nesting is the . . .

- a. kestrel.
- b. harrier.
- c. red-tailed hawk.
- d. Cooper's hawk.

Answer a. The kestrel's breeding range is from coast to coast and from Mexico and Florida north to the northern edge of the boreal (far-northern or high-altitude coniferous) forests. Kestrels habitually nest in woodpecker holes, old barns and church cupolas. They are the only raptor that is habitually attracted to the vicinity of farms and suburban homes by man-made bird houses.

69. How can you tell a passage kestrel from a haggard kestrel?

- a. The passer's feathers are in better condition.
- b. The overall color of the plumage is different: brownish for the passage and bluish for the adult.
- c. The passage kestrel is larger than the haggard.
- d. The passer retains immature wing feathers until moulted during their first winter.

Answer d. Keep your Peterson Field Guide handy. [4] The kestrel barely finishes growing its immature feathers before starting an incomplete moult retaining its immature wing and tail feathers until the second summer. [18] Even then the difference is subtle. Specifically, the passage female kestrel has a narrower black subterminal band than the haggard and streaked chest markings of the passage in comparison to the spotted breast coloration of the male. [11b] Answer "a" is incorrect. While the passer's plumage may be in better condition, it is not a field marking. Answer "b" is also incorrect, as this describes the primary plumage difference between the adult male and the female. Answer "c" is incorrect as it describes the size differences between the smaller male and the female.

70. A species which normally breeds successfully at one year of age is the . . .

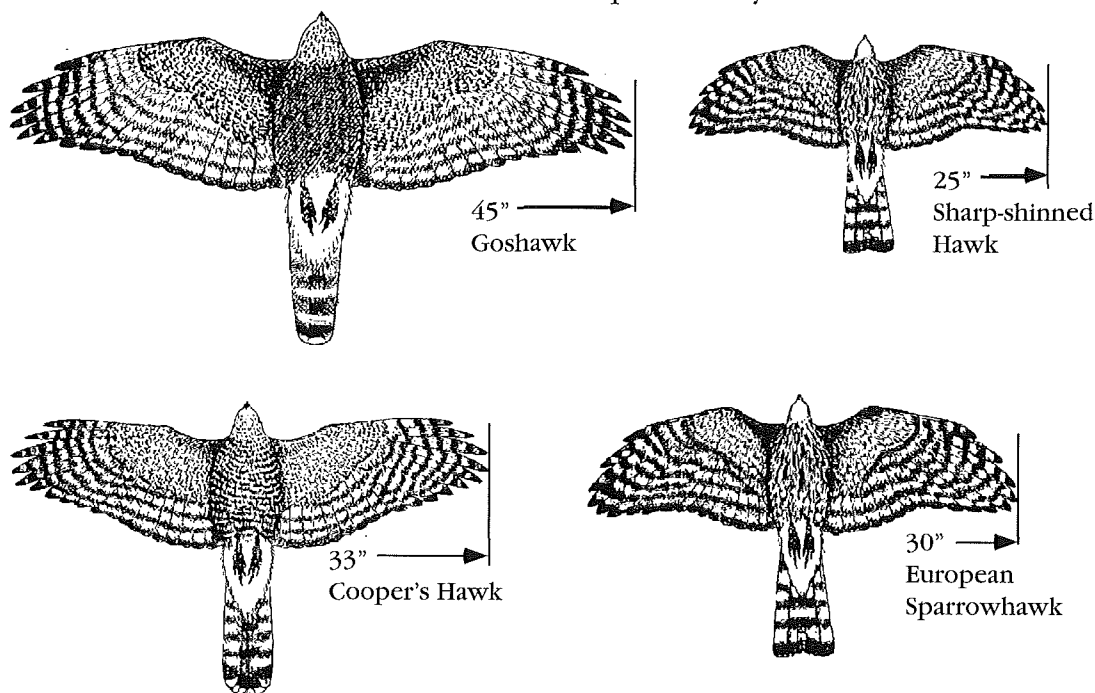
- a. kestrel.
- b. peregrine.
- c. bald eagle.
- d. all of the above.

Answer a. The kestrel generally breeds the year after it leaves the nest. Some larger longwings and eagles don't breed for four or five years.

71. True or false. The incubation period for the eggs of the American kestrel is thirty-three days.

False. The incubation period for American kestrels is about four weeks. Further, the size of the brood varies with the season and existing food supply, as it does with other raptors. Normally three or four young are successfully fledged with each brood. [5a]

Shown for size comparison only.



72. The correct descending order in size for accipiters is . . .

- goshawk, Cooper's hawk, sharp-shinned hawk, sparrowhawk.
- goshawk, Cooper's hawk, sparrowhawk, sharp-shinned hawk.
- goshawk, sparrowhawk, Cooper's hawk, sharp-shinned hawk.
- goshawk, sparrowhawk, sharp-shinned hawk, Cooper's hawk.

Answer b. The Cooper's hawk is about two-thirds the size of the goshawk. The European sparrowhawk is about two-thirds the size of the Cooper's. The sharp-shinned is about two-thirds the size of the (European) sparrowhawk and about forty percent the size of the Cooper's. The goshawk and the (European) sparrowhawk are well known to classic falconry and mentioned in every work on the subject. The Cooper's and the sharp-shinned are native to this continent and were unknown in Europe. Accipiters are highly oriented toward capturing birds and are characterized as having short, rounded wings, a long tail and light eyes.

73. True or false. Accipiters kill their prey by the power of their speed on impact.

False. Accipiters kill their prey by a powerful clutching action of their feet called **footing**, driving their long talons into the vitals of their prey. [12]

74. You catch a glimpse of a crow-sized hawk that makes a furious pass at a pigeon and then rests briefly in a tree. It gives an impression of a dark back and brown breast. The folded tail is strongly banded black on charcoal-grey and the tip is clearly round in shape. It is most likely a . . .

- immature goshawk.
- Cooper's hawk.
- red-shouldered hawk.
- sharp-shinned hawk.

Answer b. Cooper's hawk. Among goshawks only the immature are brownish in color, with the adults more of a bluish-gray, but rarely does a goshawk give the impression of "medium sized." The tail of the goshawk is roundish in shape as is that of the Cooper's, where the tails of the sharp-shinned hawk and red-shouldered hawk are squared off. Red-shouldered hawks have enough variation among individuals to be listed in the Peterson Field Guides as a "Similar Bird" to the Cooper's hawk and to the red-tailed hawk, but rarely do they attempt to hunt birds, preferring small ground quarry. [4] See the sketch on page 24. Note the distinct roundness of the tail of the Cooper's hawk as compared to the sharp-shinned hawk.

75. The first hawk to nest in the northern forest is generally the . . .

- a. goshawk.
- b. merlin.
- c. Harris' hawk.
- d. marsh hawk.

Answer a. Only the large owls precede the goshawk in nesting activities in the northern forest. On the northern edge of the boreal forest (far-northern or high-altitude fir, pine and spruce forest) mated pairs are in the nest territory by the middle of March, beginning their spectacular and noisy courtship display while the male begins nest building. At this time the forest is snow and icebound with nighttime temperatures below zero.

76. Which hawk is most likely to require a plucking log or stump near its nesting site?

- a. red-tailed hawk.
- b. goshawk.
- c. kestrel.
- d. red-shouldered hawk.

Answer b. The plucking log, usually a large, fallen tree, on which the male **plucks** prey before carrying it to the nest is characteristic of goshawk nesting sites. This site is always present, but sometimes nearly a quarter-mile from the nest. Goshawks also require permanent water near the nest site such as a lake or stream with a sloping beach for bathing.

77. The hawk is most likely to attack intruders near its nest site when young are in the nest is the . . .

- a. prairie falcon.
- b. Harris' hawk.
- c. goshawk.
- d. red-tailed hawk.

Answer c. Goshawks attack intruders as much as half-mile from the nest tree. Only the ferruginous is as aggressive as the goshawk in protecting its nest from intruders.

78. True or false. Under ideal conditions a goshawk can be expected to live to be twenty years old.

True. Although more than seventy percent of wild raptors die before reaching breeding age, most are potentially long-lived. Peregrines are known to have a life span in excess of twenty-five years, Harris' and red-tails to nearly forty, and eagles upward of sixty years. These are the extremes and represent the human equivalent of living past a hundred.

79. The hawk most likely to use stealth in capturing its prey is the . . .

- a. marsh hawk.
- b. gyrfalcon.
- c. red-tailed hawk.
- d. goshawk.

Answer d. Accipiters are primarily forest hawks and have developed complex methods of hunting. The goshawk's stealth hunting style is in sharp contrast to the simple direct hunting methods of the gyrfalcon, which lives where it can readily be seen and therefore makes little effort at stealth. The goshawk utilizes forest cover for concealment, and bases most of its hunting on the ability to detect at once, by the actions of the prey, whether it has itself been seen. [12]

80. You are most likely to find a Cooper's hawk nest . . .

- a. in a coniferous forest in mountain valleys.
- b. the woods near open meadows.
- c. on cliffs abutting open country.
- d. in dead or branchless trees, like loblolly pines in open marshlands with low brush.

Answer b. The Cooper's hawk prefers deciduous (trees that drop their leaves in the fall) or mixed woodland with a diversity of **passerines** (birds of the branches). The Cooper's hawk, like the goshawk, is a woodland species with specialized requirements for nest sites. In settled areas it is very shy and secretive, never making a sound unless the nest tree is actually climbed. They nest repeatedly in the same patch of woods year after year, though they actually build a new nest each season. They leave little or no evidence of occupancy and the nests can look utterly deserted. Answer "c" is more typical of the prairie falcon. [5a]

81. True or false. The Cooper's hawk tends to be a more southerly, lower altitude, warmer weather hawk than the goshawk.

True. As a species, goshawks tend to nest in more northerly, cooler, or higher-altitude climate zones than the Cooper's hawk. The Cooper's ranges from coast to coast and from the southern fringe of the northern forests to the tropics. Of recent, Cooper's hawks are living and hunting in open urban and suburban areas.

82. True or false. The wild Cooper's hawk is more inclined to hunt out across open fields than are most goshawks.

True. Goshawks, while they often chase prey in the air and take it in flight, are nevertheless ground-oriented. The species they often hunt, snowshoe hares and various grouse, are species of the forest floor and of the ground at the forest edges. During the breeding season, goshawks also hunt small birds. Cooper's hawks are much less ground oriented than goshawks because so many of the species they hunt are **passerine birds**. These species often forage in pasture land and fields well away from trees. Thus the Cooper's hawk tends to hunt out across open fields more than the goshawk.

83. Of the following, the most abundant hawk on the North American continent is probably the . . .

- a. red-tailed hawk.
- b. peregrine.
- c. marsh hawk.
- d. sharp-shinned hawk.

Answer d. The sharp-shinned hawk outnumbers all other raptors in the national migration counts at Cape May, Lake Michigan, in the Rockies and California. Part of the reason for their success is the large broods they raise, four to five being the norm, almost twice the usual number brought to **fledging** by larger raptors.

84. The most migratory North American accipiter is the . . .

- a. sharp-shinned hawk.
- b. Cooper's hawk.
- c. goshawk.
- d. merlin.

Answer a. The sharp-shinned hawk, smallest of the North American accipiters, is the most migratory. The merlin is not an accipiter. Both the sharp-shinned hawk and the merlin are predictably migratory as is their major prey species—small **passerine** birds.

85. Small birds are the principal dietary item of the . . .

- a. sharp-shinned hawk.
- b. red-tailed hawk.
- c. American sparrowhawk.
- d. Harris' hawk.

Answer a. The sharp-shinned hawk is by far the smallest and most active and aerial of the three accipiters and is an incessant, persistent hunter of small birds. It is much the accipitrine counterpart of the merlin, both in its size, habits and coloration. [12]

86. Proportionally, the largest foot size is found on the . . .

- a. red-tailed hawk.
- b. kestrel.
- c. sharp-shinned hawk.
- d. golden eagle.

Answer c. The sharp-shinned hawk has the proportionally largest feet to its body size. As a general rule, the greater the percentage of birds in their diet, the larger are the raptor's feet, the greater the percentage of mammals eaten, the relatively smaller the raptor's feet.

87. Buteos are usually described as . . .

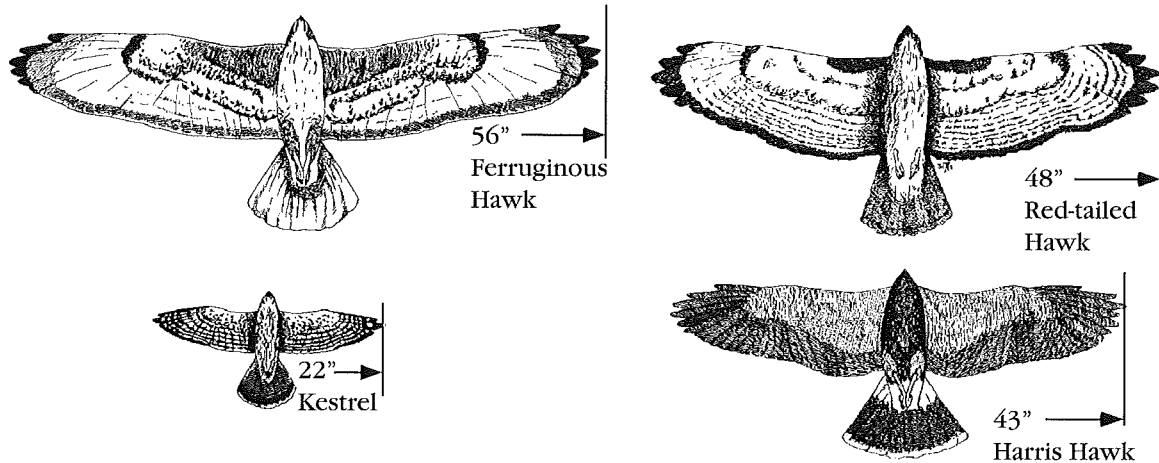
- a. having long, pointed wings; preying chiefly on birds.
- b. distinguished from the longwings, having longer tails and shorter, rounded wings, most obvious in flight.
- c. slender bodied, with long wings, and long tails.
- d. robust bodies, long, broad wings, and short to medium length tails.

Answer d. Answer "a" describes longwings; "b" is the classic description of accipiters; and "c" describes the marsh hawk. (4)

88. True or false. Since the ferruginous hawk is much larger than the red-tailed hawk, it has correspondingly larger feet.

False. The ferruginous largely replaces the red-tailed hawk across the flat prairies and hot deserts of the arid west. Their feet are smaller than a red-tailed hawk with conspicuously short toes. Don't confuse small with weak. Any ferruginous hawk can punch through the thickest glove at will (the editor's personal experience). The strength of these smaller feet has been compared to the feet of an eagle. Their chief prey is ground squirrels and jack rabbits.

Shown for size comparison only.



89. Which is the largest and heaviest of the North American hawks?

- a. red-tailed hawk.
- b. ferruginous hawk.
- c. gyrfalcon.
- d. Peale's falcon.

Answer b. The ferruginous is the largest of hawks. Of North American raptors, only the bald and golden eagles and the heaviest female snowy owls weigh more. Ferruginous hawks are classified in three color phases, of which the light phase is most common, about two thirds of the total population and is sometimes difficult to distinguish from the light-colored Krider's hawk, a subspecies of the red-tailed hawk. The dark phase is virtually indistinguishable from melanistic red-tails, (except, of course, by the tail color) and the Harlan's hawk, another red-tailed hawk subspecies, but the ferruginous has characteristically pale wings. The body of the red phase is almost entirely red in color, again with pale wings.

90. Which hawk builds the larger nest?

- a. golden eagle.
- b. osprey.
- c. ferruginous hawk.

Answer c. The nest built by the ferruginous hawk is the largest structure made by any North American bird, even larger than the osprey's, golden or bald eagles' nest. Some measure as much as eight feet across the top and sixteen feet from the down slope edge to the rim. [12]

91. The ferruginous hawk habitually nests . . .

- a. on the ground.
- b. on cliffs.
- c. in trees.
- d. all of the above.

Answer d. In large parts of its range, the ferruginous nests almost exclusively on the ground. The nest is very large and requires either a broad nest ledge or is placed near the top of a steep slope, like a river bank or ravine. In the northern parts of its range, where it is weakly migratory, the ferruginous more often nests in lone trees, often of no great size. These nests are often used by other raptors, including red-tails and golden eagles.

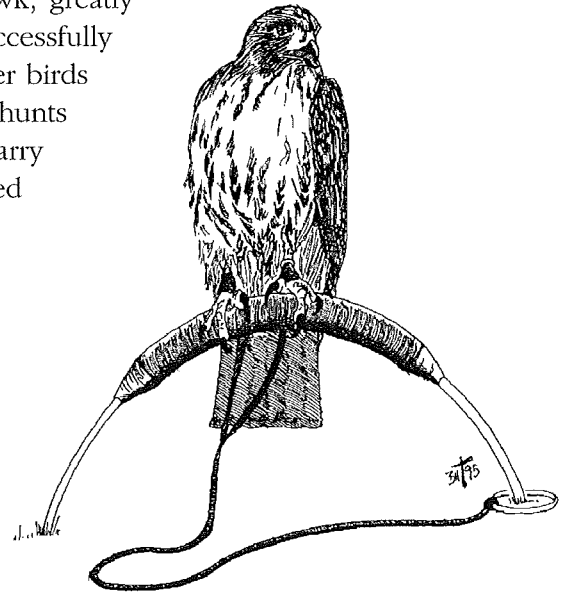
92. The ferruginous hawk lays . . .

- a. no more than two eggs.
- b. no more than four eggs.
- c. up to six eggs.

Answer c. The ferruginous hawk differs from most of the larger birds of prey in that it often produces large broods. The number of eggs laid is directly related to the abundance of the ground squirrel, its principal prey. Incubation is thirty-four days, with the young fledgling in forty-five to fifty days.

93. True or false. In the wild, a red-tailed hawk will not hunt game birds or passerines.

False. Red-tails are highly opportunistic feeders. If it moves and is not too big, it is on the menu. Red-tailed hawks tend to have the same dietary patterns as their parents who introduce or enter them on prey. However, in periods when the red-tailed hawk normal food supply of rodents becomes scarce, the red-tailed hawk becomes a highly competent bird-hunting hawk, greatly feared by larger waterfowl and upland game birds. Red-tails successfully attack other birds including crows, ravens, gulls, owls and other birds of prey. Longwing falconers report frequent intrusions on their hunts by wild red-tails who will contest the largest gyrfalcon for its quarry or will attack the longwing directly. Red-tails have been observed taking carp out of shallow water as well as snapping turtles and small dogs out of backyards.



94. The sex of a red-tailed hawk can be determined in most cases by . . .

- a. weight.
- b. eye color.
- c. coloration of plumage.
- d. none of the above.

Answer a. The most reliable criterion is weight. The males are about one third smaller than the females on average, but the size (weight) range within each sex is quite large: eighteen to forty-four ounces for males (thirty-four average), thirty-six to seventy ounces for females (forty-four average) represent the extremes. Even within the wide overlapping range, falconers continue to make good educated guesses as to sex of red-tails.

95. True or false. There is size sexual dimorphism in the red-tailed hawk.

True. The females are larger and heavier, and generally have larger, more powerful thighs and feet, broader and larger heads, wide wings and a blockier overall build. In fact, this is “reverse-size sexual dimorphism,” as males are usually the larger in non-raptorial species. Female red-tails seem more ready to “crash” heavy cover in pursuit of prey but are “thought” to lack the quickness and aerial dexterity of the male. “Thought” being the operative word as aerial dexterity seems to be more a function of the effort needed to take quarry than sex. The size difference seems to help non-mating season behavior as the male and female tend to hunt different-sized prey, thereby accommodating overlapping but noncompetitive hunting territories.

96. Of the following the raptor least inclined to migrate is the . . .

- a. tundra peregrine.
- b. merlin.
- c. red-tailed hawk.
- d. sharp-shinned hawk.

Answer c. The tundra peregrine, the sharp-shinned hawk, and merlin are highly and predictably migratory following their prey species on their migrations. The red-tailed hawk is much less migratory, with some pairs remaining stationary in temperate locales year-round. In western states both the red-tailed hawk and the ferruginous hawk appear to disperse, not migrate, forcing their offspring to fend for themselves in the territory they look at as home. By late winter, the parents return to reclaim their territory and drive off competing birds which may include their own unrecognized and forgotten offspring.

97. True or false. Red-tails nest only in trees.

False. In western states, red-tails occasionally choose cliffs as their nest sites and in Arizona they sometimes nest in the tall saguaro cacti. [12]

98. In California, red-tailed hawks lay their eggs in . . .

- a. February/March.
- b. March/April.
- c. April/May.
- d. May/June.

Answer b. Egg production in red-tails (as with most raptors) varies with climate. In California, red-tailed hawks lay their eggs in March or early April. Incubation is thirty-four days and is shared by both sexes.

99. Red-tails generally have how many young?

- a. two.
- b. three.
- c. four.

Answer b. Red-tails lay, on the average, three eggs, of which two young are successfully **fledged**.

100. True or false. The red-tailed hawk eyass generally leaves the nest for the first time at six weeks.

True. Red-tails leave the nest at about six weeks, but often stay in the area until the parents drive them off or abandon them in the fall. During this time the parents teach the fledglings how to hunt and kill.

101. True or false. The Harlan's hawk is a subspecies of the red-tailed hawk.

True. Up to fourteen subspecies have been described for the red-tailed hawk, but falconers know that the red-tailed hawk is so variable that no two individuals look alike anyway. Two subspecies stand out. The pale Krider's hawk, occurs in the west, with adult tail plumage that is almost white. In upper British Columbia and the southern Yukon, a very dark red-tailed hawk strongly resembling a golden eagle in color, but without a red tail has been given the name of Harlan's hawk.

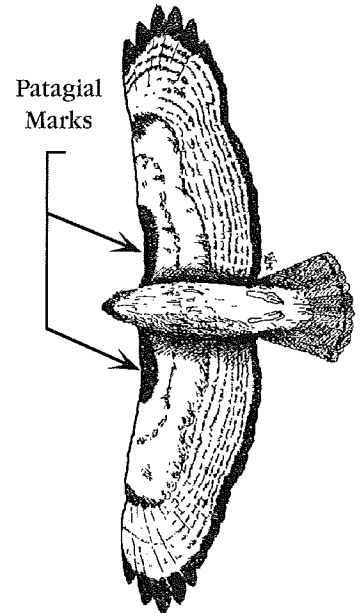
102. True or false. You can tell a passage red-tailed hawk from a passage red-shouldered hawk by the dark patagial marks.

True. Dark patagial feathers in the "arm pit" are a clear field marking separating a small immature red-tailed hawk from a large immature red-shouldered hawk.

103. The hawk with the most tenacious and concentrated grip after a strike is the . . .

- a. goshawk.
- b. ferruginous hawk.
- c. red-tailed hawk.
- d. none of the above.

Answer c. Red-tailed hawks kill prey that cannot be swallowed whole or quickly ripped apart by the numbing compression of their grip and by talon penetration, sitting back on the spread tail with spread wings and raised head and crest, patiently awaiting the total cessation of breath and movement. [1]



104. Wild red-tailed hawks seem to prefer to hunt . . .

- a. from a soar over flat prairies.
- b. in deep woods.
- c. sitting on light poles by the freeway.
- d. none of the above.

Answer c. Red-tails are highly adaptive opportunistic feeders. However, they tend to prefer to perch and wait atop a high position with good visibility and dive onto prey, letting gravity provide acceleration. Freeway light poles, dead or live tree branches overlooking open areas or valleys, and the sides of hills all provide the red-tailed hawk with a high perch and good visibility. Answer "b" is a more accipitrine hunting style. Answer "a" applies more to ferruginous hawks, since red-tails seem more to soar for the sheer enjoyment or to survey their territory than as a "high perch" though they have been seen to **strike** from a soar.

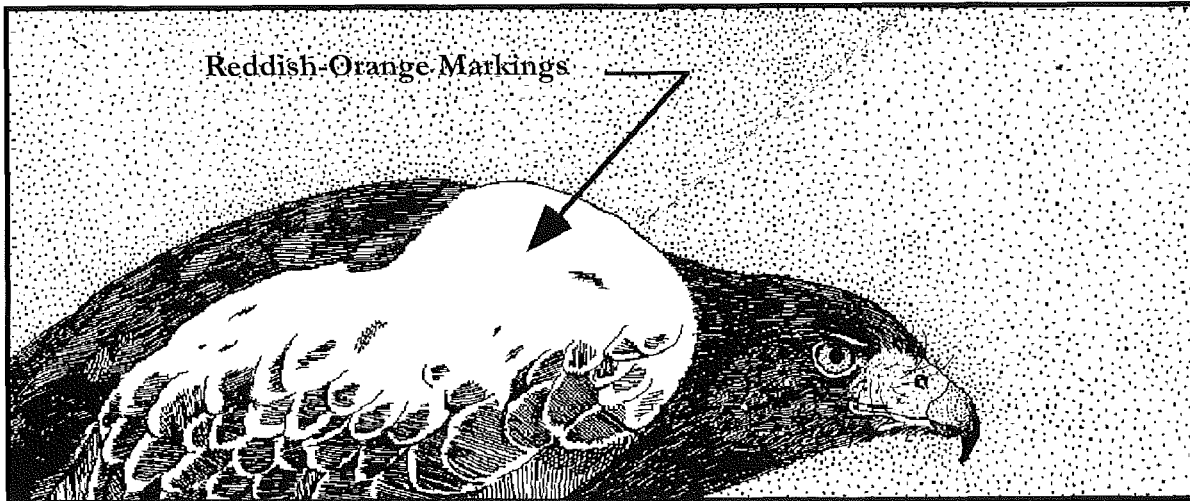
105. True or false. The sole member of the genus *Parabuteo* is the Harris' hawk.

True. The Harris' hawk, once known as the "bay-winged hawk" (because of the dark orange or "bay"-colored patches on their wings) is the only species of this genus. It is very similar to the genus *Buteo* (thus the term "para"), but has a slimmer appearance due to its proportionally longer tail and legs, like the accipiters. Generally black in color, this raven-sized raptor has a circle of white feathers around the base of the tail, the tips of the tail feathers are white, and has bay markings on the upper shoulders and thighs. Depending on the source, the markings can be described as "reddish-orange," "rufous," "chestnut," or "bay." The immature Harris' hawk is very similar to the adult but with heavily streaked and barred underparts with much lighter plumage on chest, legs and underwings. They are residents in south and central Arizona, southern New Mexico and Texas, throughout Mexico and Central America, and historically, as far east as Louisiana. Until the 1960's, they were considered carrion eaters of no interest to falconry.

106. While driving in the Sonora Desert you see a raptor perched on a tall saguaro cactus. A second hawk of the same species is perched on its back while a third hawk perches on the back of the second. The most likely identification is . . .

- a. rough-legged hawk.
- b. ferruginous hawk.
- c. prairie falcon.
- d. Harris' hawk.

Answer d. Only Harris' hawks are known to manifest this behavior. The Sonoran Harris' tends to be the largest subspecies. [12]



107. Castings contain bones and often the entire skulls of the prey in the pellets.

- a. Longwing.
- b. Accipiter.
- c. Buteo.
- d. Owl.

Answer d. Owl pellets contain many bones because owls' digestive juices are not as strong as those of hawks.' Hawk pellets have few if any bones present, whereas in owls most of the bones remain undigested.

108. Which of the following does not have a crop?

- a. red-tailed hawk.
- b. bald eagle.
- c. osprey.
- d. great horned owl.

Answer d. The crop is the vascular sac above the sternum in which the diurnal (daytime) raptors first receive food before passing it onto the stomach. Owls do not have a crop. [12] Owls are not closely related to hawks, eagles and falcons. Owls are nocturnal (nighttime) birds of prey sharing the hooked beak and grasping talons of the diurnal birds of prey, it is due to convergent evolution rather than closeness of relation. While hawks are thought to be more closely related to ducks and game birds, owls are considered to be more closely related to night jars and cuckoos. An even better example of convergent evolution is the New and Old World vultures which are not related. Old World vultures are thought to be related to hawks, while New World vultures are related to the storks. Yet the end result is virtually the same. [2]

109. True or false. The raptor that can lift heavier loads in proportion to its size than any other raptor is the great horned owl.

True. Due to its extremely large wings, the horned owl can lift prey weighing more than itself straight up like a helicopter. This permits the horned owl to hunt over water with remarkable success, lifting ducks or muskrats and carrying them to shore. [12] A general rule of thumb is that hawks and falcons can lift three-quarters of their body mass for short distances and can carry one-half their mass for some distance.

110. In March, you find a raptorial baby bird “abandoned” on the forest floor. It is probably a . . .

- a. red-tailed hawk.
- b. great horned owl.
- c. goshawk.
- d. golden eagle.

Answer b. The young of great horned owls often jump out of the nest weeks before the wing feathers have emerged. They wander about on foot on the forest floor, getting as far as half a mile from the nest, yet they are not deserted. They keep calling in a loud, harsh two syllable scream by which the adults locate and feed them. The adult owls will vigorously defend them. If you find one, there is a good chance the parent has already locked you in its sights and is inbound. [12]

111. Of one hundred red-tailed hawks born in a given year, how many are alive after five years?

- a. twenty-six.
- b. fifteen.
- c. ten.
- d. five.

Answer d. Based on mortality rate statistics [18] only five of the original hundred would be alive after five years. Observed mortality rates (based on information returned from bands) are, by year, 73%, 47%, 36%, 34%, and 31% for the first five years. For the same time span and number of birds born in the wild, nineteen ospreys, fourteen goshawks, eleven peregrines, nine red-shouldered, seven prairie falcons, three marsh hawks, two Cooper’s, and one kestrel survive to the age of six. [14]

112. True or false. Of one hundred bald eagles born recently in a given year, thirty-seven are alive after five years.

True. Recent efforts at protection paid dividends for this magnificent bird. Just twenty years ago mortality rate statistics predicted only two of the original hundred would be alive after five years. [14]

113. The average life-span of a wild adult red-tailed hawk, assuming it makes it to adulthood is . . .

- a. one year.
- b. two years.
- c. five years.
- d. ten years.

Answer b. Based on mortality rate statistics [18] for the first five years, by year, 73%, 47%, 36%, 34%, and 31% for the first five years, then the average life span is just slightly more than two years as an adult. Pretty grim, huh? So when you are asked how long they live, begin your answer with: “Well, in the wild, assuming they make it to adulthood, about two years; as a falconry bird, typical life spans exceed ten years.

REVIEW QUESTIONS - SECTION 1.1 - GENERAL

Answers to the questions may be found at the question number given in parentheses.

- T F 1. Male hawks are usually larger than female hawks. (#15)
- T F 2. The two outer tail feathers are the “deck feathers.” (#27)
- T F 3. A falcon (female peregrine) has long, pointed wings. (#21)
- T F 4. A Harris' hawk has orange markings on its wings. (#105)
- T F 5. On a hawk the tail feathers are known as the train. (#26)
- T F 6. Accipiters generally have wide core wings and a short tail. (#1)
- T F 7. Young hawks that have flown are called “branchers.” (#12)
- T F 8. Hawks only use vision to hunt with. (#35)
- T F 9. The cere is the waxy skin above the beak. (#24)
- T F 10. The strongest foot for its size is the sharp-shinned's. (#67)
- T F 11. Large longwings build a new nest in trees every year. (#41)
12. An eagle passes overhead. It is mostly dark but has large white patches on the underside of the wings. It is most likely . . .
- a. a mature golden eagle.
 - b. an immature golden eagle.
 - c. a mature bald eagle.
 - d. an immature bald eagle. (#33)
13. Sharp-shinned hawks can be distinguished from Cooper's hawks by . . .
- a. the eyes.
 - b. plumage color.
 - c. extreme roundness of the Cooper's tail feathers.
 - d. shape of the wings. (#74)
14. A hawk develops its adult plumage at about . . .
- a. one year of age.
 - b. two years of age.
 - c. three years of age.
 - d. four years of age. (#14)
15. What is North America's smallest accipiter?
- a. sharp-shinned hawk.
 - b. Cooper's hawk.
 - c. goshawk.
 - d. red-shouldered hawk. (#72)
16. Buteos are usually described as . . .
- a. having long, pointed wings; chiefly prey on birds.
 - b. distinguished from the longwings, having longer tails and shorter wings, most obvious in flight.
 - c. slender bodied, with long wings, and long tails.
 - d. useless for falconry. (#87)

ETHICS

From time-to-time you will hear some action or other called “unethical,” separately from the action itself being illegal. The general membership of the North American Falconers Association (NAFA) approved the following passage in 1985. It remains the ethical standard for beginning apprentices to understand and follow. If you want to be a falconer, these are the rules you go by.

“Underlying these positions is the following definition: “Falconry is the taking of wild quarry in its natural state and habitat by means of trained raptors.”

Positions regarding Bird Maintenance. NAFA supports falconers in keeping, within regulatory entitlements, only those birds (both by species and numbers) that they can regularly fly at quarries. It is incumbent upon each falconer, in addition to meeting minimal standards required by regulation, to insure that his/her birds are equipped, housed and maintained in the manner most conducive to their well-being. Each falconer is urged to take all available measures to minimize the possibility of loss of his birds and to make every effort to recover any bird if lost. Each falconer, likewise, is expected to spare no effort in curing a sick raptor. He is expected to ensure that if a raptor is no longer desired, it is passed on to another qualified falconer able to fly it at wild quarry or returned to the wild with full capability of sustaining itself.

Positions regarding Conformance to Falconry Laws and Regulations. Each falconer is under a moral as well as legal obligation to observe the laws and regulations of his/her own and foreign countries with regard to taking, import and export of raptors, taking of quarry and access to land.

Positions regarding Conservation of Raptors. The well-being of our native raptor populations is fundamental to the continued practice of falconry. Each falconer should endeavor to promote to the utmost the welfare and survival of those populations in their wild state in accordance with accepted precepts of use-management conservation. NAFA opposes the taking of haggards, i.e., the wild breeding population, except under exceptional circumstances (such as birds that would be destroyed due to depredations). NAFA urges that in taking eyass raptors, at least one young be left in the eyrie/nest unless, again, exceptional circumstances prevail. NAFA opposes commercial traffic in wild-taken North American raptors.

Positions regarding Exotics. Based on extensive scientific scrutiny and historic evidence, NAFA supports the use of non-native (exotic) raptors — to include hybrids — in the practice of falconry in North America. Despite lack of scientific evidence of any threat to native avifauna, NAFA nonetheless counsels against any deliberate release into the wild of such raptors.

Positions regarding Captive Breeding. NAFA recognizes the importance of captive breeding as a significant source of birds for both falconry and release to the wild for restoration of wild populations. NAFA concurs in the commercial sale of captive-bred progeny to appropriately licensed and qualified recipients as a way to encourage the production of captive-bred birds so that they will be available for both purposes.

Position regarding Publicity. Falconers are cautioned about the dangers of publicity. Those considering public representations are urged to consult NAFA’s policy on publicity or NAFA’s Publicity Committee. In general, the only two acceptable alternatives are the very highest quality presentation or no publicity. With or without publicity, application of discretion, moderation and common sense by all falconers will go a long way toward maintaining a favorable image of our sport.”

SECTION 1.2 HUNTING AND FALCONRY TECHNIQUES

1. Falconers are bound by the ethics of the sport and by tradition to . . .

- a. never tell the location of an eyrie to anyone other than a fellow falconer.
- b. never talk to the press without permission of the California Hawking Club.
- c. always give a trained hawk to an apprentice falconer when they are done with it.
- d. always leave at least one young in any eyrie.

Answer d. Hawks can't count and leaving this one young permits the adult hawks to complete the normal annual breeding cycle successfully, thereby establishing a biological tie to the nest-site ensuring their return the following year. [12] Further, California prohibits taking all the nestlings from a single nest. (CFR 670(4)(F))

2. **Cast** means . . .

- a. the act of disgorging a pellet consisting of fur, feathers, and bones.
- b. two or more longwings flown together.
- c. to hold or wrap a hawk so as to prevent movement.
- d. all of the above.

Answer d. All are correct. A casting is the indigestible portion of the last meal of a raptorial bird, usually bones and feathers that are formed into a compact pellet and regurgitated from the stomach through the mouth. The word cast is also used to mean two hawks flown together, of either sex or species. One casts a hawk to immobilize it. This is not as confusing as it first seems. After all, **cast off** clothes are clothes that are thrown away. A Broadway play, a television show, and a movie all have a **cast** of characters. Finally, a doctor will put your broken leg in a **cast**.

3. When walking with a falconer carrying an unhooded hawk, a visitor should always walk . . .

- a. in front of the falconer.
- b. behind the falconer.
- c. to the right of a right-handed falconer.
- d. to the left of a right-handed falconer.

Answer c. The visitor should always walk on the side opposite the hand on which the hawk is perched. Right-handed falconers carry their hawks on their left fist. Then guests should walk on the right so the hawk can see them. Hawks are quick to sense a stranger behind them and may become uneasy. After a few trips both the visitor and the hawk will become accustomed to the situation.

4. When walking with a falconer whose red-tailed hawk is perched in a tree, a visitor should always . . .

- a. walk anywhere, it doesn't matter.
- b. avoiding getting between the falconer and the hawk.
- c. walk behind and to the left of a right-handed falconer.
- d. walk in front of the falconer three or four paces.

Answer b. The visitor should avoid getting between the falconer and the hawk. The falconer may need to **call** the hawk to him. As visitors are often non-falconers, the sight of a two-pound bird of prey flying straight at them at forty miles an hour is intimidating—to say the least. Answer “d” is useful for warning snakes away and is very helpful to the falconer if not to the visitor. A few words describing necessary field courtesy will inform the visitor of what to avoid and that the falconer's attention will be on the hawk and not on socializing with them.

5. True or false. A five-year-old-trained hawk can never be accurately described as an eyass.

False. There are two uses of the term “eyass.” First, an **eyass** is a trained raptor of any age or species that was originally obtained as a nestling. Secondly, the word describes the young of raptors while they are still in the nest.

6. Which of the following has a long history of falconry?

- a. red-tailed hawk.
- b. ferruginous hawk.
- c. sharp-shinned hawk.
- d. Cooper's hawk.
- e. goshawk.
- f. Harris' hawk.

Answer e. Of the above, only the goshawk was known in classical falconry. The rest are all natives to the new world. The sharp-shinned hawk (*Accipiter Stratus*) is a smaller American counterpart of the European sparrowhawk (*A. Nisus*). There is no European accipiter comparable to the Cooper's. The red-tailed hawk, the ferruginous, and Harris' hawks are relatively new and welcome additions to falconry.

7. **Haggards**, adult raptors, are not taken for falconry because they . . .

- a. may be too old and might die soon.
- b. are too difficult to train.
- c. are nature's breeding stock and should be allowed to function as such.
- d. will only take the prey species they have specialized to catch in the wild.

Answer c. Consequently, only **eyasses**, nestlings, and **passagers**, immature hawks, may be taken for falconry. **Haggards** are the natural breeding stock. Most raptor species mate for life or are seasonally monogamous, therefore, capturing a haggard has a direct impact on species propagation. Young birds of prey have an over a seventy percent mortality rate before they reach breeding age. The hawks surviving to adulthood must be allowed to remain in the wild to produce young. Answer "a" is incorrect as the life-span of a falconry hawk is usually much longer than a wild hawk. Answer "b" is partially correct. Historically, classical falconry reports **haggards** are extremely difficult to train and very easy to lose.

8. True or false. Eagles make excellent modern falconry birds.

False. Eagles require more extensive commitment of resources of time, facilities, and hunting territory than most hobbyist falconers have. While impressive, they are difficult to man and train. Literature abounds with "horror stories" but few successes. Federal law allows depredating (plundering domestic livestock) golden eagles to be taken for falconry. However, California requires special permitting. California has issued precisely one since the laws went into effect.

9. True or false. Except for being prohibited, ospreys would make excellent modern falconry hawks.

False. The osprey must **carry** its normal prey (fish) from the site of the **strike** to a spot where it may be consumed. The inability of the falconer to control events before and after the **strike** prevents the use of the osprey in falconry. Modern falconry is characterized by working in close harmony with the hawk's natural inclinations. We humans lack the ability to control the osprey's natural prey as we do with the aerial and ground prey of the other raptors. Until we grow gills, falconry with ospreys is impractical.

10. True or false. The gyrfalcon's instinctive hunting style is to pursue.

True. And this is the bane of the falconer's existence as these raptors love to pursue. Hunting with any longwing with telemetry is well advised and with a gyrfalcon telemetry is even more important. Wild gyrfalcons are avid tail chasers and catch most of their prey in this way after climbing up from below to intercept prey flying overhead. When trained, gyrfalcons are notoriously impatient and do not readily understand the advantage of **waiting-on** over the falconer when there may be lots of other interesting birds flying around to chase. This is their primary disadvantage as falconry birds.

11. True or false. Wild peregrine falcons often take mammalian prey.

False. Wild peregrines exist almost exclusively on avian prey and they are able to tackle waterfowl larger than themselves like ducks and egrets near open water. They kill by severing the neck vertebrae with their notched beak. See the sketch on page 12.

12. The longwing that excels at **waiting-on** is the . . .

- a. prairie falcon.
- b. gyrfalcon.
- c. peregrine.
- d. saker falcon.

Answer c. Peregrines excel over all other longwings in the discipline falconers call **waiting-on**—where the hawk circles high in the air above the falconer and holds this position for a period of time in anticipation of quarry being flushed under it. [1] The natural hunting style of the gyrfalcon, the saker, and the prairie falcon is oriented toward pursuit of open country prey. While they can be taught to **wait-on**, they are not naturally inclined to do so.

13. True or false. The prairie falcon's moderate size makes it a relatively easy hawk to man.

False. The prairie falcon is quite different from the other longwings as far as **manning** and taming is concerned. The other longwings are manned quickly and with little effort from the falconer. The prairie falcon often refuses to come around in even the most elementary stages of training. For comparison, wild caught tundra peregrines will often feed from the fist within minutes of being captured. According to Frank L. Beebe: "Of all the large falcons, they [the prairie falcon] are the most irascible and the least forgiving in attitude toward their trainer." Size doesn't seem to have anything to do with it. [1a]

14. True or false. The prairie falcon is more delicate than either the peregrine or the merlin.

False. The prairie falcon is tough and able to withstand anything the weather can produce, performing exceptionally well in cold weather and not bothered by excessive heat which would debilitate a peregrine. They survive nicely on a diet that would be fatal to the more delicate merlin and harmful to a peregrine. Loss through sickness or disease (other than true negligence of a falconer) is negligible.

15. True or false. The merlin can be fairly readily taught to wait-on.

False. The merlin generally is difficult to teach to wait-on as it is more inclined to direct pursuit.

16. The fastest peregrine stoops at approximately . . .

- a. thirty to forty miles per hour.
- b. eighty to ninety miles per hour.
- c. one hundred thirty to two hundred eighty miles per hour.

Answer c. The highest recorded stoop speed prior to 1996 was eighty-seven miles per hour. Recently skydiving falconers have had female peregrines stoop past them in free-fall chasing a lure. As of late 2001, the true upper speed limit is not known, but to quote one of the skydivers "as fast as they need to go". The highest recorded speed is 242 miles per hour. [Ken Franklin- presentation at the CHC Field Meet December 29, 2001]

17. The easiest small falconry bird to keep tame and keep healthy is the passage . . .

- a. sharp-shinned hawk.
- b. merlin.
- c. kestrel.
- d. red-shouldered hawk.

Answer b. Of the raptors listed above, the passage merlin becomes extremely tame and shows none of the nervousness of the sharp-shinned hawk. While the passage kestrel tames relatively easily, the merlin seems more robust. Eyass kestrels are extremely easy to tame, but the question above deals with passage hawks. However, this does not mean that the merlin or kestrel is easy to care for or train. The smaller the hawk, the more likely that a mistake in feeding will be fatal. With small raptors, the falconer **MUST** pay close attention to weight control with excellent scales. The red-shouldered hawk is easy to care for, but is not a small hawk nor is it currently legal for use in falconry in California. [11b]

18. Passage kestrels offer the following advantage(s) as first hawks for apprentices:

- a. manning is easier.
- b. facilities and equipment are smaller.
- c. their training leads to an easier transition to larger longwings.
- d. "b" and "c" but not "a".

Answer d. Initially passage kestrels bate as much as a red-tailed hawk but the experience is much less physically intimidating to the apprentice. As with the red-tailed hawk it takes patience to man the passage kestrel. Eyass kestrels will tame virtually overnight. Initial facilities may be smaller and more compact, easier to fit into cramped quarters. The transition to larger longwings is relatively easy when the apprentice advances to general in comparison to an apprentice that has only hunted with a red-tailed hawk. Kestrels are less robust than the red-tailed hawk in health and feeding requirements. Additionally, kestrels are prone to carrying their quarry, and their prey is small ground mammals, insects, and small often-protected birds. A mews that is sized for a kestrel will be sufficient for a merlin and a sharp-shinned, but may not be big enough for any of the larger hawks.

19. True or false. Generally, a kestrel should be fed once a day.

False. After your kestrel is trained and regularly taking quarry, it will be easy to feed them their daily ration from their fresh kill, i.e., once a day. To do that safely means knowing the bird's metabolism to the point you can predict the bird's requirement prior to the next hunt. Kestrels in training may need several small meals while weight is being reduced and training commenced. Twice a day or more often, smaller servings are necessary to control weight loss to bring a fat kestrel down at two to three grams per day for the first week and then one gram per day until the hawk is responding well. Kestrels learn basic falconry techniques very quickly and are usually flying to a garnished fist within a few days.

20. The falconer is less likely to find **lure**-training necessary when flying a . . .

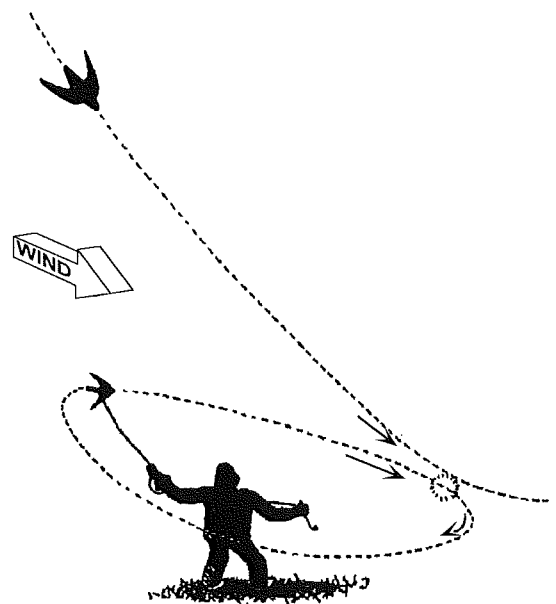
- a. peregrine.
- b. red-tailed hawk.
- c. goshawk.
- d. Harris' hawk.

Answer d. **Lure** training is a requirement for every hawk and it should be started before the hawk is off the creance. Harris' hawks, however, seem to show less interest in chasing lures than the other hawks and the falconer is less likely to need a lure when flying a Harris' hawk.

21. The falconer generally prefers that his longwing strike the **lure** . . .

- a. from a steep dive flying with the wind (Downwind).
- b. from a steep dive flying into the wind (Upwind).
- c. on a low raking approach downwind
- d. on a low raking approach upwind.

Answer a. The tendency of any young longwing is to circle so as to approach the lure flying into the wind and from a rather low raking approach and relative slow speed. The trainer wants her to take the lure from a steep diving approach flying with the wind producing a faster **stoop**. It follows that any time your falcon climbs steeply into the wind after a miss and you can get her to try for the lure immediately after she turns downwind, she should be permitted to hit it. See sketch describing answer "a."



22. You lure fly an eyass female prairie falcon and she strikes the **lure** firmly on her first **stoop** of the day. You should . . .

- a. continue swinging the lure and ignore the hit.
- b. give her the lure and feed her the reward.
- c. give her the lure but withhold the reward.
- d. none of the above.

Answer b. You must always play fair with your hawk. As the falcon improves, she will more and more often take, or at least hit, the lure on passes when you intended her to miss. Following any solid hit, the lure should be dropped to the ground and the falcon permitted to **strike** and **bind**. [12]

23. A characteristic of the kestrel that can become a vice when it is trained is . . .

- a. **soaring**.
- b. **warbling**.
- c. **bowsing**.
- d. **carrying**.

Answer d. The ability to control **carrying**, that is, picking up the quarry and flying off with it, is one of the skills falconers with kestrels must master. Typical anti-carrying techniques such as only allowing the kestrel to take the lure on the ground or hunting starling which they can't carry work well. **Soaring** means riding thermal air currents to high altitudes. Once in a soar a hawk may not be responsive to the falconer. **Warbling** is stretching the wings overhead. **Bowsing** is drinking water.

24. Which of the following traditional falconry equipment is recommended for use with a kestrel?

- a. bells.
- b. hood.
- c. Aylmeri jesses.
- d. "a" and "c," but not "b".

Answer c. Aylmeri jesses are a legal requirement. The falconer must take care as the equipment is small and the kestrel's legs are delicate. Few falconers take the time or trouble to bell or hood a kestrel. These hawks become so tame that there is often no advantage to a hood and they are extremely difficult to fit. Bells must be extremely lightweight and small.

25. The one hawk which seems to be most affected by heat, and becomes more difficult to fly as the temperature rises (70F and above) is the. . .

- a. red-tailed hawk.
- b. goshawk.
- c. kestrel.
- d. red-shouldered hawk.

Answer b. Goshawks seem to be more susceptible to heat than other birds. Their natural range is higher or cooler territories. [12] As with dogs, children, spouses, and other small pets, hawks should not be left in a car unless the falconer takes care to ensure adequate ventilation and comfort. This is really a dumb way to lose a hawk.



26. In North America a goshawk would be a desired species for hunting . . .

- a. rabbits.
- b. grouse.
- c. pheasant.
- d. all of the above.

Answer d. Goshawks will attack any of these, and waterfowl as well. [12]

27. True or false. Quail are good quarries for the trained goshawk.

False. They are pursued eagerly but quail are small, hard to foot, and the buzzing close-packed flocks tend to bewilder a goshawk. They are also very difficult to locate in places where a goshawk has a fair chance at them. They are not as swift as goshawks but they can pull away at the start. Worst of all, they provide almost an irresistible temptation to **carry**. [12]

28. True or false. The goshawk prefers to descend on winged prey.

False. Goshawks always underfly, taking them under and behind their quarry, and completely out of sight, making the air strike of the goshawk almost impossible to evade. [1]

29. True or false. The passage female Cooper's riding your fist horizontally, tight-plumaged and beak half open is in **yarak** and is ready to be released to hunt.

False. Unless you intend to release her permanently, better not let her go! Accipiters emotionally ready to hunt ride the fist in a vertical stance, plumage loose and mouth closed. [1] **Yarak** is more than a state of hunger. **Flying** or **combat weight** alone does not guarantee readiness to hunt in accipiters, they have to be psychologically ready as well. The open beak, in and of itself, is a sure sign of stress. No hawk in stress should be released unless you plan on it being a permanent release. You'd be better off discovering and eliminating the source of the stress.

30. Cooper's hawk kills are . . .

- a. seldom seen.
- b. happen in or behind thick cover.
- c. by surprise and dexterity rather than speed.
- d. all of the above.

Answer d. "The hawk flies along a line of trees or a hedge and flicks over the top to surprise a bird feeding in the open. Alternatively, the hawk approaches low over the ground, behind a bush, or other cover, and suddenly dashes among a flock of feeding sparrows. Such attacks may have been planned some distance away. Hawks may also hunt from perches within cover, snatch a bird flying past, or suddenly arrive in a tree and snatch a feeding bird." [2]

31. True or false. The goshawk riding your fist vertically, relaxed, with the beak closed is in **yarak** and is ready to be released to hunt.

True. This is the classic physical description of **yarak**.

32. True or false. The sharp-shinned hawk is delicate of health, high strung and hard to man.

True. Sharp-shinned hawks are distressingly nervous and difficult to feed properly and to keep in good health. They are easily injured and difficult to handle. Good quarries for these small hawks are also limited because most passerine birds are illegal to hunt. Their best quarries are starlings which they cannot **carry**. Much expertise, confidence and patience are required to train and to fly the sharp-shinned hawk.

33. True or false. Most buteos make good falconry hawks.

False. Of the ten species of North American buteos or buzzards, most lack the cooperative spirit compared to other predatory hawks of similar size. Most of the buteo species live on insects and small rodents and so are of considerable value to agriculture, but as much of the art of falconry is working within the hawk's natural inclinations, they are of little use to falconers. The two largest buteos, the highly spirited ferruginous and red-tailed hawks, are exceptions.

One Florida falconer reports success with a broad-winged hawk and with the promise of greater potential. Currently, the only buteos used in falconry, per California regulations, are the ferruginous and the red-tailed hawk. Federal regulations, but not all of the states, allow the use of the red-shouldered hawk for use in falconry and/or by apprentices, and allow the use of all non-endangered, non threatened birds of prey for use in falconry. The broad-winged hawk is about the size of the Cooper's hawk and in the right hands may prove a very willing falconry hawk. Time will tell. [11a]

34. If a human intruder approaches an occupied ferruginous nest with young the nesting pair are likely to . . .

- a. viciously attack the intruder.
- b. abandon the nest.
- c. sit quietly.
- d. kill and eat its young.

Answer a. With their ground nests open to easy violation by mammalian predators like coyotes and wolves, the ferruginous evolved extremely aggressive nest defense behavior. The ferruginous attack dogs, coyotes, and sometimes humans, up to a mile from the nest. Early in the season, however, during egg production or incubation, human intrusion usually results in abandonment of the nest and eggs, and frequently cuts off reproductive activity for the season. [12]

35. Which is the strongest and swiftest of the large, open country buteos of North America?

- a. red-tailed hawk.
- b. ferruginous hawk.
- c. Swainson's hawk.
- d. rough-legged hawk.

Answer b. The ferruginous hawk is certainly the largest and possibly the most spirited of the buteos. Females are capable of overtaking and subduing the largest prairie hares and are almost equals of a male golden eagle in strength. Going head-to-head, a trained ferruginous easily outdistanced red-tails chasing ground quarries during western falconry meets. By the same token they are widely thought to lack the acceleration needed on close **slips**. The editor's experience with a passage female was that it seemed as if the hawk was sizing up the situation rather than simply slow off the mark. Almost as if the bird was deciding whether or not to invest the energy in the flight.

36. When their tree nest is climbed by humans, western red-tailed hawks usually . . .

- a. attack the intruder.
- b. disappear and permanently desert the nest.
- c. utter vocal cries from a distance.
- d. make menacing aerial displays.

Answer d. Western red-tails are more aggressive than eastern red-tails but they rarely make physical contact with an intruder at the nest "dive-bombing" trying to intimidate the intruder into leaving their nest alone. Answer "c" is correct for Eastern red-tails.

37. The advantage(s) of the red-tailed hawk for the apprentice's first hawk is (are):

- a. The species is more robust than the kestrel.
- b. It provides an excellent introduction to more specialized ground-oriented hunting raptors.
- c. If sized for a red-tailed hawk, facilities and equipment will fit most other raptors.
- d. If flown at the correct weight, the red-tailed hawk is nearly "loss-proof" while hunting.
- e. all of the above.

Answer e. The red-tailed hawk's size and health make it ideal for apprentices to learn the care and treatment of raptors. Red-tailed hawks learn easily and quickly learn the benefits of hunting with humans. An apprentice can make mistakes, such as underfeeding, that would kill a kestrel. The hunting style and training provide an excellent introduction for working with Cooper's hawks, goshawks, ferruginous hawks, and Harris' hawks. Facilities sized for a red-tailed hawk will be sufficient for any sized falconry bird, with the possible exception of ferruginous hawks or great-horned owls. All have distinct personalities. Once apprentices learn to work with the red-tailed hawk, they can work with any of the ground-quarry oriented hawks.

38. A preferred species to take cottontails and jacks is the . . .

- a. Cooper's hawk.
- b. red-tailed hawk.
- c. prairie falcon.
- d. any of the above.

Answer b. The red-tail is oriented toward ground quarries, particularly large rodents and rabbits. Both the Cooper's hawk and prairie falcon are oriented more toward aerial kills. Even though ground mammals make up sizable percentages of their prey in the wild, both are too small to take jacks routinely. Most falconers with prairie falcons fly them exclusively against avian quarry. Falconers with Cooper's usually specialize in either ground or avian quarry, but rarely both during a given season.

39. To exercise a red-tail . . .

- a. block it out in a place where it will bate continuously taking care to insure the leash has shock absorption to mitigate leg breakage.
- b. stoop it to the lure repeatedly (twenty-five to fifty times).
- c. accustom it jumping vertically fifty to two hundred times for randomly rewarded tid-bits.
- d. take it to the field and fly it.
- e. "c" and "d".

Answer e. Little can compare in effectiveness to a five mile walk—for the falconer—with the hawk following from tree to tree or tree to **fist**. A falconer can also carry the hawk and **call** it off repeatedly or practice "fly-ups" while standing on a chair or a ladder. However, these alone won't get an **intermewed** hawk back into hunting shape. Once your hawk is at **flying weight**, the easiest method is to fly your bird hard and often. This also reinforces the bond between falconer and bird. An **intermewed** hawk needs to be back in flying condition before actual hunting is attempted. If you take her too soon to a field where there are many **slips**, she will start **refusing** them, as she quickly learns that she can't catch quarry. A clear sign your bird is not in condition is when you call them to the **fist** they land on the ground and run or walk to you.

So, how can you get a hawk into flying condition before flying her free? Answer "c" is a training method called "operant conditioning" where the hawk is not rewarded every time it comes to you, otherwise it would get overfed and never back out in the field. Rather the hawk is encouraged to jump to your fist held at arms-length overhead for a hidden tid-bit. This technique takes patience to learn, but the moult is six-months long, so you've got the time. The result, a well-conditioned hawk on your first hunting day, is well worth it. This proven technique works just as well during the latter stages of the moult as you reestablish your bond with the hawk and get her ready to hunt. You can also maintain her condition

during the hunting season when circumstances deny you a chance to hunt. [10] Answer “a” is incorrect and unacceptable. Continuous bating is a sign of panic and not the raptor analog of a human running on a treadmill. Answer “b” applies to longwings and not red-tails. Your sponsor will work with you to get your intermewed hawk back in shape. Note this particular area is evolving quickly as raptor trainers gain fresh insights into the workings of our bird’s minds.

Editor’s comment: Apprentices are encouraged to work with passage red-tails. The following three questions, plus a series in Section 3.1, detail observed difficulties with imprinted eyass red-tails. Please recognize that all three questions are about EYASS red-tails. Fortunately, PASSAGE red-tails do not share these problems. At this point in your falconry career, “imprint”, “passage” and “eyass” are just words without the weight of experience to really understand the difference. For now, memorize and retain. Later, with experience, you will understand.

40. Some **EYASS** hawks may become so aggressive when they mature that they should only be taken as passagers. The species that displays this behavior to the greatest degree is the . . .

- a. goshawk.
- b. Harris’ hawk.
- c. red-tailed hawk.
- d. prairie falcon.

Answer c. Only in the rarest of circumstances will an apprentice falconer raise an eyass red-tail because of the hawk’s very aggressive tendencies when they get older. There is also a high likelihood that the apprentice will make serious mistakes raising the hawk, even under the watchful eyes of the sponsor, that may result in a bad-mannered, screaming hawk. Further, if an **imprinted** red-tail is lost, it may become a menace to dogs or humans.

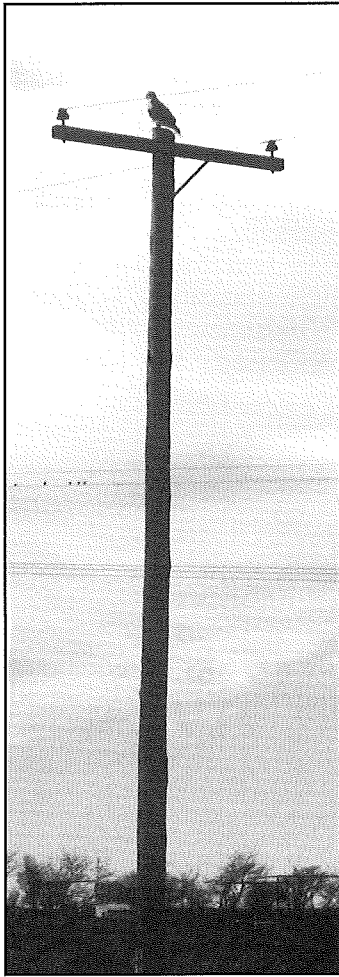
41. Your imprint **EYASS** red-tail inexplicably attacks a member of your hunting party. She binds to their arm with both feet and hangs. Her talons have drawn blood and there is a danger of serious injury. The best way to remove her is to . . .

- a. pull the hind talon of each foot backward and slide the foot forward.
- b. cover the hawk’s feet.
- c. throw a garnished lure or a live pigeon on the ground.
- d. grab the hawk by its head and squeeze with your gloved hand.

Answer d. Falconry is wonderfully and frustratingly unpredictable. When you release the hawk, literally anything can happen. In an emergency situation like the one described, where there is potentially serious damage to a human being, a domestic animal, or another raptor, a hawk can sometimes be removed from a **bind** or **crabbing** situation by clutching its head. Hawks have a natural reaction when their head is grasped firmly, to release what they are holding to attack whatever is holding their head. Caution: this method does not always work. The next best method is answer “a.” In non-emergency situations where there is no danger of serious injury, the preferred method for removing a hawk from a bind is to pull the rear talon of each foot back out of the wound and slide the front talons forward. Answer “b,” simply covering the hawk’s feet with a cloth sometimes works. As the hawk can no longer see what it is clutching, she may loosen her grip.

42. True or false. At the beginning of her second season your imprint **EYASS** red-tail attacks a new member of your hunting party. She has never done this before. You should discipline the hawk immediately, so that she will associate the punishment with the aberrant behavior.

False. The nonsocial nature of raptors prevents any understanding of the falconer’s use of pain, force, or threat of force in their training. Some hawks, particularly eyasses, develop aggressive behavior toward human beings as they grow older. Since the behavior is unpredictable, once it starts the only prudent course is to retire the hawk from falconry or hunt solo. Another consideration is that the hawk’s memory span is not very long. In this case she may connect the punishment with either releasing the victim or coming back to you, rather than attacking your former friend. Do not use food to get her to release the victim since this rewards her for attacking your friend in the first place and is the same technique used to get her to step off of quarry.



And now, back to falconry in general.

43. True or false. An aggravating characteristic of poorly-conditioned red-tails is the total lack of interest after missing a **strike**.

True. Sometimes after missing a **strike**, red-tails will perch in a tree and ignore other prey, the lure, and their falconer. If in poor condition it might be some time before they resume pursuit after a quarry. They can be time-consuming to recover, if out of reach in a tree and their weight is high. If the hawk is in flying condition it will shake off the frustration and resume hunting within seconds. This is an excellent point to teach the hawk the wrong lesson. If your patience runs thin and you **lure** her in or **call** her with a **tid-bit**, you teach her that you will reward (feed) her for missing a strike, or you will teach her that by being patient you will feed her for coming to the fist. Better for you to be patient and wait out the sulk.

44. Falconry trained red-tailed hawks seem to prefer to hunt . . .

- a. from a soar over flat prairies.
- b. in deep woods.
- c. sitting on exposed tree limbs overlooking fields and meadows.
- d. from the fist.

Answer c. Although falconers have reported their red-tails taking quarry from all of the above, they tend to prefer sitting on a high perch and being able to dive onto prey, letting gravity provide acceleration. Dead or live tree branches overlooking open areas or valleys, and the sides of hills all provide the red-tail with a high perch and good visibility. This seems to fit within their natural inclinations. Answers “b” and “d” are more accipitrine hunting styles.

While capable of taking quarries from the fist, red-tails generally lack the acceleration to overtake hard-running prey. Answer “a” applies more to trained longwings, since trained red-tails seem more to soar for the sheer enjoyment than as a “high perch.”

45. What hawk is most likely to jump up and down on a squirrel nest tearing it apart until its occupants flee down the tree, **wait-on** in a high wind and pump back upwind to the falconer against 20 mph gusts, take an English sparrow in flight, and **put in** quarry and mark the spot to wait patiently for the falconer to **flush** and fly back to the truck at the end of the day?

- a. Harris’ hawk.
- b. goshawk.
- c. red-tailed hawk.
- d. gyrfalcon.

Answer a. Harris’ hawks may be smarter and more versatile than any of the hawks of classic falconry. It is certainly the most sociable and the most flexible.

46. True or false. The Harris’ hawk’s only major drawback is inadequate cold weather adaptation.

True. When the temperature drops below twenty degrees Fahrenheit, along with high humidity and a strong breeze, Harris’ hawks will head for the car. With a direct wind, they are easily frost bitten and can lose their toes. Always give them good cover as an escape from the wind. Some falconers heat their mews to keep the temperature above freezing. [12]

47. True or false. **Flying weight** is harder to determine with a *Parabuteo* than it is with other raptors.

True. The optimal weight at which Harris' will hunt and take quarry is more difficult to determine than it is with other species. Harris' hawks are easy to train and will follow the falconer, chasing quarry, and flying to the fist at well above "combat" weight. They appear keen and will chase and "pull fur," but eventually lose the quarry. Lower the hawk's weight by as little as a half ounce (fourteen grams) and instead of pulling fur, the quarry will be taken with no overt change in the hawk's style of flight or its enthusiasm in the chase.

48. You discover that despite your desire to be a falconer and work with a bird of prey in a one on one relationship, the cry of captured quarry makes you violently nauseous. You thought that things would get better after your apprenticeship and you purchased a captive-bred eyass male Harris' hawk. But reality proved different. You enjoy everything BUT the actual capture of quarry and your new bird is feather perfect and as well trained as possible except for capturing quarry. You . . .

- a. tough it out. If you are going to be a falconer you have to hunt.
- b. only take your hawk hunting when it is slightly heavy and unlikely to hunt.
- c. release it to the wild.
- d. transfer it to a falconer that will hunt with it. Then drop out of active falconry. You can still retain membership in the clubs and the close associations with other falconers that you have come to treasure.

Answer d. Answer "a" is incorrect. You are supposed to have fun as a falconer. This does not include being on your hands and knees reliving your last meal. Besides one of the skills you must learn is to assist the hawk with its catch. Answer "b" is not falconry. It may look like falconry but it is pet-keeping. Answer "c" is incorrect and in most states illegal. Certainly in California, the Harris' is no longer a native bird. Also, despite your training, the hawk is both unproven in the field and an eyass lacking the skills that would have come from a wild birth and socialization with other Harris' hawks. Answer "d" is both ethical and legal. You do not have to drop out of falconry entirely. You can still be an honored friend of the family. In fact, we'd rather have that than any of the other alternatives.

49. During your first year as an apprentice you were able to get enough time off work to hunt during the hunting season. Then, between hunting seasons, you changed jobs and your new job requires you to work long days and travel extensively. Even though your red-tail moulted nicely, you just don't have the time to work with her to get her in shape to hunt. By November, she has become unmanned due to your neglect and getting her to sit on your fist when you pick her up is becoming difficult. You . . .

- a. tough it out. The days will get longer in the spring and you might have more time.
- b. drop her weight and take her out on weekends.
- c. release her to the wild.
- d. transfer her to another apprentice. And drop out of falconry.

Answer c. Answer "a" is alluring but incorrect. Falconry is hunting, not keeping a pretty bird of prey. Answer "b" is also alluring but incorrect. Red-tails are not weekend warriors, they need exercise more often than that. Answer "d" is a possibility. Finding an active apprentice that does not already have a red-tail and whose sponsor is willing for them to accept a transferred bird (with all your bad habits) is not likely. Releasing your bird back to the wild is the correct choice. She proved herself as a hunter in her first year. Her nervousness she shows when you pick her up in the mews shows that she is losing her trust of humans. Both are positive signs that she will do well in the wild. Granted your two-year Apprentice calendar stops but you can pick up again at a later date.

Editor's note: the above questions really deal with the ethics of falconry. They are tough questions and the answers focus on what is best for the bird and what is legal. Your convenience and ego must take a back seat. Even though question 48 seems contrived, it is not. In this particular case the now-friend of the falconry family made the sacrifice. His bird is doing nicely in the hands of another falconer. Question 49 is a situation that many falconers face. You may have noticed that the alternative of "get another job" was not offered. While many falconers make extraordinary changes to their life-style to accommodate falconry, you can't always put your life and your family's well-being at jeopardy over the sport of falconry.

**COMPARISON OF SELECTED TRAITS BETWEEN THE
ORDER ACCIPITRIDAE AND THE ORDER FALCONIDAE**

<u>TRAIT/CHARACTERISTIC</u>	<u>ACCIPITRIDAE</u> (accipiters, buteos, eagles)	<u>FALCONIDAE</u> (longwings)
Beak	naked cere, no bone in nostril, rarely toothed, upper and lower beak smooth	cere often has bristles, bony tubercle in nostril, upper and lower beak often toothed and notched.
Eye color	typically varies with age	permanently dark, typically
Primary moult (falconry number system)	from #10 forward	from #6, inwards and then outwards
Nesting site	typically in trees, cliffs or on ground, build their own	typically in cavities, or recesses, or on ledges, rarely on ground or in trees, never build their own nest
Fratricide	common	rare
Defecation	forceful ejection over the side of the nest	directly over the edge
Juvenile plumage (after Johnsgard)	typically streaked on body	rarely streaked body (peregrine being the exception)
<hr/>		
Falconry - apprentice level	red-tailed hawk	kestrel
Falconry - General and Master in California	red-tailed hawk ferruginous hawk sharp-shinned hawk Cooper's hawk goshawk Harris' hawk* inter-species hybrid* golden eagles and other species are also legal for falconry in California.	kestrel merlin prairie falcon peregrine* gyrfalcon* inter-species hybrid*
		*exclusively from captive breeding, in California

HUNTING AND FALCONRY
REVIEW QUESTIONS - SECTION 1.2

- T F 1. The prairie falcon is difficult to man. (#13)
- T F 2. The red-tailed hawk is difficult to man. (#37)
3. Of the following which best describes an eyass:
- a. a young hawk taken from the nest.
 - b. a young hawk in the brancher stages.
 - c. a first year passage bird.
 - d. a wild hawk in adult plumage. (#5)
4. The type of hawk that hunts larger birds are the . . .
- a. accipiters.
 - b. buteos.
 - c. harriers.
 - d. longwings. (#11)
5. The basic hunting style of the red-tail is to . . .
- a. soar over open grass lands and attack in a stoop.
 - b. weave in and out of trees attacking any prey it sees.
 - c. perch and wait atop a highly conspicuous perch, overlooking a valley on a dead limb and attack in a surprise stoop.
 - d. hover low over open fields and drop on mice and grasshoppers. (#44)
6. Of the following, the hawk most likely to hunt waterfowl near open water is a . . .
- a. red-tailed hawk.
 - b. peregrine.
 - c. sharp-shinned hawk.
 - d. merlin. (#11)
7. Small birds are the main diet of the . . .
- a. sharp-shinned hawk.
 - b. kestrel.
 - c. red-tailed hawk.
 - d. great horned owl. (#32 and Section 1.1, #85)
8. The type of hawk that kills larger birds by severing the vertebrae is the . . .
- a. shortwing.
 - b. broadwing.
 - c. harrier.
 - d. longwing. (#11)
9. The raptor would you most likely see perched atop a freeway light pole is the . . .
- a. shortwing.
 - b. marsh hawk.
 - c. kestrel.
 - d. red-tailed hawk. (#44 & Section 1.1, #104)

SECTION 2.0 KEEPING HAWKS

SECTION 2.1 CARE AND MAINTENANCE

1. The mark of a good falconer is the . . .
 - a. ability to put his hawk over quarry consistently.
 - b. condition of the hawks he keeps.
 - c. speed at which he trains his hawks.
 - d. "a" and "b".

Answer d. The good health, physical condition and plumage (in short—the **condition**) of the hawk are the primary goals of the falconer. The ability of a hawk to fly effectively and swiftly and to catch and hold quarries depend on the condition of its plumage and feet. Keeping a newly captured hawk in perfect plumage while learning to hunt is a challenge. If your red-tail is a good, consistent hunter of rabbits and hares, it will, in all likelihood, break feathers while **striking** and while subduing the prey particularly in heavy underbrush (the editor's personal experience). But you should still aim for the goal of a feather-perfect hawk at the end of the hunting season.

2. The most important factor in maintaining a healthy raptor of any species is . . .
 - a. daily flying.
 - b. balanced diet.
 - c. regular access to fresh drinking/bathing water.
 - d. all of the above.

Answer a. While all are critical, daily flying is an especially important variable. Some hawks may appear to exercise by wing flapping or bating from the perch. But there is no substitute for hard flying. Some hawks appear to lose their health very quickly when not flown regularly. Daily flying is also important in maintaining the bond between falconer and hawk. The red-tail should not be treated as a "weekend warrior," since a week's worth of inattention and inactivity in the mews results in a hawk that is in poor physical and mental condition. Even if at proper **flying weight**, the desire to fly, hunt, and kill, combined with sudden freedom compounded by previous inattention and poor physical condition causes the hawk to be less responsive to the falconer. In many cases, daily hunting seems impractical to the novice falconer, but with a little positive experience and effort, priorities shift in the new falconer's life-style and a daily hunt becomes a welcome and routine part of life.

3. Direct sun in hot weather (over 90F) for an extended period . . .
 - a. does not affect desert raptors.
 - b. is enjoyed by all raptors.
 - c. can be fatal to any species.
 - d. will bother only arctic species.

Answer c. Heat alone can kill goshawks, while peregrines suffer more from low humidity. Direct sun can be fatal to any raptor in hot weather. Desert longwings are more resistant but cannot take prolonged exposure when the temperature is over 90. Wild hawks such as Harris' hawks and hot-climate longwings spend much of their time soaring high overhead in the cooling air of the thermals.

4. A diet exclusively of fresh-killed rodents would be . . .
 - a. excellent for red-tails, kestrels, and goshawks.
 - b. poor for any raptor, since it lacks feathers.
 - c. a poor one for any raptor, since it is "exclusive."
 - d. the cause of serious constipation problems.

Answer a. This is a close approximation of their wild diets and contains all the vitamins, nutrients and roughage they require. A varied diet is probably even better. [12]

5. True or false. A hawk with ice on its feathers should be taken into a warm place until dry.

True. Hawks should not be left in such conditions. Ice on its wings during hunting is one thing, otherwise a falconer should not expose their hawk to subfreezing conditions if at all possible, and Harris' hawks never. A raptor's need for water in winter can be almost the same as in summer. Some hawks continue to take a daily bath in winter. In subfreezing temperatures, the feathers may ice up after bathing. The hawk should be taken inside and dried. A hair dryer set on low speed and held at least six inches from the hawk can be useful.

6. True or false. As a general rule, the smaller the species of raptor kept for falconry, the easier it is to maintain and keep in proper health.

False. Not only are the larger species generally easier to train, the large hawks are the easiest to keep in condition and good health. Even between males and females of the same species, the females are hardier and easier to work with.

7. The morning after a hawk is captured, a mass is found under her perch. It is rounded on one end, tapered on the other and is gray, covered with mucous. It appears to be composed of fur, feathers and chips of bone. It is . . .

- a. a normal bowel movement.
- b. the so-called "mute."
- c. a pellet of prey-remains normally regurgitated daily by a raptor.
- d. a pellet of prey-remains passed in the feces daily by a raptor.

Answer c. A pellet or **casting** is the indigestible portion of the raptor's last meal, formed into a compact mass in the stomach and regurgitated through the mouth. [12] The mucous is known as **gleam**.

8. When a hawk **mutes** or **slices**, which of the following is correct?

- a. The white chalky substances is the feces (digestive waste) and the hawk has eaten something white and chalky like bones.
- b. The white chalky substance represents urates from the kidneys; the brown portion is feces (digestive wastes).
- c. Since hawks do not have kidneys, the waste products all come from the vent and are uniformly mixed together.
- d. Both "b" and "c" are correct.

Answer b. The urate portion of the mute is the white material which comes from the kidneys. The fecal (digestive waste) portion of the mute is the brown or black material. The color of this can change based on the type of food the hawk has eaten and whether it has a full or empty crop. The urates and feces mix in the cloaca to a certain degree. When the hawk slices, the result is a mute sample which contains urates (white) and feces (brown). If the hawk has diarrhea, the feces portion is runny- not solid.

9. A small greenish mute from a hawk that seems otherwise healthy indicates . . .

- a. **frounce**.
- b. **coccidiosis**.
- c. an empty crop.
- d. roundworm infestation.

Answer c. With food in the crop, the mutes will be frequent and large. As the digestive tract is emptied, mutes become fewer and smaller. As fat reserves start to be depleted, the mutes are less frequent, but still may be fairly large. The further the hawk dips into reserves, the smaller the mutes, and the more the whitish portion (the urates) becomes tinged with green. This indicates the hawk's liver bile is not being entirely used up in digestion. If, however, you know your hawk is well fed and the mutes are still green then there may be a medical problem. Get that bird to the vet.

10. Falconers, generally, do not feed the crop, throat and internal organs of pigeons and doves to hawks because they . . .

- a. usually are foul-smelling.
- b. make a hawk throw-up.
- c. may harbor germs harmful to raptors.
- d. may contain grains and weed-seeds.

Answer c. These parts of pigeons and doves harbor **frounce**, parasites and other diseases to which raptors are often susceptible. Recently herpes has been found in pigeons. Even a bite of meat from an infected pigeon can be fatal to raptors even though the pigeon looks perfectly healthy.

11. Washed meat is used to . . .

- a. give a hawk a quick energy burst.
- b. cure diarrhea.
- c. provide vitamins and minerals.
- d. lower a hawk's condition.

Answer d. "Lower a hawk's condition" means to remove unwanted weight from the hawk. While feeding washed meat does work, lean-washed meat lack the vitamins and minerals required to keep a hawk healthy. Some falconers refuse to use this method. Your sponsor will advise you on methods of safely lowering your hawk's condition. Water-saturated meat can also be used to effectively treat constipation.

12. Hawks should not be exposed to extended rains because . . .

- a. the jesses will become weak and tear.
- b. feather coloring will fade.
- c. it may chill and lower resistance to several diseases.
- d. a fungus infection of the feet frequently occurs.

Answer c. A hawk may be left out in a light rain, but it should be moved to shelter before its feathers become soaked. [12] Unless kept treated, jesses will dry and become brittle. Then with a little water, they rot and tear easily.

13. True or false. Beef heart and chicken necks or backs from the grocery provide a safe, balanced, and healthy diet for red-tails.

False. Beef heart promotes calcium/phosphorous imbalance and chicken necks and backs are both too fatty. The bones pose a physical danger. A chicken neck or backbone swallowed whole can lodge between the crop and the rest of the digestive tract and kill the hawk before the source of the problem can be discovered. Whole animal diets of four-week-old cockerels, coturnix quail, mice, rats or day-old chicks are the best and easiest to provide. Your hawk will do best if you rotate these items to vary the diet. Many falconers add a commercial vitamin/mineral supplement. If you are raising a longwing or an accipiter, rotating cockerels and coturnix quail is a good diet. A diet of day-old chicks—by itself—does not provide a balanced diet.

14. True or false. As a general rule, the dark colored meats appear to be much more satisfying to raptors than the white meats.

True. In addition, the meat of ducks or of large mammals—beef or horsemeat—is heavier and must be fed in lesser amounts than the meat of chicken or upland game birds. Beef heart is much like pigeon in both appearance and food value, but a continuous diet of beef heart causes a calcium/phosphorus imbalance and, therefore, is not recommended. Many falconers refuse to feed their hawk pigeon because of the dangers of avian herpes and **frounce**.

15. Suppose a raptor maintains its weight on two ounces of whole beef per day. If fed two ounces of rabbit, a falconer would expect this raptor to . . .

- a. gain weight.
- b. maintain the same weight.
- c. lose weight.
- d. some would gain while others would lose weight.

Answer c. Beef is a relatively rich food, as is pigeon and quail. You will find that much larger quantities of pale meat (rabbit, young domestic chickens, or even the pheasant) are needed to match the same nutritional value. As a rule of thumb, an active red-tail needs ten percent of its body weight daily to maintain good condition in moderate weather. Beef by itself provides inadequate nutrition resulting in loss of muscle and tone. Additionally, whole beef is full of fat that hawks can neither digest nor **cast**.

16. Captive raptors require more food energy per day during . . .

- a. cold weather.
- b. moulting.
- c. when being flown hard.
- d. all of the above.

Answer d. All of these factors and many others are energy-requiring for raptors. [12] Falconers report difficulty keeping their hawk's weight up to proper levels hard hunting in cold weather, even while allowing the hawk to gorge. On the other hand, raptors require much less food when inactive or in warm weather. Letting a red-tail gorge in warm weather is a classic apprentice error. In warm weather some inactive red-tails need less than ten grams a day. As a cockerel weighs almost thirty grams or an ounce, weight control requires extended patience. At the end of an inactive period the hawk may weigh the proper weight but will require extensive **manning** and flying to get back into proper condition. See question #39 on page 37.

17. A good **tiring** would be . . .

- a. chicken breast.
- b. day-old chick.
- c. beef heart.
- d. pigeon wing.

Answer d. Pigeon wing with very little meat attached makes an ideal **tiring**. **Tiring** is any tough part of a quarry consisting mostly of feathers, sinew or fur which is given to a hawk to tear and work upon rather than to provide nourishment. Its purpose is to exercise the hawk's back and neck muscles, keep the beak in good trim and keep the hawk from getting bored. [12] Tiring is very useful during **manning**, as the hawk will focus on eating the tiring while being carried on the fist.

18. True or false. Pet stores are an excellent source of food for your red-tail.

False. The best source of food for any hawk is what it hunts and catches. Barring that and since the pet food manufacturers don't make a "Hawk Chow," an inexpensive source of food is farmers' or ranch supply feed stores where pet, poultry, and ranch supplies are sold along with small whole live animals such as chicks, rabbits, rats and mice. These will get you through the moult. Commercial pet stores may be able to supply you with young rats and mice. This is becoming especially true as snake, monitor lizard and other reptile owners require similar food stocks. An excellent food source is the frozen quail advertised in the California Hawking Club newsletter and NAFA **HAWK CHALK**.

19. True or false. Peregrines and gyrfalcons are less likely to use a bath than prairie falcons or goshawks.

False. Peregrines and gyrfalcons are very fond of the bath; prairies and goshawks less so. Passage hawks often appear reluctant to bathe, but after they have been kept a year or so, they usually bathe regularly.

20. Most raptors . . .

- a. never drink water.
- b. drink only when sick.
- c. drink regularly in large amounts.
- d. drink every day or two in small amounts.

Answer d. A bath must be provided by law. Most hawks will drink from this bath. Consequently, keeping the bath water clean is vital. Some hawks enjoy a fine spray of water from a garden sprinkler or other device upon occasion.

21. Hawks should have drinking water provided for them . . .

- a. once a week.
- b. twice a week.
- c. every day.
- d. only during very hot weather.

Answer c. Fresh water should be available to hawks every day. Most species drink after a meal. If water is available for drinking or bathing, they will be happier and healthier. The amount of water they enjoy even in winter is surprising.

22. True or false. The mews must be thoroughly cleaned every weekend.

False. The mews should be thoroughly cleaned at least four times each year. Although sanitation is much more important to humans than it is to hawks, a clean, dry hawk house with dry gravel regularly cleaned or changed, clean perches, regular exercise and fresh nourishing food are the best measures to prevent disease. More frequent cleaning is prudent during the moult when the mews fills with food debris and discarded feathers.

23. If a raptor is to be released to fly about in the mews (also called "free-lofting"), the windows should be protected with . . .

- a. heavy gauge welded wire.
- b. insect screen reinforced with poultry netting.
- c. horizontal rods
- d. vertical round rods.

Answer d. The best cover for the windows of a red-tail's mews is round vertical bars placed one to two inches apart, without spacers or crossbars. For a kestrel, closer spacing of about an inch is required. Vertical barring is a legal requirement for an untethered hawk. [50 CFR 21.29(g)(1)(i)] Windows on a mews cannot be merely screened. The hawk will fly full tilt into an obstruction with such a light, flimsy appearance as they fly through brush in the wild. The hawk will attempt to land on the cross bars and hang with their wings flapping and tail jammed down as a prop. You can practically hear the feathers breaking. You may install insect screening or chain-link fencing on the outside (as long as the hawk can't reach it) to keep humans, children, or other animals from sticking their fingers and paws in harm's way.

24. A hawk house or mews should have . . .

- a. room for the hawk to stretch its wings, if tethered.
- b. a bath with clean fresh water.
- c. several perches if free-lofted.
- d. good ventilation.
- e. all of the above.

Answer e. These are the primary points the game warden will look for during your mews' inspection and are the guidelines the wardens follow. [50 CFR 21.29(g)(1)(i)] Your sponsor will assist (supervise) you planning your mews. An excellent practical discussion of the requirement for a mews can be found in Kimsey and Hodge's "FALCONRY EQUIPMENT." You must take into account the area you have available, prevailing sun

and wind conditions, and winter weather conditions. The editor converted a lean-to, metal walled, utility shed into a legal mews complete with canvas hangings to keep feathers from brushing the metal walls.

25. An unattended weathering area should have . . .

- a. room for the tethered hawk to stretch its wings.
- b. a perch and a bath with clean fresh water.
- c. fencing to exclude avian and ground predators.
- d. all of the above.

Answer d. Federal regulations allow the inspecting game warden to determine whether you may not need to provide a weathering area based upon climatic conditions. The federal regulations allow the inspector to decide if you need a mews, a weathering area or both [50 CFR 21.29(g)(1)(ii)]. Typically, they insist on a mews at the minimum. Some states require both. If a weathering area is provided it must meet the above parameters. As in the paragraph, above, an excellent practical discussion of the requirement for a weathering area can be found in Kimsey and Hodge's "FALCONRY EQUIPMENT." Additional designs are available for both hawk houses, permanent and portable, and for weathering area, also permanent and portable, in back issues of the California Hawking Club's journals and newsletters, and in back issues of NAFA's newsletter, **HAWK CHALK**.

26. A bent feather should be . . .

- a. cut off at the bend and a new one impeded in.
- b. pulled out.
- c. immersed in hot water.
- d. treated with neat's-foot oil.

Answer c. Bent feathers, or feathers with twisted web should be dipped in hot (not boiling) water. They will straighten out immediately. Brass feather straighteners are also available, work extremely well and can be used by a second person while the first holds the hawk on their fist.

27. **Fret marks** on the tail of an eyass hawk are often the result of . . .

- a. a period of time when the parents failed to provide adequate food for the youngster before it was taken from the nest.
- b. the stress of being taken from the nest.
- c. external parasites.
- d. any of the above

Answer d. These marks indicate a point in feather development, at which the hawk was under sufficient stress that normal growth was temporarily halted. Prolonged hunger can certainly cause these same marks but they are universally the mark of the eyass hawk if it was taken as a downy. They often appear on an eyass' tail at the point of feather growth when the hawk was taken from the nest. These marks sometimes result from the work of feather mites even when hawks have had no stress and ever-present food.

28. True or false. Newly caught accipiters tend to break feathers more frequently than most hawks.

True. Accipiters are much worse at damaging their plumage than are longwings or broadwings. A newly-caught passage Cooper's hawk or goshawk will quickly break all the tail feathers unless the tail feathers are enclosed in a paper or plastic envelope and taped in place until the hawk tames down a bit. [12] and [9] Some **austringers** continue this practice after manning to keep the tail intact.

29. True or false. Minor primary feather or tail feather damage during hunting should be repaired before the next hunt.

False. Consult your sponsor before attempting to imp major or minor feather damage from hunting. Imping can result in even worse breakage than before imping. The real problem is feather breakage. One good ride on a jack rabbit that refuses to submit can take a tenacious red-tail through a lot of underbrush, destroying a train in seconds as described in question #30, below. If you imp and make the joint stiffer than natural—and

the hawk grabs another uncooperative quarry—you are likely to end up with a second break, and this time it may be too close to the body to repair (the editor's personal experience). When you do imp, cut as little as possible off the broken feather shaft. You will need to be able to slide the plug into the hollow part of the shaft. Cutting to close to the base of the shaft makes a second imping impossible if the hawk breaks the same feather again.

30. True or false. Feather breakage is entirely due to apprentice error.



False. While the apprentice can make mistakes result in **mantling**, leading to feather breakage, a far more likely event is the young hawk learning which end of quarry it must grab to get the quarry to stop. While it would be nice for a young hawk to strike the jack's head the first time and the jack to roll over and give up, few are so accommodating. A first-year hawk often strikes the rear end and the jack takes it for a ride through the underbrush, kicking and trying to peel the hawk off. While this is going on, the hawk is not neatly tucked in tight like a jockey on a race horse; rather the hawk is flailing outstretched wings and tail wildly for balance as it tries to get the jack to stop. Wings and tail are the hawk's only brakes. If the hawk hangs on long enough, or works its way up to the head, the jack eventually gives up. And the falconer gets to imp.

31. True or false. The ideal imping peg is a metal needle.

False. Though metal is the traditional material, it is too stiff for the flexible feather shaft and may break along invisible faults. Better materials are available such as bamboo or even fiberglass from broken and discarded fishing poles. Some falconers trim feathers kept for imping into pegs. Experiment with combinations of plugs and glue before actually imping the hawk. Pegs should be triangular in cross-section since this permits the needle to be inserted into the feather without splitting the shaft, yet it will prevent the feather from rotating before the adhesive sets.

32. The simplest way to deal with tail feather breakage in the passage Cooper's hawk is to use . . .

- a. a screen perch.
- b. rubber bands around the tail.
- c. a plastic envelope.
- d. none of the above.

Answer b. Rubber bands are cheap and easy to apply. Prevention is better than having to repair. Answer "c" is a more studied approach using tail protectors of plastic or canvas. [8] and [9]

33. The best way for an apprentice to judge a raptor's condition is by daily . . .

- a. visual inspection of how the hawk holds its feathers.
- b. weighing.
- c. feeling the keel.
- d. visual check of the brightness of the eyes.

Answer b. All of these are important ways to check a raptor's condition, but weighing the hawk is the most objective, reliable, and quantitative method, particularly for the apprentice. Daily weighing in combination with feeling the keel gives the apprentice an indication of the hawk's relative **sharpness**.

34. The apprentice falconer should weigh his red-tailed hawk . . .

- a. once each day.
- b. once every other day.
- c. at least once a week.
- d. whenever the hawk fails to perform.

Answer a. A hawk's weight and condition are affected by a number of variables, including amount and quality of food, weather (especially temperature), disease, season, barometric pressure, the amount of exercise, the type of hawk, its metabolism and ability to assimilate food. A scale is a legal requirement. Daily weighing during the hunting season is just about mandatory. Don't expect weighing to be easy at first. Weighing a bating hawk takes patience. Weighing a hooded hawk is simple. Part of your daily routine should be a weight check. When you first pick him up to go to the weathering area, take him to the scales and weigh him. After a short while, this will become routine and the hawk will stop bating. Some falconers use grams and others use ounces. Learn to translate back and forth. It makes it sound as if you know what you are talking about, and very soon you will.

35. The apprentice falconer should weigh his hunting kestrel . . .

- a. once each day.
- b. twice a day.
- c. three times a day.
- d. whenever the hawk fails to perform.

Answer c. The hunting kestrel is a high metabolism creature that you are trying to keep at a specific weight where it has sufficient energy levels to hunt but is hungry enough to respond to the falconer. To do this requires weighing three times a day and perhaps feeding to ensure both health and control. [11b]

36. A gram scale accurate to one-tenth of one gram is vital for a . . .

- a. jerkin.
- b. golden eagle.
- c. red-tailed hawk.
- d. kestrel.

Answer d. With an average weight of one hundred grams, hunting kestrels must be maintained with great precision in weight control. Typical **flight weight** windows consist of three to four grams with real differences observable in half-gram increments. The federal standard of a scale accurate to one-half ounce or about fourteen grams are not precise enough to use with a kestrel.

37. True or false. A hawk should be **coped** when the beak and talons grow too long.

True. **Coping** is cutting back either the beak or the talons.

38. **Coping** is best accomplished by . . .

- a. cutting the beak off flat at the start of the moult.
- b. clipping the beak a little at a time and reshaping it before taking off more.
- c. two people gently casting a hooded hawk, holding it tilted forward and following "b" above.
- d. none of the above.

Answer c. Don't take a large amount off at one time even if a large amount needs to come off. Moderation is the key. Tilting the hawk forward prevents dust from entering the mouth and lungs. [11] The only suitable tools are miniature files in various shapes up to a quarter inch in diameter.

39. True or false. While **coping** the beak or talons of a raptor, a bit too much is cut away and bleeding results. The hawk is in great pain and may bleed to death.

False. Occasionally the vein inside the talon is hit. Bleeding should stop after a few minutes. A useful hint is to apply a styptic or caustic pencil (as for shaving cuts) to stop the bleeding. Watch your sponsor before attempting this on your own.

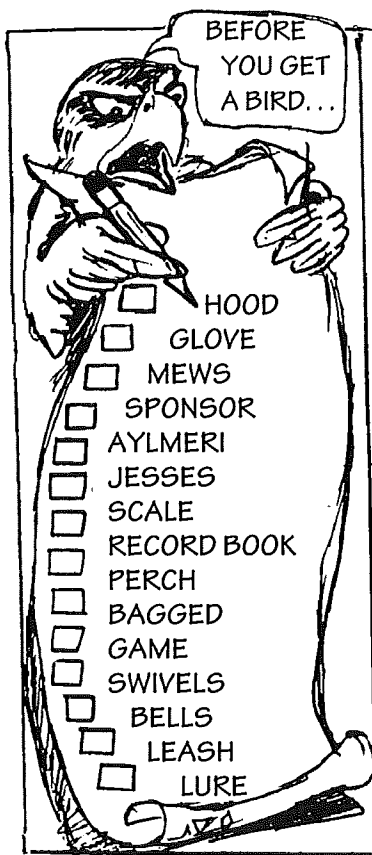
40. True or false. As they get older, falconry hawks must be flown at lower and lower **flying weight** or **combat weight** as the years go by due to their increasing stubbornness and intractability.

False. In general, the reverse is true. As falconry hawks mature **flying weights** generally increase due to increasing tameness and trust in the falconer's ability to **serve** quarry. In addition, the hawk is subjected to less nutritional stress as the weight creeps higher making her a healthier hawk.

SECTION 2.2 EQUIPMENT

1. The minimum legal requirements for maintaining a captive raptor are . . .

- a. perch, bath, Aylmeri jesses, scales.
- b. hood, lure, glove, initial food supply.
- c. perch, scales, bath, leash, swivel, and mews.
- d. "a" and "c," but not "b".



Answer d. Before you get your license, much less a hawk, you are required by law to have the following: (1) a bath-pan, (2) Aylmeri jesses with grommets, (3) a swivel, (4) mews, (5) a leash, (6) an out door perch, and (7) scales. Not required by law, but certainly essential is a falconry glove, a method of transporting the hawk (like a giant hood), a hood, a lure, hunting territory where you have access and will not overly disturb resident wild hawks, and an initial food supply. A fenced weathering area depends on the Game Warden's decision, based upon climatic conditions, if you must provide one or both mews and weathering area. Your sponsor will advise you on this point.

2. Before taking the falconry test, beginners should know about . . .

- a. what kind of hawk (kestrel or red-tail) to begin with.
- b. how and where to house the hawk.
- c. what and where to hunt.
- d. how to transport the hawk.
- e. all of the above.

Answer e. The type of hawk, kestrel or red-tail, determines the what, and to a great extent where, they are going to hunt. The type of hawk also influences the housing but is not the primary determinant. The mews

for a kestrel can be smaller than that of a red-tail, but if the novice changes to another species later on, a mews tailored for a kestrel may be far too small for a red-tail. Transportation is often overlooked until the last minute. **Hood-shy** red-tails and unhooded kestrels often ride in a “giant hood,” a traveling container. Hooded red-tails can ride an open perch, but then you must deal with mutes sliced around the interior of the vehicle and on passengers. Kestrels don’t slice but their droppings should be kept cleaned up.

3. To become a falconer, you must . . .

- a. be independently wealthy.
- b. have plenty of time on your hands.
- c. be a hunter.
- d. convince your state and, at least one general or master falconer, you have the book knowledge, equipment and facilities to properly keep, maintain and train a kestrel or red-tailed hawk.

Answer d summarizes the entire process that leads to becoming an apprentice falconer. While several books on the “how-to” of falconry imply that novice falconers can afford everything and has plenty of time to spend with a hawk, reality is a different story. Most falconers work for a living and support families. You do not have to be a hunter to become a falconer. However, to be a falconer, you have to hunt with your hawk. Even if you’ve never hunted in your life, if you want to be a falconer, you’ll learn that your hawk needs to hunt (the editor’s personal experience). While it is true money can’t buy happiness, answer “a” is a plus.

4. Before putting your hawk out to weather on its perch, you should . . .

- a. make sure there are no avian predators in the sky.
- b. make sure the bath pan is filled.
- c. check to insure the perch won’t tip over if the hawk bates.
- d. check the equipment’s condition.

Answer d. The editor’s red-tail once broke his leash and spent a long half hour chasing pigeons around his suburban neighborhood dangling the broken leash before returning to a chick. The falconer should always inspect the condition of jesses, bracelets, leash, knots, swivels, clips, attachment rings, and the perch. The shock of a bating hawk is much greater than you’d expect and is extremely hard on equipment. Fatigue failures of attachment joints, knots and leash buttons lead to the escape of the hawk. A dangling leash is almost certain to get caught the first time the hawk lands. As weathering hawks are often well fed hawks, getting them to return is difficult at best. Answers “b” and “c” are good advice, but always inspect the equipment first.

5. Of the following, probably the most effective method of trapping red-tailed hawks is the . . .

- a. **dho gazza.**
- b. **bal-chatri.**
- c. **bow net.**
- d. **harness pigeon.**

Answer b. The **bal-chatri** allows the falconer to approach hunting hawks wherever they may be perched alongside a road. Most hawks do not seem to fear the approach of a vehicle so long as it does not stop. Your sponsor will take you through the details and the legalities of trapping. Currently, falconry equipment mail-order catalogs require a copy of your falconry license before selling you a trap.

6. The mist net is also known as . . .

- a. **bal-chatri.**
- b. **dho-gazza.**
- c. **phai-trap.**
- d. none of the above.

Answer d. The mist net does not have a nickname and is used only by banders (people who band birds) and not falconers. The mist net system was originally manufactured from human hair and used to trap small birds in Japan and China. It is similar in appearance to the **dho-gazza** used in the Middle East and India where the name originated. However, the concept of the dho-gazza, which uses a smaller, heavier net like a gill net to collapse around the hawk, is very different from the mist net which uses fine strands and bulky pockets to entangle the raptor. In contrast to the mist net, neither a banding permit nor a special permit other than a regular falconry license is required to trap with the dho-gazza, the bal-chatri, the **phai-trap**, or the **harness pigeon**. An excellent compilation of traps and trapping techniques can be found in the 1998 CHC Journal.

7. The most effective trap for kestrels outside of the migration is the . . .

- a. bal-chatri.
- b. phai-trap.
- c. **bow-net.**
- d. **harness pigeon.**

Answer a. The **bal-chatri** is a small wire cage covered with monofilament nooses. There are many proven shapes including a round one used specifically for kestrels. They are commonly baited with mice or small birds. [12] The primary advantage of the "BC" or bal-chatri is that it can be made with materials found at most hardware stores, and for less than \$10.

8. When trapping their first hawk, apprentices should . . .

- a. be supervised by their sponsors.
- b. have scouted out possible locations prior to the start of trapping season.
- c. have a trap, bait, Aylmeri jesses and grommet tools, a large hood, a roll of masking tape, and a pair of modified panty hose.
- d. all of the above.

Answer d. Overseeing trapping is one of the sponsor's primary duties to ensure neither the hawk nor the apprentice is injured. The apprentice should have a good idea of trapping locations and have discussed and rehearsed the operation beforehand. The requirement for trap and bait is obvious. The hood will go on the hawk, and too large is better than too small. The Aylmeri jesses go on the hawk. If you cannot perch the hawk or hold it on your fist, you may need to sock the hawk as a last resort. The panty hose will act as a sock to immobilize the hawk. The masking tape is to wrap the feet, and to hold the sock in place. **Caution:** the hawk cannot slice while bound up like this and will quickly overheat. This leads to other problems, so minimize the amount of time the bird is trussed. Finally, avoid placing the hawk on its back.

9. True or false. When making their own hoods, most north American falconers prefer the Anglo-Indian to the Dutch pattern.

True. The Dutch hood is molded over a form (hood block). Completing a Dutch hood is a slow and difficult process for beginners. When making their own the Anglo-Indian hood is more popular with American falconers because it is lighter and easier to make and fit especially

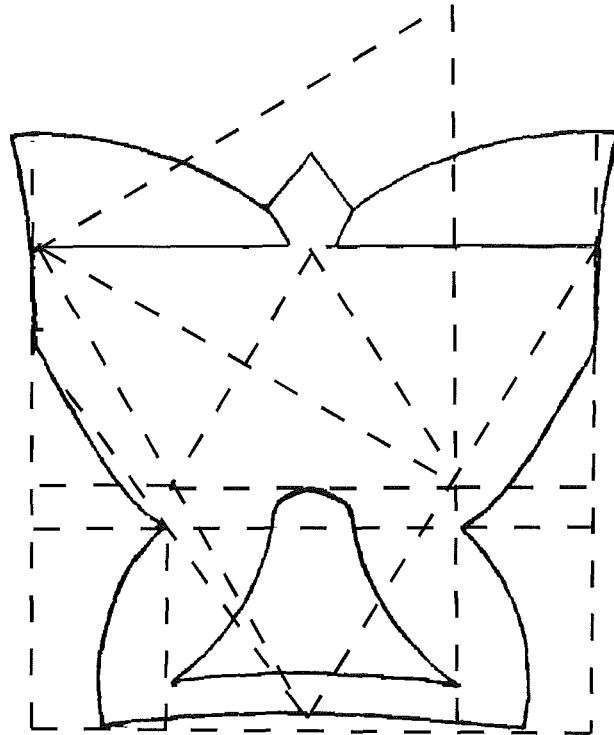


around the sensitive mouth and nares (nostrils). The advantage of the Dutch hood, other than looks, is its stiff, solid construction which makes it simpler to get on a hawk that is difficult to hood. Due to the availability of lightly constructed, high-quality Dutch hoods made by talented leather workers within the American falconry community, purchased Dutch hoods have become the hood of choice in this country.

10. H. J. Slijper's "canon" is a . . .

- a. modified Dutch bow net.
- b. geometrical formula for hoods.
- c. bewit for fastening a tail bell.
- d. method of casting an accipiter at quarry.

Answer b. A geometrical formula based on head measurements which can be used to develop a hood pattern to fit any hawk with a glued, seamless hood. The sketch, right, is a result of the twenty step process that starts with measuring the distance across the skull directly above the eyes of your hawk. Everything else is developed with a straightedge and compass from that base measurement. Answers "a", "c", and "d" are incorrect.



11. A giant hood is . . .

- a. a hood made for an eagle.
- b. a really large gangster.
- c. a box for carrying the hawk.
- d. none of the above.

Answer c. Many red-tails become resentful about being hooded (**hood-shy**) but are so mellow in all other respects that many falconers carry them in a traveling container or box foregoing hooding. Often the **hood-shy** problem is a result of the apprentice's lack of experience with hooding. [9] If the hawk is hooded immediately after being taken from the trap then a precedent is set that will last the length of your relationship with the hawk.

12. True or false. The falconer should always change to slitless field jesses before flying his hawk.

True. **Always** use slitless field jesses when flying the hawk loose. Make them long enough for ease of handling in the field and punch a tiny hole in the end to attach a leash with a small snap. Storing the "other" jesses is always a challenge as they tend to wad up and get lost in pockets or fall out in the field. The editor punched and grommeted extra jess-sized holes in the cuff of his falconry glove and stores the "other" pair of jesses and an extra set of slitted jesses on his glove.

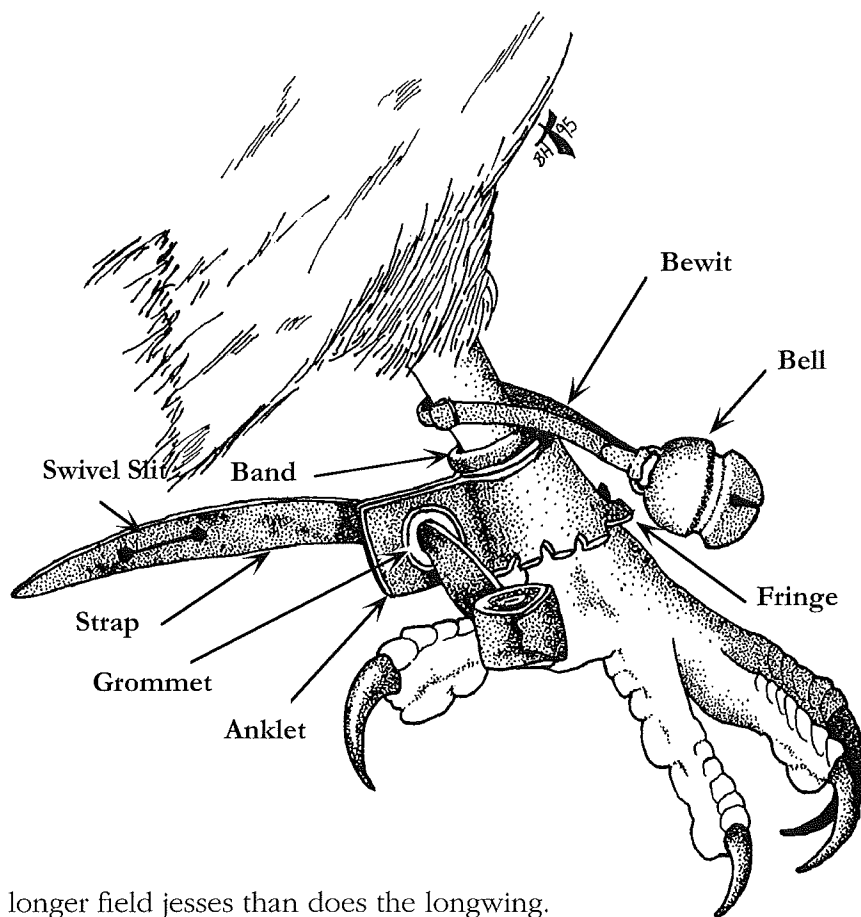
13. Aylmeri bracelets that are too narrow are dangerous because they . . .

- a. may catch in briars when the hawk is flown.
- b. do not enable a quick release when the hawk is cast off.
- c. may slip over the block the hawk weathers.
- d. may cause leg sores.

Answer d. A hawk's tarsus should be examined regularly for calluses or sores. Another danger of narrow jesses is their tendency to slip around a toe in a half-hitch knot and stop circulation.

14. True or false. The Aylmeri jess is safer for the hawk than the traditional jess.

True. Aylmeri jesses are a legal requirement [50 CFR 21.29(g)(2)(i)] and consist of two sets (one set for each leg) of three pieces: (1) a anklet (including grommets), (2) a removable slitless field jess, and (3) a removable swivel-slitted jess for the mews and the perch (often called a "mews jess"). The traditional one-piece jess has the swivel strap permanently attached to the leg. If the hawk twists the jess, the Aylmeri is less likely to constrict against the tarsus. If the hawk is lost while flying, it is less likely to get caught up by the slitless jess (2) than by either the traditional jess or the swivel-slit jess (3). Note in the sketch the bewit is shown deliberately long to differentiate it from the rest of the equipment. Typically the bewit fits snugly.



15. True or false. The goshawk needs longer field jesses than does the longwing.

True. The goshawk is a "bird of the fist," that is to say that, typically, goshawks are carried on the fist when hunting, while the longwing is released the moment it is unhooded.

16. True or false. The common dog-leash snap-swivel is both a reliable and convenient swivel for attaching the jesses of a hawk to its leash.

False. This type of swivel is unreliable since jesses work out of the clip easily. The snap swivel is dangerous since it is so heavy. The best swivels are custom-made figure-eight's or heavy duty, stainless steel, saltwater fishing swivels of the kind manufactured by Sampo®.

17. True or false. The use of a piece of well-maintained bungee cord, shock cord, or strip of inner tube as part of a leash will help prevent injured or broken legs.

True. The key words are "well maintained." A bating hawk can put a great deal more strain on a leash than imagined. Repetitious bating leads to fatigue failure of the leash connections to the perch, including the button at the top of the leash, swivels, and most of all, the intermediate connections. A hawk flying free with dangling leash and paraphernalia is, in all likelihood, going to get caught in something and die.

18. True or false. The best leash material is leather.

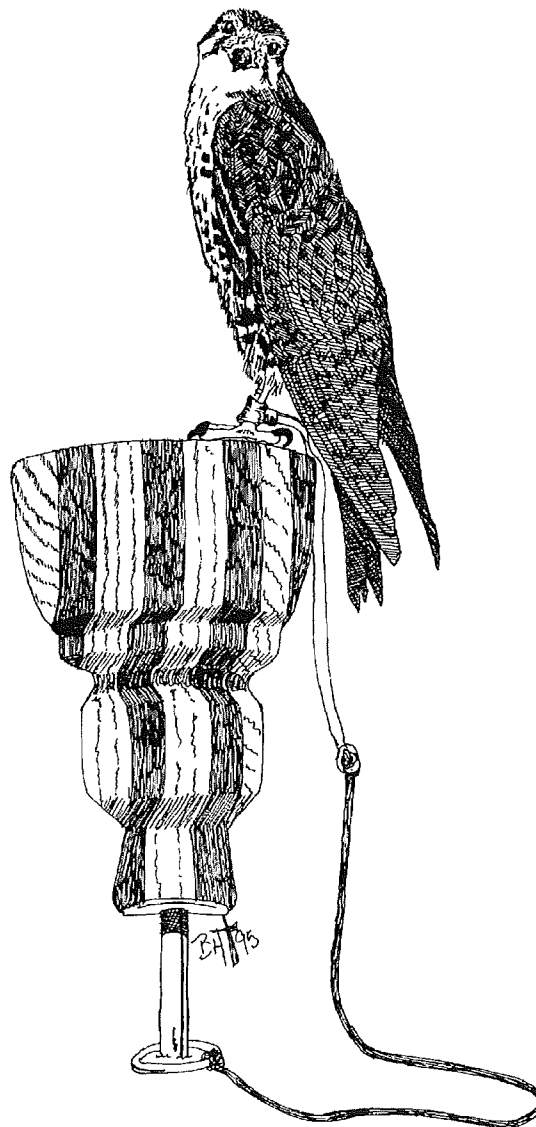
False. Leather is the traditional material for leashes. However, recent advances in materials have made nylon "parachute cord" or "kernmantle" type ropes viable and attractive alternatives since they are less subject to weathering and deteriorating from exposure to rain, bating, mutes, and food decay products. Some falconers are experimenting with braided bungee cord leashes. Caution, there have been an unexpected and unexplained number of broken legs from bating by male hawks on a bungee leash. You must keep leashes in good condition and inspect before use. Learning to tie the "falconer's knot," (a slip knot that can be tied with one hand while the other holds the hawk) is a key apprentice skill. See the sketch on page 67.

19. A good perch for preventing feather damage in accipiters and buteos is the . . .
- ring perch.
 - block.
 - bow perch.
 - screen perch.

Answer c. Perch related feather damage is most often a result of the leash smashing into the feathers of a bating hawk. However, other forms of feather damage results from the hawk getting tangled in its leash, even with swivels. The bow perch seems to prevent the tangling and hang-ups that plague ring perches. Rotating ring perches seem to work much better than fixed ring perches. Screen perches are not used by many American falconers. See the sketch on page 29 for a bow perch.

20. The block is used for longwings; the bow perch for accipiters and buteos. The rationale is based upon . . .
- health.
 - comfort.
 - tradition.
 - all of the above.

Answer d. These perches were designed to accommodate the foot shape, conformation and the natural perches generally preferred by the hawks. Longwings tend to stand flat-footed, while accipiters and buteos tend to perch on tree limbs. Thus, the choice of perch is thought to enhance the health of the hawks' feet. A goshawk and red-tail probably wouldn't be uncomfortable on the block and although a bow perch may not cause discomfort to a longwing, and in fact is often recommended for kestrels and merlins, most falconers remain true to tradition and keep longwings on a block perch. Kestrels and merlins perch in trees and on wires like the buteos and accipiters. A small bow perch may be a better choice for the higher activity kestrels and merlins as they eliminate many of the potential hang-ups. A block is shown at right.



21. The diameter of a longwing block perch across the top is . . .
- four inches.
 - eight inches.
 - twelve inches.
 - determined by the size of the leg and the length of the jesses.

Answer d. For most large longwings, the typical width is about five to six inches. The block should be circular in cross-section and wide enough to prevent the jesses from slipping one on each side and so snubbing the hawk up short with its breast to the ground, its feet pulled out behind and the tail bashed into the block. This is another reason for using comparatively short jesses (but not too short, the hawk needs walking room).

22. Of the following, which is the best description of an outdoor bow perch for an apprentice's tethered red-tail? Note: all assume there is a steel ring to tether the hawk's leash.

- a. half-inch diameter manila rope covering a quarter-inch steel bow.
- b. half-inch tall plastic grass covering a PVC bow.
- c. half-high wide electrician's tape over a steel bow.
- d. half-high thick tree limb bent into the shape of a bow.

Answer a. The rope provides both padding and a rough, round surface about one and a quarter inch in diameter for the hawk to stand on. The steel is strong enough to withstand continued bating. The steel ring will slide over the rope when the hawk bates. Answer "b" is incorrect. While the surface may be ideal for the hawk to stand on and the PVC piping is both strong and light, the steel ring will not slide well over the grass surface. Further, the PVC glue at the joints will not withstand repeated bating. Answer "c" is incorrect as the end result is both too narrow for the hawk to grip and too smooth. Wide does not equal thick. Smooth surfaces cause the skin on the bottom of the hawk's feet to soften or polish which can lead to bumblefoot. Answer "d" is incorrect as the result would be too narrow to grip and the wood would not withstand repeated bating. While each of the above answers may not be your (or your sponsor's) idea of an "ideal" perch, it is the best of the choices allowed. Remember that you have to choose from the answers offered when you are answering questions on the state test.

Editor's comment: there must be a million combinations of possible perch shapes, sizes, padding and surfacing materials. The most important factors are what surface, the surface shape, and padding materials the hawk is going to be standing on for a considerable portion of its life. Picking the right combination is a compromise. The ideal for a red-tail would simulate a rough-barked tree limb. Hard, smooth surfaces should be avoided as they tend to "polish" the skin under the foot. Hard, rough, round, and bowed surfaces (similar to a tree limb) are best but the closer you get to a tree limb the more likely the leash will catch and tangle.

23. A **creance** is a . . .

- a. light, strong line used to control a raptor during early training.
- b. disease of the mouth and throat of raptors.
- c. watery, foul-smelling mite.
- d. soft leather thong used to bind one wing to prevent bating.

Answer a. The disease in "b" is **frounce**. Answer "c" is diarrhea. The thong in "d" is a **brail**. The materials for the creance should be both light and strong. Avoid the temptation to use monofilament fishing line. Despite its strength and light weight, Murphy's Law is a powerful factor in falconry. What can go wrong, will go wrong. If you are using monofilament line, that one line will break. Use a multi-strand line as several strands will have to break before the line loses integrity.

24. True or false. One end of the **creance** should be anchored and the other end secured to the hawk's swivel.

True. Until recently, swivels were the "weak link" in the chain, and earlier texts advise against including the swivel with the creance. The advent of the ball bearing, stainless steel, salt water models, like the Sampo®, changed that.

25. Which of the following objects would function best as an anchor for a new apprentice's red-tail on a creance?

- a. a pair of old running shoes
- b. a goal post (when flying on a practice field).
- c. a tree.
- d. the falconer's hand.

Answer d. The trainer should use a strong but light line and attach the free end to something that will gradually slow the hawk and bring it to the ground. In this example, the falconer wrapping several turns of the creance line around his hand and holding on to the line would be fine. With experience falconers learn to anticipate the hawk's behavior and often simply stand on the line. If the hawk flies off, the falconer simply picks up the line and brings the hawk to the ground. However, the apprentice does not have this experience and should use something to provide a positive "soft" stop. If the line is attached to something solid without a "soft stop" the creance can snap and the hawk will fly off and die miserably hanging by its feet.

26. True or false. A well-padded horseshoe is an acceptable lure for a longwing.

False. Although classic works recommended this and similar items, modern falconers take a dim view of this device. In training it is necessary for longwings to strike the lure in the air and a heavy lure is not only difficult to swing properly but is likely to discourage the hawk. The weight of the lure should not be more than the weight of a pigeon—about eight ounces. The hawk may be discouraged from **carrying** by the falconer holding the lure line when the hawk does take it.

27. In the field, it is important to have the following falconry equipment:

- a. bells.
- b. lure.
- c. jesses.
- d. all of the above.

Answer b. The lure is the one truly indispensable piece of field equipment. An escaped or reticent hawk can be taken when a lure is available. Obviously, the hawk must be **made to** or **trained to the lure** beforehand. Don't leave home without it.

28. True or false. A lure with weight attached is almost always preferred to a one-piece lure.

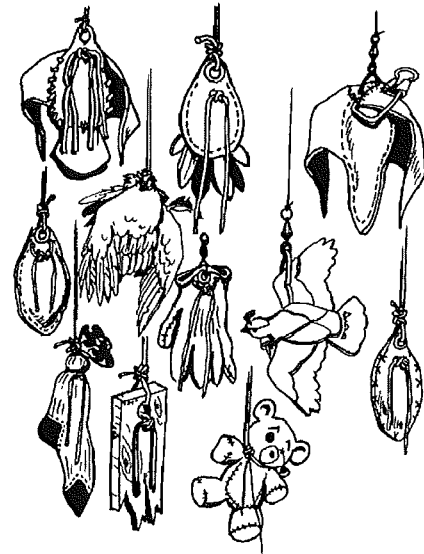
True. The falconer should always hold onto the lure line. Should the hawk rip the lure and lure line away from the falconer it is true that a swinging weight will always bring a hawk to the ground faster than a heavy lure with a weightless handle. A one pound padded weight swinging on a four to ten foot line from a ten-ounce lure will bring a big female goshawk to earth in just a few yards. The same hawk can easily carry an eighteen ounce one-piece lure for an extended distance and reflush with it, time and again, when approached. The weight must be well padded or it may bounce and hit the hawk in the head as she carries it to the ground. A naked lead fishing weight is extremely dangerous. On weight carrying capabilities, a rule-of-thumb is that a hawk can, if necessary, fly forever with half its body weight and a good distance with three-quarters of it's weight. But if part of that weight is bobbing around, swinging in the breeze, out of control, the hawk will ground with it.

29. True or false. Tough, stringy meat should not be used to garnish a lure.

False. Tough stringy meat is best for tying to lures as it stays there and is not so quickly eaten. Chicken heads, if you can find them, are ideal. Day-old **chicks** are commonly used and can be secured by string. **Chicks**, however, are not tough and stringy, and deny the hawk the satisfaction of working at his dinner. Longwing falconers often tie the wings from the quarry onto their lure to provide the falcon with a **tiring** to provide a meal that has little nourishment for a maximum of effort.

30. True or false. A good recovery lure for a red-tail closely resembles the hawk's normal prey.

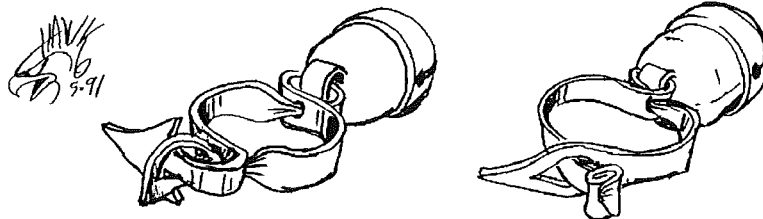
False. Or more like "not-necessarily." As long as the red-tail, or any hawk for that matter, learns that she is going to get a full crop when she sees her normal lure, the lure can be of any shape. Many falconers do go to great effort to provide detailed realistic lures for their longwings and accipiters. Red-tails are not as picky. The editor discovered much by accident and to his chagrin, that his red-tail recognized his wife's walkman tape player as his lure, which is about the same size, shape, and color. She probably won't ever go hunting with us again.



31. Bells are most needed . . .

- a. when your hawk is on the perch in the yard.
- b. to keep track of your hawk in the trees or sky without watching her too closely.
- c. when the hawk is down with quarry.
- d. all of the above.

Answer c. Even belled hawks can be difficult to find when they are on quarry, accipiters even more than buteos or longwings. A longwing and many red-tails will stay out in the open though they may mantle their prey. Accipiters and some red-tails drag prey into the nearest thicket hiding themselves under overhanging grass and brush—including the editor's red-tail. At such times they will almost permit themselves to be stepped on without giving away their position. For this reason many people prefer to use a tail bell on accipiters as it is more likely to ring. Bells allow you to listen to the hawk in the mews and on a perch alerting you to potential problems.



32. True or false. Ideally, when a pair of bells is selected, both should produce identical tones.

False. Bells with two different metals and two different frequencies (commonly, a half-tone apart) yield dissonant tones and can be heard farther away.

33. True or false. The life of hawk bells can be lengthened by cooking the bells on a hot plate.

True. As the original metal is formed into bells, it becomes work-hardened and brittle and eventually crack. Before this occurs they should be annealed on an electric hot plate in a darkened room and allowed to heat to a dull red, then cooled. The work-hardness has been removed and the bells are now in the same metallurgical condition as the original metal.

34. True or false. A passage red-tail should be flown with the largest size bells possible.

False. Some falconers, including the editor, use the smallest bells possible. The point behind bells is to be heard. Remember all that metal has to be somewhere, and it's banging around on and under your hawk's feet, toes and tarsus.

35. True or false. When a plastic cable-tie is used as a bewit, it should be fastened around the tarsus.

False. A bewit is a small leather strip used to secure a bell or telemetry transmitter to a hawk's leg. The bewit is fastened around the tarsus above the jess. Modern falconers sometimes use a plastic cable-tie in place of the traditional leather bewit. It is less flexible than leather and extremely strong; if caught on a branch or bark, it may break the hawk's leg or trap the bird. Cable-ties may also "tighten-up" and can cut directly into the skin and tendons or block blood circulation to the feet. Some falconers attach the bell with the cable-tie to the Aylmeri bracelet. Unfortunately, bracelet-mounted bells bang around under the hawk's legs and feet and, in general, get in the way. Using cable-ties as a short cut is not recommended. This is one place where modern technology and modern material science is a hindrance.

36. True or false. When flying a red-tail, telemetry is more important than bells.

False. Telemetry is rarely used with these hawks as their hunting style keeps them, generally, close to the falconer who can track the hawk by the sound of the bells. Bells are a necessity to find the hawk after it has pulled the quarry into cover. Telemetry is used with longwings almost without exception and nearly as often with goshawks. Increasingly, longwings are flown without bells as the hawks tend to stay in the open with quarry. Many falconers attach transmitters to hawks they truly value, regardless of species or the feeling that a particular hawk is "loss-proof." The usefulness of telemetry becomes blindingly clear the first time you can't find your hawk.

37. A "yagi" is . . .

- a. an Indian hood made of dog skin.
- b. a Pakistani glove without finger sleeves.
- c. a hand-held telemetry antenna.
- d. a juvenile saker falcon.

Answer c. The **yagi** is a sensitive hand-held telemetry receiver and antenna consisting of three or more elements mounted at right angles to a central boom. Reception range is usually a quarter to seven miles if both hawk and falconer are on the ground and fifteen miles or more when used from an aircraft or if the hawk is high up in the air.

38. A telemetry signal is likely to be strongest when the antenna is held . . .

- a. horizontally when the antenna whip is hanging vertically.
- b. vertically when the transmitter whip is hanging vertically.
- c. vertically when the transmitter whip is hanging horizontally.
- d. vertically regardless of the position of the transmitter whip.

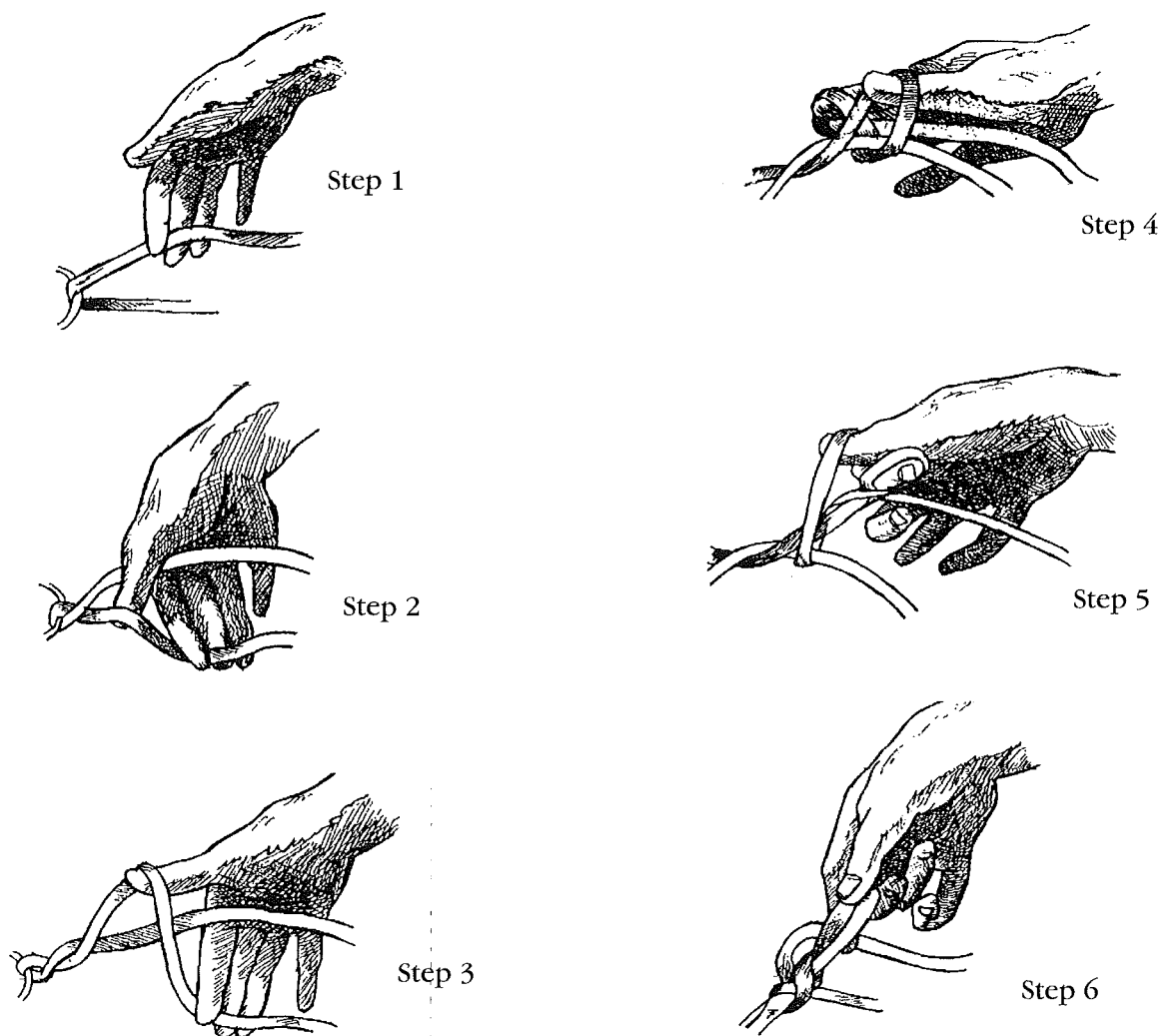
Answer b. The signal will be strongest when the whip antenna on the transmitter and the elements of the receiving antenna are in the same plane—both vertical or both horizontal. This effect is “polarization.”

39. A traditional instrument used to stop a hawk from bating was the . . .

- a. creance.
- b. **braces.**
- c. **brail.**
- d. **cadge.**

Answer c. Bating is the raptor’s attempt to escape from the falconer’s fist, or from a perch, being attached as it is by jesses or tethered with a leash. The **brail** is a soft leather thong formerly used to bind one wing of a hawk to prevent bating, but is rarely used by modern falconers. **Braces** are the leather straps used to open or close a hood. A creance is a long, strong cord or line used to secure a hawk during its first training flight. A **cadge** is a portable perch used for carrying hawks in the field. [12]

The Falconer’s Knot [3A]



REVIEW QUESTIONS - SECTION 2.1 & 2.2

- T F 1. A Dutch hood is made of leather molded over a block. (Section 2.2 #9)
- T F 2. The bow perch is generally used for longwings. (Section 2.2, #19)
- T F 3. Lean beef has all the nutritional elements to keep a red-tail in good health. (Sec 2.1, #11)
- T F 4. The smaller the hawk, the more difficult it is to maintain and to feed. (Section 2.1, #6)
5. In order for a full grown red-tailed hawk to maintain its body weight, it must consume . . .
- five to ten percent of its body weight daily.
 - twenty-five to thirty percent of its body weight daily.
 - fifty to sixty percent of its body weight daily.
 - ninety to one hundred percent of its body weight daily. (Section 2.1, #15)
6. A hawk requires less food . . .
- in cold weather.
 - in warm weather.
 - when active.
 - when moulting. (Section 2.1, #16)
7. The ideal perch for a red-tailed hawk is a . . .
- bow perch with a quarter-inch wide flat tape wrapped around the perch for padding.
 - ring perch with a quarter-inch diameter inch rope wrapped around the perch for padding.
 - large bare rock.
 - a tree branch with plastic grass padding. (Reference Section 2.2, #21 & #22)
8. The apprentice falconer should weigh his red-tailed hawk . . .
- once each day.
 - once every other day.
 - at least once a week.
 - whenever the hawk fails to perform. (Section 2.1, #34)
9. Aylmeri type jesses should be used . . .
- on all falconry hawks.
 - on eyass birds only.
 - in the event of an emergency only.
 - should never be used. (Section 2.2, #14)
10. What is bating?
- A lure.
 - A restrained flight from the fist or from the perch.
 - Used for trapping.
 - The raptor equivalent of jogging in place. (Section 2.2, #39).
11. A creance is a . . .
- long leather thong used to restrain one wing.
 - disease of the respiratory system.
 - strong line used to control a hawk during training.
 - none of the above (Section 2.2, #23).
12. The minimum legal requirements for maintaining a captive raptor are . . .
- perch, bath, Aylmeri jesses, scales.
 - hood, lure, glove, initial food supply.
 - perch, scales, bath, leash, swivel, and mews.
 - "a" and "c," but not "b" (Section 2.2, #1).

SECTION 2.3 HEALTH

1. The best time to find a competent veterinarian who has experience with birds of prey is . . .

- a. when the hawk is clearly sick.
- b. after your first hawk dies.
- c. before you get your first hawk.
- d. before your hawk gets sick.

Answer c. By the time you notice your hawk is sick, it may be too far gone. Unfortunately, many falconers lose a hawk to what may have been a treatable disease, had it only been diagnosed early. Answer “d” requires a sense of clairvoyance. Locate a good veterinarian who has experience with birds of prey prior to getting your first hawk. Your sponsor will be a good source of advice on local veterinarians. You can also contact the Association of Avian Veterinarians to find out which of your local veterinarians is certified in avian medicine in your area. Many qualified avian veterinarians do not get formally certified.



2. A good way to judge a raptor’s condition and health is . . .

- a. maintain daily weight records.
- b. examine the mutes.
- c. note alertness of the hawk.
- d. all of these.

Answer d. The falconer should be vigilant for any change in his hawk’s condition or the color and texture of the hawk’s mute. The castings should also be examined regularly. The best signs and symptoms of a sick hawk are a “puffy” look around the eyes and general listlessness, disgorging of food in the crop and discolored mutes, and tearing at food, but flicking it away. [12] Other symptoms include anorexia—a drastic reduction of food intake, change of voice, and increased respiratory effort. Sick hawks may not feak their beak after eating. While feaking is not universal by all hawks after all meals, this is an excellent “early warning” behavior change to confirm your “gut” instinct that your hawk isn’t acting right.

4. Your hawk becomes suddenly tame and well mannered, even at the times you would expect her to act wild. She refuses to eat a good crop and is reluctant to exert herself physically. Bating is weak and causes heavy breathing and general exhaustion. She has an extreme thirst and tends to bend forward as if due to a painful abdomen. She eats less and less and finally ends up picking at the food and flicking it away. She most likely suffers from . . .

- a. coccidiosis.
- b. frounce (trichomoniasis).
- c. aspergillosis.
- d. cramp.

Answer c. Aspergillosis is considered the most lethal of the common raptor diseases. The end comes very quickly in aspergillosis cases—usually within a week, sometimes only two days. The hawk will lose all interest in food. Weight loss is fantastic, amounting to as much as half of the hawk’s normal weight. Weight loss is often due to dehydration and anorexia. Postmortem will show the lungs, air sacs and internal organs spotted with a cream substance or moldy gray dust.

5. The best weapon against aspergillosis is . . .

- a. Ancoban® (generic: flacytosine).
- b. amphotericin B (fogging or oral).
- c. Clotrimazole.
- d. prevention.

Answer d. Both ancoban and amphotericin B have shown some success in treating aspergillosis, Itraconazole is also used. Prevention of aspergillosis is the only successful method of control. The fungus which causes the disease is not strictly a disease organism. It is ubiquitous—extremely widespread. The spores can be almost anywhere. The problem can be reduced by using substances in the mews that do not mold. Pea gravel, decomposed granite and artificial surfaces such as Astroturf are excellent. Avoid hay, straw, and dampness.

6. Aspergillosis is most frequently seen in . . .

- a. peregrine, Cooper's and sharp-shinned hawks.
- b. red-tails, goshawks and gyrfalcons.
- c. Harris' hawks and kestrels.
- d. "b" and "c," but not "a".

Answer b. Hawks from northern or cooler regions seem more susceptible to the disease than those from southern latitudes or warmer or dryer climates. "Seem" is the operative word. Aspergillosis has been reported in all species of birds of prey used in falconry.

7. Hawks which have some symptoms of aspergillosis may also have concurrent . . .

- a. coccidiosis.
- b. frounce.
- c. pneumonia.
- d. tapeworm.

Answer c. Pneumonia should also be considered in hawks that have signs of aspergillosis. Treatment is accomplished with antibiotics, stress reduction, good food and quiet.

8. True or false. Chances for recovery from aspergillosis are excellent.

False. About one in four fully recovers. "Any hawk with a diagnosis of aspergillosis carries a guarded [tactful medical term for "grim"—the editor] prognosis. Depending on the degree of respiratory involvement and whether the infection is classified as acute, subacute, or chronic will influence the recovery period and the degree of permanent respiratory damage. A conservative census indicates that twenty-five percent of the hawks with aspergillosis fully recover. These hawks may be flown successfully but need to be monitored closely for relapses." [6]

9. Flecks of red appear in your hawk's mutes. A few days later, the mutes turn watery and black, and the castings are slimy, dark brown and foul smelling. The hawk does not otherwise appear very ill but may appear lethargic. This may indicate . . .

- a. coccidiosis.
- b. frounce.
- c. aspergillosis.
- d. pneumonia.

Answer a. Coccidiosis. During the initial phase of the disease, prior to any noticeable change in the mutes, you may notice the bird to be less energetic while hunting. Longwings may land and not take a pitch. Fecal changes may vary from diarrhea to bloody diarrhea. The diagnosis can be made by your veterinarian using a fecal flotation test.

10. Coccidiosis is transmitted . . .

- a. by direct contact with an infected hawk.
- b. through droppings of a sick hawk.
- c. through contaminated soil in areas where poultry has been allowed to run.
- d. all of the above.

Answer d. Coccidiosis is a disease of the digestive system is highly infectious and may be fatal course unless identified and treated promptly. Coccidiosis is caused by microscopic single-celled protozoan known as coccidia. It is transmitted through direct contact, mutes, or through soil where turkeys or chickens have lived. It forms oocysts (egg cases) which may remain in the soil still highly infectious for several years. Captive reared birds may be carriers and not display disease signs until times of stress such as during weight reduction. Keeping the mutes cleaned up in your bird's environment is a useful prevention tip. [12]

11. True or false. Since coccidiosis is well known in poultry, treatment should be entrusted to the advice of a veterinarian.

True. Treatment begun during the first stage before the mutes turn black is most effective, but cures can be effective even when initiated in the second stage of black mutes and foul castings. Every effort should be made to keep the raptor from losing weight. [12] Several medicines can be used to treat Coccidia—see your veterinarian. [14d] However, prevention by keeping a clean mews is the best approach. [14a]

12. Your hawk has a flat, cheesy, yellowish growth in its mouth and throat, especially under the tongue and on the roof of the mouth. The mutes are greenish to bright green and the hawk has difficulty feeding. Your bird most likely has . . .

- a. tapeworm.
- b. frounce.
- c. aspergillosis.
- d. coccidiosis.

Answer b. Frounce, also known by its scientific name *Trichomoniasis*. Some hawks inhabiting areas where pigeons and doves (or other members of the family, *Columbidae*) are common, develop an immunity to frounce. The disease is most likely to appear in goshawks and longwings taken north of the range of the *Columbidae* where hawk populations are not exposed to the disease. Goshawks with frounce come into a high state of yarak during the early stages and maintain this desire to hunt and kill almost to their last breath. An early symptom that may pass unnoticed is a curiously messy way of feeding due to a malfunction of the tongue caused by early growths of the disease. [12]

13. A raptor disease caused by eating infected pigeons is . . .

- a. frounce.
- b. bumblefoot.
- c. cramp.
- d. myiasis.

Answer a. Frounce. The organism, *Trichomoniasis gallinae* has been isolated from pigeons suffering from pigeon canker. The disease is endemic (widespread in the population but doesn't make them ill) to the *Columbidae*. The best way to avoid the disease is to remove the head and crop of all pigeons before letting your hawk feed. Pigeons and doves should be frozen at least 30 days prior to thawing for feeding to your hawk. Pigeons can also carry pigeon herpes which is a fatal viral infection in raptors. This virus seems most problematic for gyrfalcons and gyr-hybrids but has been reported in other raptor species.

14. Untreated, frounce is usually fatal within _____ days from the time the symptoms manifest.

- a. one.
- b. two.
- c. ten.
- d. thirty.

Answer c. Virulent frounce usually runs a fatal course in a week to ten days from the time the first symptoms appear. The mouth becomes overgrown with hard plaques, breathing becomes difficult, feeding impossible. The hawk dies of strangulation or starvation. The incubation period, the time between actual infection and the first symptoms, seems to be less than ten days. [12]

15. The most practical weapon against frounce is . . .

- a. enheptin.
- b. thiamine.
- c. Flagyl®.
- d. prevention.

Answer d. Many falconers do not feed their hawks any portion of a pigeon or remove the head and crop (See question 13 above). Flagyl (Metronidazole) and Spartrix (Carnidizole) have proven safe and effective. Answer "a", enheptin, while technically not incorrect, has been replaced by flagyl and spartrix. Thiamine is vitamin B1 and is not effective against frounce.

16. Your hawk develops a small corn on the bottom of the foot. It then progresses to a small, localized swelling. The swelling feels warm to the touch and appears red. The condition becomes extremely painful for the hawk, who begins to lie down frequently to take pressure off the ball of the foot. The best diagnosis is . . .

- a. frounce.
- b. myiasis.
- c. bumblefoot.
- d. apoplexy.

Answer c. As the disease progresses, the swelling increases in size and the entire foot may become quite warm to the touch. The warmth is due to inflammation as the body attempts to fight off the infection. The swelling can extend down the length of the toes and up the leg. The skin begins to ulcerate on the ball of the foot. The arch scabs and the scab increases in size as the whole foot becomes puffy. The later stages can result in death due to generalized infection.

17. Foot swelling in longwings is often linked to . . .

- a. high humidity.
- b. using perches of poor design.
- c. direct wind in cold weather.
- d. a diet of lean beef and/or general poor husbandry.
- e. "b" and "d".

Answer e. In a high percentage of cases the problem of foot swelling is linked to a diet of lean beef, a poor substitute for the diverse diet these hawks normally enjoy in the wild state. A hawk whose health, diet, weight and living conditions are well managed is much less likely to suffer this ailment. Long blade Astroturf® is a popular perch surface which seems to help prevent bumblefoot. Keeping the mews clean and free of sharp protruding objects is beneficial.

18. Bumblefoot is caused by . . .

- a. any injury to the sole of the foot.
- b. standing in irritating substances such as excrement or commercial cleaners that have not been properly rinsed from a block or perch.
- c. inappropriate shaped or padded perches.
- d. all of the above

Answer d. The bumble infection enters the foot through the skin when the epithelium (skin of the bottom of the foot) becomes damaged. The epithelium may be damaged by any of the factors listed above as well as bruising, heavy impact, abrasion or polishing the foot against the smooth surface of a perch, sluggish blood circulation and self trauma (such as biting their own feet). Overgrown talons can also contribute to developing bumblefoot [1a]. Bumblefoot can be difficult and expensive to cure.

19. The best way to prevent bumblefoot is to . . .

- a. keep a clean perch.
- b. feed a whole animal diet such as adult quail or mice regularly and supplement with a vitamin product made for raptors.
- c. Provide the bird with a properly shaped and covered perch surface (such as long blade AstroTurf) based on the type of bird you have.
- d. all of the above

Answer d. Keeping the perch clean decreases contamination and aids in good foot health. Industrial cleaners can lead to foot irritation so discuss cleaners and disinfectants with your veterinarian. Whole animal diets supplemented with vitamins made especially for raptors improve the skin health and is an aid to bumblefoot prevention. Properly shaped and covered perches are necessary for adequate weight distribution—see your sponsor for help. Different raptor species have different perch requirements.

20. Your hawk appears dull, the feathers are puffed out and the crop is still distended from the previous day's feeding. The crop may have been vomited. The breath (or vomit) has a putrid, sour odor. The hawk is increasingly thirsty, but has no appetite. Best diagnosis?

- a. sour crop.
- b. myiasis.
- c. frounce.
- d. aspergillosis.

Answer a. From the symptoms described the outcome is either spontaneous recovery (the speed of which can be hastened by the falconer) or eventual toxemia and death in serious untreated cases.

21. Sour crop can be caused by . . .

- a. your hawk eating rotten meat.
- b. a parasitic infection such as capillariosis or coccidiosis and the associated inflammatory changes in the digestive tract.
- c. ingestion of poisonous substances such as petroleum products.
- d. over feeding a weak bird.
- e. all of the above.

Answer e. Although many different organisms normally inhabit the digestive tract of birds (e.g., parasitic worms, protozoans, yeast and bacteria) imbalances in these bacterial populations may result in toxic digestive problems. In addition, sour crop can be caused by using antibiotics to treat the hawk for something else entirely, like bumblefoot. Sour crop can also be caused by obstruction of the digestive tract caused by bones in the raptor's food, or by roundworms or tapeworms. In kestrels the most common cause of sour crop is from overfeeding a thin or weak bird. Letting their weight fall too low is easy for a novice with the resulting solution of a "full crop" leading to sour crop. Sour crop can be fatal. [11b]

22. The preferred treatment for an early, mild case (i.e. foul breath, failure to put the crop over, or slight dullness) of sour crop is . . .

- a. Pedialyte®.
- b. Ancoban.
- c. Zovirax ointment.
- d. Ampicillin.

Answer a. The primary aim is to administer a balanced electrolyte solution to moisten the crop contents. If the raptor regurgitates most of the crop contents, hold off on further feedings for six to twelve hours. Give Pedialyte® orally. A small amount of Pepto-Bismol® will be fine. More serious cases, i.e. those that do not respond to the above treatment within eight hours, should be treated aggressively under your veterinarian's supervision. This may include IV fluids and injectable medications such as antibiotics.

23. During the initial handling of a freshly trapped sharp-shinned hawk, the hawk shows an uncontrolled jerking or twitching of the shoulders and wings. The best diagnosis is . . .

- a. aspergillosis.
- b. frounce.
- c. apoplexy.
- d. coccidiosis.

Answer c. The hawk should be placed immediately in a dark cool place to regain its composure. If more than a few moments pass, the hawk will go into a succession of violent spasms, and, if untreated, will live only for a few hours. The condition is associated with stress in small accipiters and is often connected to hypoglycemia or low blood sugar. [12]

24. The hawk most susceptible to apoplectic fits is the . . .

- a. kestrel.
- b. Cooper's hawk.
- c. merlin.
- d. goshawk.

Answer b. The small accipiters, the Cooper's and sharp-shinned hawks are quite subject to these attacks. Goshawks are less likely to suffer them though they are certainly not immune. Affected hawks can die within minutes unless the onset is recognized at once. Fits are caused by low blood sugar, thiamine (vitamin B) deficiency, calcium deficiency and, rarely, vitamin D3 deficiency. Any and all of these are direct results of bad management on the part of the falconer trying to lower the accipiter's condition to get it to respond.

25. The preferred treatment for apoplectic seizures is . . .

- a. Ancoban® (generic: flucytosine).
- b. Enheptin.
- c. Flagyl® (generic: metronidazole).
- d. sugar water, Gatorade®, or Nutri-Cal®.

Answer d. Sugar water, Gatorade®, or nutritional solution should be administered through a plastic eyedropper. Flat cola can also be used. Three or four eye droppers full are given at two-hour intervals. Without this treatment, the hawk will likely stiffen and die after several hours of rigid spasm. This risk needs to be considered and the risk of aspiration which can also cause death. Seek veterinarian assistance immediately.

26. The preferred treatment for “stargazing syndrome” is . . .

- a. sunlight and vitamin D3.
- b. calcium/phosphorous supplement.
- c. sugar water.
- d. vitamin B1.

Answer a. A hawk with “stargazing syndrome” (inflammation of the brain) stands with its head upward or backward over its shoulders. The commonest cause in raptors appears to be deficiency of vitamin D3. Most other vitamin deficiencies can be avoided by feeding whole bodies of small birds and mammals or by giving a multivitamin powder (Vitahawk®) on the meat.

27. Internal parasites . . .

- a. are common in captive raptors.
- b. are easily treated.
- c. can cause death or debilitation.
- d. all of the above.

Answer d. New drugs have made treatment of internal parasites so easy that most hawks are now treated prophylactically. Minimizing fecal contamination where your bird eats will aid in parasite prevention.

28. True or false. Bird lice can weaken or kill a raptor.

False. Many trapped hawks and a good percentage of eyasses have lice. Bird lice (Mallophaga) do not feed on blood and are rather innocuous as parasites go. They feed on skin scruff and feather powder and do little real harm. Like other parasites, they tend to increase on hawks that are ill. Use two light dustings of two percent Sevin® powder or a preparation made for cage birds or poultry dust, applied one week apart. [12]

29. True or false. Hippoboscidae are deadly to hawks.

False. Hippoboscidae are parasite flies. They have wings and a crab-like appearance and are slightly larger than common house flies. They are not often seen as they hide among the feathers. They may run up the falconer's arms when a hawk is being cast for coping, imping, or new equipment. They are easily treated with poultry dust. [12]

30. True or false. A raptor with a broken leg or wing should be put down (killed) in as humane a manner as possible since these bones cannot be set or cast with any degree of success.

False. Good veterinary care can successfully treat most broken bones, bullet wounds or mechanical injuries. It will not be cheap, but a truly valued hawk is worth the expense. Once in possession of a bird of prey, the falconer assumes full responsibility for the health and treatment of the hawk.

31. Poisoning due to ingestion of lead shot, i.e. shotgun pellets, in their food . . .

- a. does not occur in raptors.
- b. occurs only in owls which have no crop.
- c. is cured easily by the use of antibiotics.
- d. can kill any raptor fed prey items killed with lead shot.

Answer d. Early symptoms are weight loss, poor appetite, general malaise or lethargy, and anemia. Other symptoms range from partial blindness to incessant convulsions. Except for severely poisoned birds, successful treatment is often possible. Treatment includes chelation of solubilized lead with calcium ethylenediaminetetraacetic acid (EDTA); removal of remaining lead particles either through natural means (casting or slicing) or surgery; rigorous fluid therapy using Ringer's solution; and several weeks of physical therapy. You should avoid feeding raptors quarry you killed with a gun unless you are sure you got all the lead out. For you organic science buffs, EDTA is pronounced calcium eth-amine-die-amine-tetra-acetic acid.

32. True or false. The chief danger of transporting a hawk in a sock is over heating due to respiratory distress (gasping for breath).

True. The raptor should be hooded, equipped with Aylmeri jesses and carried on the fist, other perch, or in a "giant hood" (see section 2.2. question #8). Earlier literature suggested that wild caught raptors be transported short distances if they were socked in women's nylon stockings, their feet taped, and masking tape placed above the shoulders to prevent the sock from slipping out of place. This method is dangerous, as the hawk cannot mute while encased and will quickly overheat. If you have to transport a hawk this way, watch it for evidence of breathing distress or overheating.

33. Your female intermewed passage red-tail strikes and binds to a wild immature red-tail. After you separate them and the immature escapes, you see a small bleeding puncture wound on her tarsus that was inflicted by the wild hawk. You should . . .

- a. ignore the wound as such things are natural.
- b. treat the wound immediately with a local antibiotic like Neosporin®.
- c. take her to the veterinarian.
- d. "b" followed by "c".

Answer d. Many falconers carry a small tube of a first aid antibiotic ointment on them in the field. The talons of a hawk carry animal decay toxins, germs and bacteria. Almost any puncture wound will become infected if not treated at once. That is why veterinary care is important, including bite wounds such as from a squirrel.

34. The most common cause of sudden death in falconry hawks is . . .

- a. being shot by a gun hunter.
- b. electrocution.
- c. lethal attack by other, larger raptors.
- d. impacting wire.

Answer b. Electrocution is the number one sudden killer of raptors, falconry or wild. Lethal attack by larger, wild raptors is second. Impact with some form of wire (barbed wire fence, telephone guy wire, and so on) comes in third. [1] Falconry hawks are occasionally lost to uneducated gun hunters.

35. True or false. Hawks show stress by standing on one foot.

False. Standing on one foot with the other drawn up is a sure sign of contentment. Hawks show stress by panting and open mouth breathing. Bating is also a sign of stress and should always be considered a bad sign. If your bird is constantly bating, the situation needs analysis and correction. Birds handled by good falconers rarely bate.

36. Which is most dangerous to the health of a hunting kestrel?

- a. Cooper's hawks.
- b. sour crop.
- c. sloppy weight control.
- d. all of the above.

Answer d. All of these elements pose a real and present danger to the lives of trained kestrels. The utmost care must be given in the training, maintaining and flying of these small raptors. [11b]

37. Match diseases with the parts of the body attacked.

<u>Disease</u>	<u>Possible body system affected</u>
aspergillosis	<i>digestive system, nervous system</i>
bumblefoot	<i>bottom of feet</i>
coccidiosis	<i>plumage</i>
external parasites	<i>respiratory system</i>
frounce	<i>vision</i>
internal parasites	<i>skeletal</i>
lead poisoning	
mineral deficiencies	
seizures	
sour crop	
stargazing	

Answers.

<u>Disease</u>	<u>Body system affected</u>
aspergillosis	<i>respiratory system</i>
bumblefoot	<i>bottom of the feet, initially</i>
coccidiosis	<i>digestive system</i>
frounce	<i>digestive system</i>
internal parasites	<i>digestive system</i>
sour crop	<i>digestive system</i>
external parasites	<i>plumage</i>
lead poisoning	<i>nervous system, digestive system</i>
seizures	<i>nervous system</i>
stargazing	<i>nervous system</i>
mineral deficiency	<i>skeletal system</i> <i>nervous system (muscle tone)</i>

Note: different diseases affect the same body system. This is especially true with the digestive and nervous system. The diseases and treatments discussed here are only the most common diseases that falconers encounter and not a complete listing. Some of the less common include: psittacosis, ornithosis, clamydiosis, and parrot fever (all names for respiratory disease caused by Chlamydophila); avian tuberculosis, pox, malaria, and avian herpes: fowl cholera; threadworm, gape-worm, and airsac worm; hemoproteus, West Nile virus, exotic Newcastle disease, piroplasma; and candida albicans just to name a few of the exotic and expensive illnesses falconers can look forward to.

38. Match possible diseases with the specific symptoms.

<u>Symptoms</u>	<u>Disease</u>
central nervous system disorders	<i>apoplexy</i>
cheesy plaques in oral cavity	<i>aspergillosis</i>
diarrhea	<i>avian malaria</i>
difficult breathing	<i>bumblefoot</i>
easily over exerted	<i>coccidiosis</i>
extreme thirst	<i>external parasites</i>
feather loss/damage	<i>frounce</i>
flecks of red in mutes	<i>lead poisoning</i>
flicking food	<i>liver problems</i>
foul smelling castings	<i>poor conditioning</i>
green diarrhea	<i>roundworms</i>
high yarak	<i>seizures</i>
lethargy	<i>sour crop</i>
poor appetite	<i>tapeworms</i>
ruffled appearance	
swelling and open sores on foot pads	
trouble eating	
unable to stand	
uncontrollable shaking	
voice change	
weight loss	

ANSWERS.

<u>A hawk with this symptom:</u>	<u>May have:</u>
central nervous system disorders	lead poisoning
cheesy plaques in mouth	frounce
diarrhea	tapeworms, roundworms, or coccidiosis
difficult breathing	aspergillosis or frounce
easily over exerted	aspergillosis or be in poor conditioning
extreme thirst	aspergillosis
feather loss/damage	external parasites
flecks of red in mutes	coccidiosis
flicking food	aspergillosis, coccidiosis, or frounce
foul smelling castings	sour crop, coccidiosis
green diarrhea	lead poisoning, liver problems, or avian malaria
high yarak	frounce, or low weight
poor appetite	aspergillosis, coccidiosis or lead poisoning
ruffled appearance	aspergillosis or external parasites
swelling & open sores on foot pads	bumblefoot
trouble eating	aspergillosis or frounce
uncontrollable shaking	apoplexy, seizures or lead poisoning
voice change	aspergillosis
weight loss	aspergillosis, frounce, tapeworms, roundworms or lead poisoning

39. Make a diagnosis based on the COMBINATIONS of symptoms.

<u>Symptom Combinations</u>	<u>Possible Diagnosis</u>
difficult breathing, weight loss, easily overexerted, extreme thirst, flicking food, ruffled appearance, voice change	<i>apoplexy</i>
feather loss/damage	<i>aspergillosis</i>
foul smelling castings	<i>bumblefoot</i>
green diarrhea (liver problems), central nervous system disorders (lethargy, suddenly clumsy)	<i>coccidiosis</i>
poor appetite, difficult breathing, flicking food, flecks of red in mutes	<i>external parasites</i>
swelling and open lesions on foot pads	<i>frounce</i>
trouble eating	<i>lead poisoning</i>
uncontrollable shaking	<i>roundworms</i>
weight loss, flicking food, cheesy plaques in mouth	<i>seizures</i>
	<i>sour crop</i>
	<i>tapeworms</i>

ANSWERS.

<u>If your hawk is showing these combined symptoms:</u>	<u>Then it may have:</u>
uncontrollable shaking	apoplexy
difficult breathing, weight loss, easily overexerted, extreme thirst, flicking food, ruffled appearance, trouble eating	aspergillosis
swelling and open lesions on foot pads	bumblefoot
poor appetite, flicking food, flecks of red in mutes	coccidiosis
feather loss/damage	external parasites
weight loss, flicking food, cheesy plaques in mouth, trouble eating, difficulty breathing	frounce
green diarrhea (liver problems), central nervous system disorders (lethargy, suddenly clumsy)	lead poisoning
diarrhea, weight loss	roundworms, tapeworms
uncontrollable shaking	seizures
foul smelling castings	sour crop

40. Match diseases with treatment.

<u>Symptoms</u>	<u>Possible Treatment</u>
apoplexy	<i>amphotericin B</i>
aspergillosis	<i>Ancoban®</i> (generic: flucytosine)
bumblefoot	<i>baycox</i>
coccidiosis	<i>chelating agents</i>
cramps	<i>clean perch</i>
external parasites	<i>Clotrimazole®</i>
frounce	<i>cool dark place</i>
lead poisoning	<i>Droncit®</i>
roundworms	<i>Flagyl®</i> (generic: metronidazole) and <i>Spartrix®</i>
seizures	<i>Intraconazole</i>
sour crop	<i>Pepto-Bismol®/Pedialyte®</i>
stargazing	<i>Piperazine/Nemex®</i> (pyrantel pamoate)
tapeworms	<i>prevention</i>
	<i>Sevin (poultry dust)</i>
	<i>sugar water</i>
	<i>sunlight/vitamin D3</i>
	<i>veterinary attention</i>
	<i>vitamin A</i>

ANSWERS.

<u>Diagnosis:</u>	<u>May have:</u>
apoplexy	sugar water
aspergillosis	prevention, amphotericin B, ancoban, Intracon
bumblefoot	prevention, variety of clean perches
coccidiosis	prevention, baycox
cramps	ground up bones in food
external parasites	Sevin® (poultry dust)
frounce	prevention, Flagyl®/Spartrix®
lead poisoning	prevention, chelating agents, veterinary attention
roundworms	Piperazine/Nemex
seizures	cool dark place, veterinary attention
sour crop	Pepto-Bismol®/Pedialyte®
stargazing	sunlight/vitamin D3/vitamin B
tapeworms	Droncit®

Editor's comment: the point of the previous four charts is not to turn you into a home veterinarian, but to provide summary charts that, first, match diseases to the body systems they affect. The second chart relates specific symptoms to specific diseases. The third chart combines symptoms to better diagnose the disease leading to the proper treatment. Finally, the fourth chart, above, relates the treatment of those diseases. Raptor disease control and cure are rapidly advancing, and new treatments and cures are being discovered daily. As current as the charts are, it may be obsolete before you read them. **The critical point is that you should get your hawk to a veterinarian as soon as you realize "something" is wrong.**

REVIEW QUESTIONS - SECTION 2.3 - HEALTH

- T F 1. The drug Flagyl is used to cure aspergillosis. (#5 & #15)
- T F 2. Frounce is a disease of the mouth and throat. (#12)
- T F 3. Aspergillosis is a disease of the nervous system. (#4)
- T F 4. Coccidiosis is a disease of the respiratory system. (#10)
- T F 5. Uncontrollable shaking is a symptom of bumblefoot. (#23)
- T F 6. Weight loss is a symptom of aspergillosis. (#4)
- T F 7. Your hawk is suddenly easily over exerted. It may have aspergillosis. (#4)
- T F 8. Bumblefoot is easy to cure. (#18)
- T F 9. Bumblefoot is easy to prevent. (#19)
- T F 10. Aspergillosis is the most lethal disease likely to occur in birds of prey. (#4)
- T F 11. Vitamin C is the preferred treatment for stargazing. (#26)
12. The most common cause of frounce is from consuming . . .
- pigeons and doves.
 - rabbits.
 - chicken hearts.
 - lean, washed beef heart. (#12).
13. Your raptor is in good health and suddenly contracts diarrhea, you should . . .
- contact a competent veterinarian.
 - feed it sugar water.
 - feed it more vitamin A & D.
 - feed it lean, washed beef heart. (#1)
14. A good way to judge a raptor's condition and health is . . .
- maintain daily weight records.
 - examine the mutes.
 - note alertness of the hawk.
 - all of these (#2).
15. 10. Coccidiosis is transmitted . . .
- by direct contact with an infected hawk.
 - through droppings of a sick hawk.
 - through contaminated soil in areas where poultry has been allowed to run.
 - all of the above (#10).
16. The best time to find a competent veterinarian who has experience with birds of prey is . . .
- when the hawk is clearly sick.
 - after your first hawk dies.
 - before you get your first hawk.
 - before your hawk gets sick. (#1).

SECTION 3.0 TRAINING AND HUNTING

SECTION 3.1 TRAINING

1. How do you get them to come back?

- a. Through the natural affection and bond that form between falconer and hawk.
- b. By punishing them when they don't.
- c. By teaching them that they eat better when they hunt with you than on their own.
- d. By rewarding them with tid-bits each and every time they return to you.

Answer c. Only when the hawk learns that it will eat better when it hunts with you in the field and by only hunting when they are **sharp-set** are you sure that they will return to you or follow-on with you in the field. Answer "a" is incorrect. Hawks don't need humans to survive and lack the emotional capabilities to do much more than trust humans to provide a better diet. We, on the other hand, often develop intense emotional attachment to our hawks. Answer "b" is incorrect as hawks lack the socialization capabilities to relate punishment to poor performance. Hawks relate reward or punishment to their current or most recent actions. Thus if you punish a hawk after recovering it, it is less likely to return to you next time. Answer d is incorrect. If you reward the hawk every time it comes to you then you teach it that it does not need to hunt and when you get nervous you will feed it for coming to you. Use tid-bits to establish the "coming to you" but then switch to a random reward of both frequency and size. This is "operant conditioning" and can be used to train the hawk effectively and quickly. [14a]

2. True or false. Falconers must hunt with their hawks.

True. Hunting combines the best exercise possible for your hawk with the very practical requirements of feeding your hawk the best possible diet. Daily hunting sharpens the instincts of both you and your hawk, provides exercise, strengthens the bond between falconer and hawk, and fills the freezer. Falconry is defined as hunting with a bird of prey. Hunting with a bird of prey and encouraging the hawk to follow its natural inclinations is the whole point of falconry even though there are many other benefits to both human and raptor. If an individual doesn't want to hunt then perhaps raptor rehabilitation is a better path for working with birds of prey.

3. True or false. Some falconers prefer to man newly-caught red-tails outdoors to avoid overheating.

False. It is always easier to man a freshly-captured hawk inside before exposing it to the noise and distractions of the outside world. Many falconers prefer to man their hawk in a cool, or even cold, dark room lest the hawk overheat. The hawks expend a lot of energy in useless wing flapping. They are nervous and very excited at the same time.

4. True or false. A hungry raptor will be trained more quickly than one which is not hungry.

True. With the edge of hunger, a hawk will respond one hundred percent faster than when she is not hungry. Her attention must be focused through the medium of daily feeding. The falconer will make most of his progress during this period. Use food to encourage her response to training. Never starve your hawk to get this response. Get her on the wing quickly so that she may realize her full potential. Use your scales daily to weigh your hawk and what you feed her. Take careful notes of what you feed her and keep track of her weight gain or loss. Make weighing part of the daily



routine. Always weigh at the same point in the day and preferably after she has cast. While daily weighing reveals what your hawk's weight is, it will not tell you what condition the hawk is in. Your sponsor will guide you on finding the best flying weight or combat weight for your hawk.

5. True or false. A falconer prefers his hawk to be **sharp-set** before he enters the field to hunt.

True. Sharp-set means hungry, or **keen**, indicating an alert state, a readiness to kill. [12]

6. Raptors are most effectively trained by a system of . . .

- a. punishment (causing fright or pain without injury).
- b. rewards (providing food for good progress).
- c. rewards and punishment.
- d. none of the above.

Answer b. Since hawks are not social animals, a system of reward and punishment does not work. They react favorably only to rewards. With force, punishment or threat of force, a hawk will react in only two ways: it can try to escape or fight back. While raptors do not have a long attention span, they do form long-lasting patterns of behavior. Harsh treatment will be remembered and returned.

7. True or false. Falconry hawks are trained to accept humans as their master and owner.

False. The point of falconry training is to teach the hawk that hunting with one specific human leads to eating better than hunting alone in the wild. In point of fact, apprentices must learn to work within the hawk's natural inclinations—not the other way around.

8. True or false. Hawks should not be made too tame but should be encouraged to retain their wild nature.

False. Tameness is a point of refinement in the art of falconry and should be encouraged at all times. The tamer the hawk becomes, the more confidence and trust she has in you, the better will be her attitude and, ultimately, her success at hunting with you.

9. What should a new apprentice do upon arriving home with his first trapped, hooded, socked, passage hawk?

- a. The hard part's over. Relax. It's been one heck of a day.
- b. Take the hawk out of the car, unhood it, take the sock and masking tape off, and toss the hawk in the weathering area.
- c. Take the hawk out of the car, weigh it, log the weight, take the sock and duct tape off, and tether the hooded hawk in the mews. Then weigh the sock and duct tape and subtract their weight from the overall recorded weight of the hawk.
- d. Listen to your sponsor and follow his/her instructions.

Answer d. Listen to your sponsor. In all likelihood, he/she will walk you through answer "c" with only minor variations. The approach in answer "c" minimizes stress both on the hawk and you. Your sponsor will be watching for out-of-the-ordinary problems. Keeping the hawk hooded helps keep it calm during the early days after capture. Unhood the hawk gradually for longer and longer periods while introducing it to new situations. While hooded, your hawk will get accustomed to the sounds around it, but for buteos and accipiters **manning** takes place when the hood is off and they can see you.

10. True or false. Weight should be cut off a newly-captured passage red-tail quickly by starvation until it is down to hunting weight.

False. While you may need to cut its weight to get it to respond, once it is feeding off the fist you should cut its weight slowly to encourage other responses as necessary. To prompt the correct action, all falconers must feed newly-trapped passage hawks on the fist. Once the hawk tires of bating and sits quietly on the fist, they offer the hawk chunks of food. Once it begins to feed, the hawk is responding to the falconer. Moderation is the key. Cut enough weight to get her to do what you need. Otherwise, you will have a stressed-out, ravenously hungry, unhealthy, or a dead hawk. Accepting food from you, however reluctantly, is the second step of **manning**.



Some hawks are already hungry when removed from the trap (Why else would they have been trapped?) Older literature suggested cutting ten percent of a trapped hawk's weight as a rule of thumb. Forget percentages. When the hawk is hungry enough, or it accepts you enough, it will eat from your fist.

11. A **passager** or **passage** hawk is . . .

- a. any raptor taken on migration.
- b. a raptor taken on its first migration.
- c. any intermewed raptor.
- d. none of the above.

Answer b. A **passager** is an immature hawk trapped from the wild after it's left the nest and before the start of the first moult. The hawk is on its first passage in life.

12. The most difficult aspect of manning a passage red-tail is . . .

- a. teaching her to stay on the fist.
- b. calming her and overcoming her natural distrust of humans.
- c. **entering** her to rabbits and hares.
- d. breaking her spirit.

Answer b. Answer "a" is part of "b," since **bating** is just one manifestation of the hawk's natural distrust of the falconer. As already successful hunters, a minimum of **bagged quarries** for **entering** should be required for her to learn that taking larger prey let her eat her fill. Passagers are well mannered, quick to train and soon out in the field. [1a] Answer "c" is a relatively easy process. Answer "d" probably can't be accomplished without brutalizing the hawk. You are far more likely to create a vicious hawk.

13. The major advantage of **taking**, or capturing a passager is:

- a. once manned, it is nearly loss-proof.
- b. the hawk has successfully hunted.
- c. the hawk is in good physical condition.
- d. plenty of time is available in the day to work with the hawk.

Answer b. The trapping season virtually guarantees the passage hawk you take has been away from its nest and parents long enough to hunt successfully and kill consistently on its own. It is usually, but not always, in good health and condition. "a" is incorrect, as passagers are more likely to be lost and harder to recover. Answer "d" is incorrect, and often overlooked. Unless the falconer is independently wealthy (a common assumption implied in many falconry texts), or works an unusual shift, the trapping season during the shortest days of the year offers few daylight hours in which to man a hawk.

14. The minimum amount of time the falconer should spend per day manning a newly trapped passage hawk is . . .

- a. dependent on the amount of time the falconer has available before darkness.
- b. dependent upon the amount of time the falconer can get off work.
- c. an hour per day.
- d. two hours per day.

Answer c. The trapping season virtually guarantees a minimum of daylight hours for the eight to five-worker to man the newly-taken passage raptor, making answers “a” and “b” seem more pragmatic. While “d” is a better answer than “c,” the falconer should spend a minimum of an hour a day with the new hawk. [13] You may work with your hawk indoors or under lights outdoors after dark. Be aware, however, that hawks become prey for owls at night and become nervous if it is too dark. Classical falconers used a manning technique called waking. The hawk was kept awake for several days by a team of falconers and is very effective.

Editor’s note: one mystery you will face as a beginner is the attitude that apprentices should not have eyasses. Indeed, some states (not including California) go so far as to outright forbid their use by apprentices. To the uninitiated, this seems overly arbitrary and unnecessary, particularly as older literature suggested that this was the best way to begin in falconry. Since those times we’ve come to understand the concepts and dangers of raptor imprinting. Furthermore, in “the good ol’ days” falconers did not always start with a red-tail as ninety-nine percent of apprentices do today. An imprint eyass red-tail can develop problems that can prevent it from either hunting as a falconry hawk or released back to the wild. These behaviors can be avoided, but minor errors in feeding by a novice can lead to serious problems. The following questions (15 - 22) along with the series in Section 1.2, about the raising, training and hunting with eyasses will to help you understand the problems.

15. True or false. Passage hawks and eyasses are manned and trained using the same methods.

False. Manning and training of passagers and eyasses are extremely different. To simplify both processes: with the passage it is a matter of getting them to trust the falconer and come to the falconer for food. With eyasses, the training is a matter of getting the hawk to leave the falconer to capture its food.

16. True or false. Eyass hawks are generally easier to hood than passage hawks.

False. Passage hawks of any species are, as a rule, easier and less openly hostile to being hooded than eyasses. Passagers more often need to be hooded because they are more likely to become alarmed at strange sights. [12] A greater factor is the skill of the falconer in hooding. While hawks will learn to put up with the hood, they will never learn to like it. Follow your sponsor’s advice on hooding.

17. **Hacking** is a process whereby . . .

- a. young accipiters or red-tails are allowed to get fully summed in a large chamber.
- b. young longwings are allowed full flight freedom until they begin to kill for themselves without the obvious presence of the falconer.
- c. passage hawks are quickly manned by keeping them constantly awake.
- d. phlegm is coughed up by a hawk with pneumonia.

Answer b. Hacking allows eyasses complete flight freedom, exercise and experience that nearly duplicate the training they would get in the wild from their parents. Allowed the freedom to fly without restraint, they learn the tricks of flying and hunting. Wild parents teach their offspring the basics of hunting and killing; hacked eyasses perform “on-the-job-training” for themselves. The falconer provides food tied onto a hack-board at the same time every day to the hawks. This early flight experience develops excellent cardiovascular systems which stay with them for life. Answer “c” is a manning technique called **waking**. A variation is **tame-hacking** and allows early free flight experience to imprinted fledglings in close association with their trainer. The advantage over traditional hack in that the falconer is always close by to protect his hawk from eagles, owls, wild raptors, cars, and hunters. The falconer allows the fledglings

to fly free for a few hours each day from a portable perch in a hack field. The hawks fly with telemetry and are recovered each night. During the process, the falconer **serves quarry** to the hawks as they frolic and exercise, in the manner of wild parents raising their young. In addition to exercise and the advantages mentioned above, **tame-hack** gives young hawks some of the learning experience which would occur at this stage of development in the wild.

18. True or false. If a falconer intends to take an eyass hawk, it is generally better to take a very young eyass, and **imprint** it.

False. Imprinting is transference of identity in which the hawk begins to think that either it is a person or that people are hawks. Specifically the person handling it may be viewed as a parent at first and a competitor or mate later. These hawks develop aggression and lack the instincts that keep wild-caught hawks from attacking human beings. Imprinting occurs when the hawk associates the falconer with food.

19. A useful method for avoiding the aggression and territoriality associated with imprinting in a eyass red-tail is to . . .

- a. slip food into its box or home when it is not looking and let it find the food.
- b. keep the hawk fat at least one month after it is **hard-penned**.
- c. allow another falconer to raise the hawk.
- d. all of the above.

Answer d. If the hawk does not associate you with food, she is less likely to imprint. If the hawk is allowed to mature psychologically before her weight is dropped in preparation for free-flight, she is less likely to develop **screaming**, begging behavior, and the parental attachments associated with imprint eyasses. If another falconer raises the hawk, and she is then removed from her imprint environment by the falconer who flies her, then she is less likely to develop the territoriality associated with imprint aggression.

20. The most difficult part of raising an eyass is . . .

- a. teaching her to fly.
- b. feeding her.
- c. teaching her to hunt.
- d. avoiding all imprinting.

Answer b. Raptors are extremely cunning when it comes to food. If an eyass in the imprint stage connects the falconer to a steady supply of food, it will quickly learn to beg for food. And it will do so constantly, becoming a **Screamer**. The falconer **MUST** prepare and hide the food out of sight of the eyass, covering the food with a cloth or cover that can be remotely removed. Feeding an eyass can be a tedious three hour ordeal. Feeding can be done by a single falconer as long as there is not the slightest connection between the falconer and the food. Getting a second falconer and/or assistant to do the food handling while the falconer walks the bird out of sight is a better approach. Answer "a" is incorrect as most hawks readily learn to fly, and flying well is a matter of experience. Answer "c" is incorrect, since techniques for **entering** her to quarry are well known. Answer "d" is incorrect. Some imprinting is unavoidable as the eyass is wholly dependent upon the falconer, but food discipline overrides. The scream of a red-tail is extremely loud and irritating. A good analogy to red-tail screaming is that of a car alarm that cannot get turned off. An even less cheerful aspect is that, on occasion, juvenile raptors attack their parents (a food source) for food. As the imprinted eyass' parent, you may become the target for this attack. This is a particular problem with eyass Cooper's hawks.

21. The most frustrating part about **taking** an eyass is . . .

- a. finding an occupied nest in a climbable tree.
- b. overcoming the parents' aggressive defense of their offspring.
- c. picking the eyass, getting it into the transport box or bag and back down the tree.
- d. finding there is only one eyass in the nest.

Answer d. Not to minimize the physical difficulty of the other three answers, but finding only one eyass means you **must** abandon plans to take an eyass from this nest. It is against the law and against the ethics of modern falconry. Apprentices are not allowed to take eyasses (nestlings). 50 CFR 21.29(i)(1)

22. The advantage(s) of raising an eyass is (are) . . .

- a. it is easy to man.
- b. you have plenty of time in the day to work with it.
- c. it is easy to feed.
- d. "a" and "b," but certainly not "c".

Answer d. The eyass is absolutely dependent upon the falconer to take the place of the parents. Considering that the eyass is no longer subject to rain, sun, or fratricide, the hawk has an easy life. As eyasses are taken during mid-spring, the days are getting longer. Assuming the falconer works an eight to five-job, he/she is blessed with long spring and summer evenings, helped in most states by daylight-saving time, to work with the hawk. Answer "c" is incorrect. Feeding, unfortunately, is fraught with difficulties. See question 20, above.

And now back to falconry in general.

23. One method of breaking a hawk of the bad habit of snatching food from the fist and bating is to . . .

- a. feed the hawk **rangle**.
- b. retrain the hawk.
- c. use a **halsband** to restrain the hawk from bating.
- d. conceal small amounts of Tabasco sauce or other foul tasting food in the carcass of a day old chick and allow the hawk to bate with it.

Answer b. Snatching and bating, an attempt to carry, reflects poor early training of calling the hawk to come too great a distance to the falconer for tid-bits too early in training. To remedy it, the falconer must step back in the training process. For several days the hawk can only be fed on the fist by direct pick-up, not being called from a distance. Then the falconer can restart, making her to hop to the fist for tid-bits. Then start calling the hawk to come longer distances. If he thinks the hawk will come fifty yards, only make her come twenty-five yards. [14c] Answer "a" is incorrect. **Rangle** is small stones fed to the hawk to remove indigestible grease and fat. Answer "c" is incorrect, as a **halsband** is a string used to launch an accipiter from the fist. Answer "d" is animal abuse. The salt alone will kill a hawk.

24. What length creance should apprentices use to verify that their red-tail is ready to be released for free flights?

- a. ten feet.
- b. ten yards.
- c. fifty feet.
- d. fifty yards.

Answer d. With the creance tied to an anchor in between the red-tail and the falconer, fifty yards of creance will allow the hawk to be called nearly a hundred yards. If the hawk will respond at this distance to tid-bits and the lure then the hawk is ready for free flight. Finding such an expanse of open ground without bumps, twigs, and rocks to snag the creance isn't easy. Early morning mall parking lots and baseball fields work well.

25. You know your passage female red-tailed hawk is trained sufficiently and is ready to be released for free-flight when . . .

- a. your sponsor says "She's ready."
- b. she comes to you with minimal hesitation when you call her to you from double the length of the creance.
- c. she comes to the lure instantaneously.
- d. all of the above.

Answer d. Your sponsor will be looking for the indications in answers "b" and "c." While there may be more stressful moments in falconer/hawk relationships, probably the toughest to overcome for the new falconer is, quite literally, "letting go" of the jesses the first time. Relax, every falconer has been through this and if your training has been sound and the situation stage-managed correctly, the hawk will not even notice it is off the creance. This is the moment you've been waiting for! Enjoy it! You will remember and cherish the next few seconds for the rest of your life. The hard part is getting that silly grin off your face.

26. True or false. Lures must be used exclusively for retrieving the hawk from a dangerous situation.

False. Quarry shaped lures are excellent training tools for the hawk. Longwing falconers often stoop their hawk repeatedly to the lure many times just for the benefit of exercising the hawk. Lures can also help teach ground-oriented hawks methods for catching and subduing quarry. A jack shaped training lure with food attached to the "head" and handled properly will help teach the young hawk where the stop button is. This will train and reward the hawk for catching the proper end. Battery powered motorized lures are coming onto the market and are being used with great effectiveness. Typically a car motor starter is used to reel in a line that is laid out in a zigzag course through a field. Controls are becoming sophisticated to the point that the falconer can slow or speed up, or even stop, the lure's motion. As with telemetry, this type of investment should be delayed until the apprentice decides just how committed they are to falconry.

27. During early training, carrying can be discouraged by . . .

- a. fastening the lure to the ground.
- b. using a **brail**.
- c. forcibly removing food from the raptor.
- d. quickly **making in** to a raptor on its kill.

Answer a. Young hawks will often grab the lure and try to fly off with it. The falconer can avert this vice before it happens by running the lure cord through a long metal staple pushed into the ground. The lure is then tossed to the ground and pulled up tightly against the staple, thus offering no opportunity to the hawk to carry. Carrying should be avoided at all costs. Answer "b" is incorrect. A **brail** is a thong used to immobilize one wing to keep the hawk from bating. Answer "c" is incorrect as this teaches your hawk that you are a competitor for its prey. Answer "d" is incorrect, as it has overtones of trying to steal the quarry from your hawk. On the other hand, making sure what prey your hawk caught and then releasing or dispatching dangerous prey (squirrels and rattlesnakes) is a good idea, but hasn't anything to do with carrying.

28. True or false. **Yarak** is utterly a function of a hawk's hunger.

False. **Yarak** is an Indian term describing a savage state of extreme readiness to kill. A hawk in yarak adopts a certain unique posture which makes it appear especially dangerous. Certain hawks in yarak will attack anything including cattle, dogs, and their trainers, but especially quarry. Yarak is partially, but not entirely linked to hunger. Hawks on a regular feeding or hunting schedule will be found, after a time, to come into yarak well before feeding time. Some hawks go into yarak after missing a flight at quarry. Longwings and owls never go into yarak.

29. True or false. Generally, it is a good idea to **gorge** your hawk on its first ten kills.

False. Previous literature suggested this approach, which—if followed—required an extended period of time before the next hunt as the hawk lost the gained weight. It also loses condition, manning and rapport with the falconer. But don't rush your hawk off the kill, or steal quarry from it, as your hawk will recall your bad faith at a later date. Take your time and let your hawk feed until it has a comfortable crop. In a red-tail this equates to ten to fifteen minutes of real eating, not including time to dispatch the quarry and **break-in**. Then get the hawk to **step-off** for a reward of a favorite tid-bit or other food, taking pains to hide the original quarry from the hawk. When the hawk is done with the tid-bit, it will feel quite satisfied and will have forgotten the quarry. Your sponsor will coach you on this technique. Develop a strong positive association that will last the long lifetime of your hawk. As you mature as a falconer, you will learn how and when to take quarry from your hawk. Rewarded properly, your red-tail will continue to hunt without resentment after her first quarry has been released or put in the game bag.

30. Your passage male red-tail is mobbed by ravens on his first hunting release. He flies into a tall tree and refuses to come to you. You should . . .

- a. go get a sleeping bag and plan to be there until dawn.
- b. try to call the hawk down with a tid-bit after a few minutes.
- c. try to call the hawk down with the lure.
- d. none of the above.

Answer b. Ravens and crows seem to take particular pleasure in “mobbing” birds of prey. Young hawks can be easily intimidated. But the ravens soon tire of their sport and fly off. After a few minutes your hawk should regain its composure and come down to a tid-bit.

31. During a late afternoon hunt, your red-tailed hawk takes a field rat and carries it high into a heavily foliated oak tree and begins to consume the prey. You should . . .

- a. be patient.
- b. try to call the hawk down with a tid-bit.
- c. try to call the hawk down with the lure.
- d. go get a sleeping bag and plan to be there until dawn.

Answer c. And if that doesn't work, resign yourself to “d.” Getting a well fed or feeding hawk to come down out of a tree at twilight or full darkness is next to impossible. After dark their vision is comparatively poor and they become the hunted. Therefore, they instinctively hide and stay still; indeed, they are unlikely to move from the spot. The falconer should mark the tree and go retrieve camping gear and an alarm clock. With a little bit of luck, the hawk will come down to the fist or to the lure at first light.

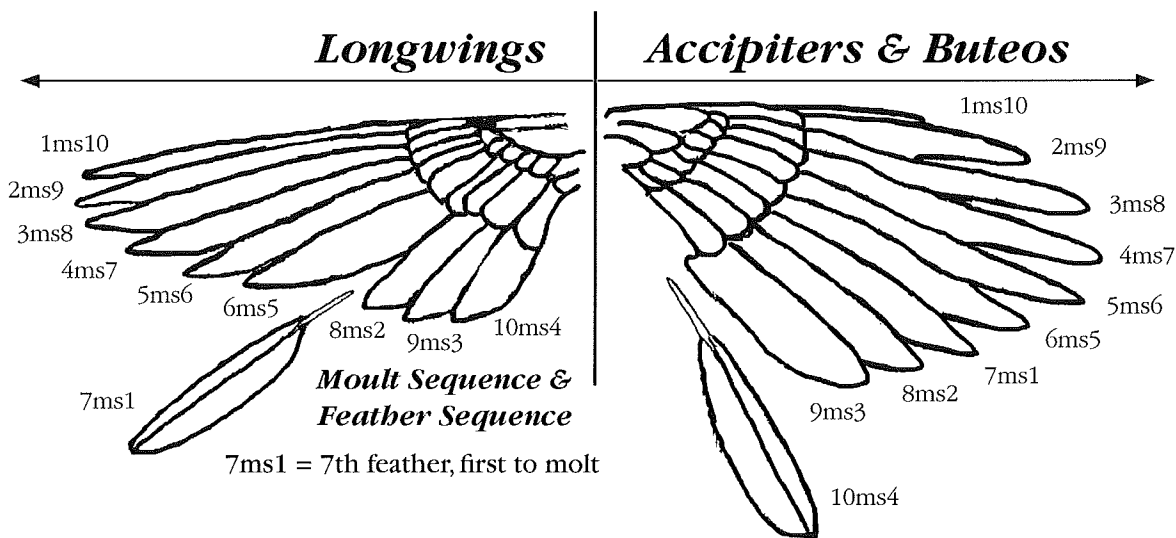
32. True or false. Late in the hunting season, you are hunting in your favorite field. The resident red-tails have become extremely aggressive almost overnight and now “dive-bomb” your hawk. You surmise that they are a mated pair and you've been hunting their territory all along, but now they are trying to drive an intruding hawk from the vicinity of their nest. You should continue hunting there. Your hawk really isn't in competition with them.

False. “Late in the hunting season” is the time at which eggs are laid and parents are defending their territory. As an ethical consideration, you should respect their territory and rights. You can find someplace else to hunt; they can't.

33. For the moult, a thirty ounce **flying weight** red-tail should be fed up to . . .

- thirty-six ounces.
- forty ounces.
- forty-five ounces.
- sixty ounces.

Answer a. Inexperienced falconers feed their hawks as much as they can eat. But what goes on, must come off. Twenty percent additional body weight is certainly sufficient (six ounces for a thirty-ounce hawk). If the hawk is kept at the higher weight for the moult, then that weight must come off before hunting. It is a tedious process, since in warm weather an inactive red-tail may lose as little as one-sixth of an ounce [five grams] a day. The loss of six additional ounces becomes a protracted exercise in patience. Operant conditioning exercise programs can help your hawk lose the weight.



34. In buteos, parabuteos, and accipiters moulting of the primary wing feathers . . .

- starts with the innermost primary and proceeds in sequence to the outermost primary.
- starts with outermost primary and proceeds inwards to the last one.
- starts with primary #4 and proceeds in both directions.
- proceeds in an irregular fashion but is the same sequence on each wing.

Answer a. Confusion on this question comes from the two different numbering systems used to identify the ten primary feathers. The ornithological numbering system starts closest to the body with #1 and counts out to the wingtip, ending with #10. Falconers do just the opposite, starting with the wingtip with #1 and counting toward the body. Using the ornithological system, buteos, parabuteos, and accipiters drop the ten flight feathers in a 1-10 sequence; using the falconry numbering system, the sequence is 10-1. Regardless of how the feathers are numbered, the innermost feather is the first to drop for the buteos, parabuteos, and accipiters. Not so with the longwings, who begin with feather #7 (falconry numbering system now) and finish #8, #9, and #10, before dropping #6 through #1. All species of longwings, hawks and accipiters finish the moult with the leading edge primary last. The tail feather moult differs also, but only slightly. For accipiters and buteos, the tail moult starts with the deck feathers and works its way out. With the falcons, the tail moult starts the same and goes outward, except the next to outer and outer feathers are sometimes dropped in reverse. ***All this seems dreadfully obscure and esoteric, right up until you want to know if your hawk's moult is complete.***

35. True or false. Falconry raptors moult in the same sequence as wild raptors, but less predictably.

True. Wild hawks normally moult their primary feathers in a predictable order and at a regular rate. Wild raptors consistently drop primary feathers symmetrically. The feather next to moult is preened out or falls out from one wing, followed in one to three days by the same feather on the other wing. In this fashion, the wings remain balanced and symmetrical. In a week or two, the next pair drops, one from each wing. Falconry raptors do not always moult at such an even rate. In extreme cases, especially when hawks are kept at flying weight until late in the spring, the moult can begin in a hurry. It is almost as if the “glue came loose,” and many feathers are dropped simultaneously. Since the new feathers growing have less support than usual from adjoining feathers, they are even more vulnerable to breakage. YOU may retain moulted feathers or give them to another falconer for later imping. It is illegal to give them away to friends and/or acquaintances for any other reason. 50 CFR 21.29(j)(5)

36. The best reason not to fly hawks during the moult is because . . .

- a. a hawk may injure itself by flying without all its feathers.
- b. a hawk may break a blood feather and bleed to death.
- c. it is too hard to see quarry when the leaves are on the trees.
- d. feather growth is energy-demanding and hawks must be fed more than flying weight allows.

Answer d. To keep their health and assure feather growth hawks must be kept too fat for control during free flight. Falconers do worry about breaking soft blood feathers which might not moult out for another year. Another reason for anxiety is the ease of losing a hawk in the summer foliage. Finally, many hawks simply don't fly as well or lose weight as quickly in warm weather.

37. True or false. During the moult, red-tails revert to the wild state.

False. More like becoming “unmanned.” This results when the falconer has little interaction with the hawk except at feeding time and then only because the falconer brings food to the mews and tosses it into the mess on the floor. Without constant interaction with their falconers, passage and eyass raptors revert to a wild state. If human interaction is maintained during the moult, the hawk can be **reclaimed** fairly quickly by manning again. Continue daily interaction of weighing and putting them out to **weather**, cleaning their mews, oiling their jesses, and carrying them on the fist a while.

38. True or false. Waiting-on flights should be made when soaring conditions are optimal.

False. **Soaring** is linked to weather and can take place only under certain conditions. Many longwings are lost through soaring and almost all such losses are preventable. A soaring longwing tends to ignore quarry and this is what makes a soar so dangerous. Avoid flying during high-wind conditions. Deliberately soar-hawking your red-tail should wait until you are sure you have good consistent control over the hawk. The experience of beating underbrush at the foot of a ridge while your red-tail is hanging on the wind waiting-on you to flush quarry is the high point of hunting with a redtail.



39. A good reason to stop flying your hawk before the vernal equinox (March 21) is the . . .

- a. frequency of soaring weather.
- b. resurgence of latent migration urges.
- c. end of cottontail hunting season.
- d. all of the above.

Answer d. Spring is a dangerous season to fly any hawk. Leaves reappear on the trees, interfering with line of sight. The moult begins in March (but will be delayed if the falconer keeps his hawk **sharp-set**). Hormonal changes urge the hawk to migrate and the whole atmosphere turns over. The warmer lower air bursts upward, expanding and accelerating as it goes and carrying your hawk with it. A poorly trained passage hawk caught in this updraft may not return. [12] In California, cottontail hunting season ends the third Sunday in March. Beside the legal considerations, female cottontails are carrying next season's quarry. Resident nesting and breeding raptors will become surprisingly aggressive if you wander into their hunting territory.

40. Apprentice falconers are most likely to lose their red-tailed hawks from . . .

- a. incompetence.
- b. overconfidence.
- c. confiscation by a game warden for hunting out of season.
- d. being run off its quarry by a golden eagle.

Answer b. The apprentice's worst enemy is becoming overconfident. However, hawks have been lost to the other three factors. The most common explanation begins "Well, I knew the weight was a little high . . ." Generally, sponsors insure that the apprentice is competent and the apprentice test and mews inspection guarantees a minimum level of competency. Having your hawk confiscated by a game warden is inexcusable. The most common reason for confiscation is hunting quarry out of season (the falconer sent the hawk after illegal quarry, or the falconer collected the illegal quarry after the hawk took the quarry ON ITS OWN). In this latter case, the falconer should have removed the hawk from the prey as soon as practical and abandoned the carcass in the field. This is known as the "let it lie" rule (CFR 670(b)). Note: other states with "let-it-lie" laws have different and more restrictive requirements. Golden eagles have bullied red-tails off prey and run them out of sight, and have been known to kill and eat the red-tail.



41. True or false. Hawks that are lost follow their instincts.

True. The bulk of "training" that goes on in falconry is the human learning to work within the hawk's natural inclinations. Hawks don't get "lost;" they know exactly where they are. Unfortunately, the falconer loses track of the hawk. Most hawks are lost because they are hunting and either pursue quarry out of sight or they strike and bind and are on the ground out of sight of the falconer, or have carried the quarry out of sight.

42. True or false. After being truly lost most hawks stay in the area where they were lost for a while.

True. Unless driven off by resident raptors, many lost hawks will stay in the general area for a while. As they revert, they have less and less reason to stay unless it is good hunting territory. During the first week the falconer has the best chance of recovery. The editor's eyass red-tail returned to his garnished fist eight long, long, days after loss, but less than two air miles from the loss site. This is why you change to slitless jesses prior to hunting. Some falconers believe that lost hawks will pick the jesses off and rationalize not changing to field jesses. Unfortunately, hawks are not that bright. Hawks used in falconry for extended periods or eyasses become so accustomed to the jesses they accept the jesses as part of their leg and have no reason to pick the jess off. To think otherwise is to read human emotion and motivation (the desire to pull off the jesses) into a hawk's actions.

43. After losing their red-tail, the apprentice should . . .

- a. go home, have a good cry, and give up falconry.
- b. go home and start planning how to get a replacement hawk.
- c. tell no one. They'll think you a fool. Return to the loss site the next day and attempt to call the hawk in with tid-bits, the lure and a live, tethered pigeon.
- d. go home, report to the sponsor, call the local wildlife rehabilitation people, the local animal control, and local law enforcement to report the loss of the hawk. Following that, post rewards for information leading to the recovery of the hawk. Every day or twice a day for two weeks, visit the loss site, attempting to call the hawk in with tid-bits, the lure and a live, tethered pigeon.

Answer d. While answer "a" will cross your mind, don't be a putz; you've invested too much time, money and emotion to quit now. Answer "b" will tempt you; however there is a hawk wondering why you aren't there to take it home. While all passagers and most well-trained eyasses will revert to the wild, they have lost their distrust and fear of humans and are, for the first two weeks or so, extremely vulnerable. Then answer "c" looks good, but if this is all you do, other falconers will be absolutely sure you are a fool. Besides, you are responsible to keep your sponsor informed. And after the prescribed waiting time, you are required to file Form 3-186A with Fish & Wildlife. No one will think you are a fool for attempting to recover your hawk. Red-tails rarely "drift" very far from the spot you lost them. The more eyes on the lookout the better. Several red-tails (including the editor's) have been recovered through local rehabilitation services that received a phone call from someone saying "There's a big bird on my fence and it has strings on its feet." Remember, there are only two kinds of falconers: those who have lost a hawk, and those who haven't—yet.

44. After recovering the lost hawk, the falconer should . . .

- a. hydrate the hawk immediately.
- b. weigh the hawk.
- c. take the hawk for a thorough physical examination.
- d. analyze, in detail, what led up to the loss, and what led to the successful recovery.
- e. all of the above.

Answer e. Dehydration is common in recovered hawks. Weighing the hawk will indicate its general condition, and if it's been eating well (remember, it may still be carrying a casting when **taken-up**.) If it is an eyass and this was its first taste of freedom, the hawk may be in poor condition. A lot depends on its early training by the falconer and its success in hunting. If the hawk returns in good health, knowing its natural flying weight is helpful. A thorough physical exam by a veterinarian is recommended, as a blood test can give an early warning of diseases it picked up from eating infected quarry. After going through the emotions of recovery, the falconer should analyze the specifics of what led up to the loss and recovery of the hawk. If the recovery was made through information from a third party, the falconer is obligated to reward the individuals providing the information.

Editor's Note: You have an ethical obligation to do everything within your power to recover a lost hawk. No one recruited you into falconry or said that there would not be moments of profound loss and difficulty. But you did take that hawk out of the wild and trained it for falconry. Unless you deliberately release that hawk back to the wild you are responsible for recovering it.

SECTION 3.2 HUNTING, GAME AND QUARRY

1. You **enter** your hawk . . .
 - a. when it is unfamiliar with the surrounding landscape.
 - b. when it is unfamiliar with a particular quarry.
 - c. before registering at a falconry meet.
 - d. before transporting it in an unfamiliar container.

Answer b. To **enter** is to set up an opportunity whereby a hawk has an easy chance to chase and hopefully catch a kind of quarry new to it.

2. True or false. At certain points during the training process of hawks, it is necessary and beneficial to use trussed-up or otherwise handicapped or incapacitated poultry, game birds, or rabbits as **bagged game** or **baggies** (also known in older literature as **trains** or **trainees**) as recommended by books of classic falconry.

False. One of the great misconceptions apprentices have after reading the classic works on falconry is that these barbaric practices are necessary to make a hunting hawk. They aren't. Modern falconers have proved conclusively these procedures are as unnecessary as they are unpleasant. [12] Your sponsor will advise you on the "how-to" of **entering** your hawk. Neither of the editor's first two apprentices used a **bagged quarry** and they did just fine.

3. True or false. The scream of an eyass hawk or the jingle of the hawk's bells frighten quarry from the field and forest.

False. There is no evidence that prey hunted by hawks of any kind associate the sounds made by the hawk with the hawk itself. To a duck or pheasant or rabbit, the cries of a goshawk, Harris' or red-tail appear to be no more disturbing than the sound of a passing aircraft. [12] By the time the quarry takes notice of the bells it's usually too late. The editor has noticed that if a quarry escapes, it learns from the experience and will be more wary the next time you're in the same field with the hawk.

4. True or false. It is safe to allow your red-tail to kill all the prey it attacks.

False. Opportunistic hunters that they are, red-tails will strike at squirrels and rattlesnakes. Squirrels have jaws and teeth that can bite a red-tail's toe and talon completely off and they are tough enough to get their head around inside gripping talons. The falconer should dispatch or release captured squirrels as quickly as possible. Talons broken off "below the quick" will grow back, but a toe bitten off in the fleshy part of the foot will not regrow and the hawk will be crippled for life. Red-tails seem to know how to kill snakes instinctively, teasing the snake with the wing-tips and grabbing them by the head when the snake strikes. (There is a superb segment of this in National Geographic's WOLVES OF THE AIR video about Harris' hawks [11c]) However, a red-tail may discover it is **bound** to a rattler too big to handle by itself. The falconer's range of options are limited. Anecdotal evidence indicates that hawks have a fifty-fifty chance of survival if bitten. When faced with exactly this situation, the editor used his hunting stick to hold the snake's head long enough for the hawk to abandon the prey. If you hunt in rattler country, invest in a good hunting stick and shin guards or rattlesnake-proof chaps.

5. True or false. When striking, a hawk's head, body and feet are going different speeds.

True. Just before contact, at the moment of commitment to the strike, accipiters and buteos swing the body upward, bring the pelvis forward, extend their legs, open the talons, and spread the tail to brake. At the actual instant of strike the feet are effectively thrown forward at nearly twice the speed of the head. Goshawks have been measured to have foot strike speeds of nearly fifty miles per hour. [2] and [18]

6. True or false. Your red-tail strikes and binds to a cottontail in early April in California. You must remove the hawk from the prey and abandon the carcass.

True. For the last several years the California falconry hunting season on brush, cottontail, and pygmy rabbits and on varying (snowshoe) hare has closed the third Sunday in March. Therefore, your red-tail has taken a prohibited species. You must remove the hawk from the cottontail as soon as possible and abandon the carcass. This is the "let-it-lie" rule (CFR 670(b)).

7. You are **reclaiming** and **conditioning** your intermewed red-tail by having her **follow-on**, as you have just **taken her up** from the moult and you feel she is not in good enough condition to really hunt. Her weight is high, and you are flying the extra ounces off her. You have a live-lure with you "just in case." A game warden approaches and asks to see your falconry and hunting licenses. You . . .

- a. require the game warden to show you a search warrant.
- b. explain that since you really aren't hunting, you didn't need to renew the hunting license yet.
- c. show the licenses to him.
- d. none of the above.

Answer c. Your licenses are the difference between falconry and felony. Federal law requires you to show your falconry license and California law requires you to show your hunting license. (FWS § 13.44) (CFR 670) While you may not be hunting, your hawk will not pass up an easy strike. At that point you will be hunting. Further, if you need to use the live-lure to retrieve her, you will be serving quarry to a raptor, and that may be regarded as hunting. Keep both licenses up to date and carry them with you in the field. That's a lot easier than explaining to a game warden why you didn't. Some falconers, including the editor, carry a reduced laminated copy of their falconry license clipped to their hunting vest. Answer "a" is incorrect and stupid. Editor's advice: avoid snappy repartee with game wardens, sheriffs, highway patrolmen, anyone wearing a uniform or carrying a gun. Save your smart remarks until the falconry meet.

8. True or false. Your hawk chases a cock pheasant for several hundred yards and it **puts it in** to cover. The hawk then perches above the cover. If you flush the pheasant again, the hawk is likely to take him in the air.

True. Adult pheasants are seldom taken on their first rise and usually pull away from a goshawk, Harris' hawk or red-tail. A Harris' or goshawk will usually begin gaining on the pheasant if the hawk persists. If the pheasant **puts in** again, make every effort to flush the pheasant into the air. A pheasant can be flown once and win; twice, and it loses nearly every time. A Harris' hawk will learn this lesson very quickly.

9. A longwing at high altitude is more likely to take a . . .

- a. mallard duck who breaks from the flock in a steep climb over land.
- b. mallard duck who breaks from the flock and drops low over a lake.
- c. cock pheasant who remains on the ground and offers to fight.
- d. homing pigeon flying in a small tight flock.

Answer a. There are no hard and fast rules about which individual quarry species a raptor will take; however, longwings tend to attack individuals who break from the flock making "a" the most likely choice. Answer "b" is incorrect, even though the duck broke from the flock, longwings are reluctant to take waterfowl over large bodies of water. Answer "c" is wrong because aggressive behavior by quarry will often discourage the predator. Answer "d" is wrong because it is more difficult than is commonly thought for a longwing to take a pigeon. It is even more difficult when an individual pigeon is flying in a flock. Few wild hawks can take a full flighted pigeon under normal circumstances. A good homing pigeon will not out speed, but can dodge the best longwing. Pigeons and doves, as well as shore birds and lapwings, will deliberately take to the air ahead of a low level attack by a longwing and contest mastery of the air with the raptor.

10. True or false. A speeding duck is as loathe to fly into trees or brush as a longwing.

True. Trees and cover do not have much effect on waterfowl flights. As a rule, ducks never attempt to enter cover or hide unless hit or forced out of the air by a near miss. Once down and trying to hide, ducks are good at it and are very difficult to find. [12]

11. True or false. Most waterfowls are more difficult for a hawk to take than are upland game birds such as pheasants, partridge, and grouse.

True. Waterfowls, except coots, are more difficult than upland game birds. In level flight, they are nearly as swift as the fastest hawk or longwing for a short distance and most species can maintain high speed for a much longer distance than a peregrine. Ducks can climb faster than any longwing with the exception of the gyrfalcon and they are surprisingly good at aerial evasion. [12]

12. True or false. The swiftest short-winged hawks rarely catch waterfowl in a tail chase.

True. Waterfowl, except for coots, can outdistance even a goshawk once they really get underway; instead, they must be taken on the rise. Of waterfowls, teals are the most difficult.

13. True or false. Falconers can hunt ducks any time and any place.

False. General hunting restrictions such as hunting license, seasons, hours, federal requirements for purchasing migratory bird stamps, and closed areas such as state and county parks, apply. While red-tails are normally oriented toward ground quarry and kestrels are too small for ducks, apprentices can hunt waterfowl within the limits of those regulatory requirements.

14. The live-lure should . . .

- a. never be used.
- b. be used only in an emergency.
- c. be used whenever the raptor fails to take quarry.
- d. be used when no wild quarry can be produced.

Answer b. The purpose of a live-lure is to get the hawk out of a dangerous situation or to retrieve a hawk that is almost certain to become lost (e.g., a wild-caught hawk or longwing gets out of control and ignores a dead lure). It should be used only in emergencies. Answer "c" is incorrect. Repeated or careless use destroys its effectiveness and continued use will absolutely ruin a hawk. Answer "d" is incorrect. If a falconer cannot provide a natural hunting environment for their hawk(s) or does not "have the time" to hunt in a natural setting, then the falconer should release or transfer their hawks until conditions improve. Repeated use of live lures or bagged quarry is a sign of a bad falconer.

15. A falconer should never allow his hawk to kill a live-lure because it . . .

- a. is unethical.
- b. reflects poorly on the sport of falconry.
- c. can ruin a hunting hawk.
- d. all of the above.

Answer d. As the hawk returns at the sight of a live-lure, the live-lure should be replaced in the lure-bag and a dead lure produced. Allowing a trained hawk to kill a live pigeon tied to a string and held by the falconer is unethical and unsportsmanlike. In most states it is illegal. Misuse of live lures will bring the severe and justifiable criticism of animal welfare groups, sportsmen, and others as well as potential criminal charges. It is also not a good lesson to instill in a trained hunting hawk. Hawks like to take their quarry by those methods that are quick and certain. They tend to repeat things that work. Why should a hawk chase a free-flying quarry half a mile when there may be an easy quarry (the hawk will perceive the live-lure as a cripple) presented by the falconer? Escape of quarry is natural and frequent. Escape of the live-lure will not prevent an immediate and powerful reaction to the sight of it the next time, provided it is not used regularly—and it shouldn't be! [12]

16. In reacting to the sight of an attacking raptor, domestic pigeons are likely to . . .

- a. seek cover of trees, lofts and buildings whether the raptor is an accipiter or a longwing.
- b. seek cover if the attacking raptor is a longwing, but **sky up** if it is an accipiter.
- c. **sky-up** whether the attacker is an accipiter or a longwing.
- d. ignore the approach of either genus until it is too late.

Answer b. Domestic pigeons and waterfowl show very quick specific reactions to an attacking raptor (though they do not generally react to raptors at rest). Pigeons will seek immediate cover from longwings and try to evade accipiters by taking to the air. The waterfowl will make for water at the approach of any of the larger accipiters and larger longwings but all will take to the air ahead of an eagle. The editor monitors a wild Cooper's hawk in his suburban neighborhood through the actions of the neighborhood pigeons. About half the time when the entire flock suddenly **skies-up**, the last bird in the flight is the Cooper's.

17. True or false. Most feral or domestic pigeons fly faster than any kind of upland or migratory game bird.

True. Only small shore birds and snipe exceed the flying ability of pigeons, especially those that are wild or half-wild. They can fly with equal endurance and as fast as any species of waterfowl, and dodge in the air better than any bird their size and weight except curlews. Wild longwings do take them but this usually occurs only when the flight path of the homing pigeon takes it down a canyon or along a mountain side where the longwing is at rest, or when the longwing is soaring high above and performs a sneak attack. [12]

18. True or false. Ground quarry taken by your red-tail is safe for human consumption.

True. Wild quarry can be eaten safely provided it is handled and cooked properly. Proper cooking will eliminate worry about diseases, which are relatively rare in any case. Contracting tularemia from rabbits is a possibility, but it comes from handling infected animals, not eating the cooked meat. (Careful hand washing after cleaning quarry is a wise precaution.) Whether for eventual use by humans or hawks, it is important to clean and cool quarry as soon as possible. Protect all captured quarry from fly or ant infestation, even if you cannot cool it immediately. [3]

19. True or False. Female red-tailed hawks are too big and clumsy to hunt squirrels in trees.

False. Red-tails of both sexes have proven themselves to be capable, agile hunters of tree squirrels. Falconers in the forests of the southeast United States where **slips** on rabbit are hard to find, hunt tree squirrels. [1b]

20. True or false. Red-tails can never be hunted in a cast.

False. Experience has shown that red-tails accustomed to each other's presence can be safely hunted in a cast. There is no evidence that red-tails hunt socially in a pack as will Harris' hawks. Falconers that have hunted red-tails in a cast report the impression that each bird is hunting the same quarry individually rather than cooperatively with some post-capture **crabbing**. Red-tails that are kept by the same falconer and have constant visual contact with each other are reported to work the best together and do little, if any at all, crabbing.

21. You hunt cottontails with a male red-tail. They are . . .

- a. easy quarry for male red-tails to catch.
- b. easy quarry for male red-tails to kill.
- c. difficult for a male red-tail to catch.
- d. "b" and "c".

Answer d. Cottontails are generally creatures of the underbrush. As such they can put in to cover quickly, giving a red-tailed hawk a minimum of time to strike. As red-tails tend to strike from a high perch, your job as falconer is to flush the cottontail into movement. Male red-tails will crash into underbrush after them. Once caught, however, the red-tail dispatches the cottontail by compression of the talons. Most falconers prefer to dispatch the quarry quickly themselves. Some falconers theorize that female red-tails will more readily crash into undergrowth than males. May be true, but the editor has not seen the difference.

22. Your passage female red-tail takes a squirrel on her first free flight after capture. You . . .

- a. make in quickly, dispatch the quarry and take it away from her.
- b. make in deliberately, identify and dispatch the quarry, let her have it and clip a leash on.
- c. do nothing as you know you are supposed to let her gorge on the first ten kills, at least. When she is completely stuffed, pick her up.
- d. make in slowly, crawl if you have to and clip a leash on a jess; when she has a full crop, pick up her, collect the quarry and go home.

Answer b. Squirrels are dangerous quarry. While not particularly difficult to catch, they are armed with extremely strong jaws and hard teeth. Additionally, they have the strength to work their head around inside the strongest red-tail's grasp and bite a toe completely off, crippling her for life. **Making in** quickly may frighten her into carrying the live squirrel out of your reach. Taking the quarry away from her entirely may ruin the start of a good relationship. Under many circumstances, answer "d" would be correct. But if you hunt where there are squirrels, you must remove the possibility of her having a toe bitten off. Some falconers carry an ice pick as the ideal tool or awl to dispatch the quarry and avoid cutting the hawk's toes.

23. True or false. Jacks are easy prey for male red-tails to catch and kill.

False. Jack rabbits will rarely put in to cover, seeming to prefer to try to out run a pursuing hawk. They are adept at dodging, often swerving at the last moment as the red-tail commits to the strike. Even if the hawk catches a running jack, he still has to stop and subdue it. The result can be massive plumage breakage (the editor's personal experience). The falconer needs to be on hand quickly as it will take a long time for a two-pound hawk to dispatch a six-pound jack.

24. Your kestrel has captured a starling feeding at the edge of a woodlot and is struggling to gain control of it. You should . . .

- a. stand at a distance and allow the kestrel room to work.
- b. call your friends on your cell phone to brag.
- c. make-in as soon as possible to assist her.
- d. stand nearby, ready to transfer her to the lure.

Answer c. You should make-in as soon as possible to a kestrel which is struggling with a large quarry on the ground. This struggle will attract every predator within earshot (especially when near cover) putting your kestrel at grave risk. Your presence will not only deter most predators, but will teach the kestrel that she can expect immediate assistance with a difficult quarry. Kestrels which have learned this lesson will frequently hold live starlings at "arms' length," awaiting the falconer's assistance rather than attempting to control the bird alone. (11b)

25. True or false. Starlings are easily caught by a kestrel if she is waiting-on over them.

False. Starlings (*Sturnus vulgaris*) are extremely difficult to catch by any falcon from the traditional waiting-on flight. Not only are starlings very fast on the wing they will rarely allow themselves to be pinned to open ground beneath a flying falcon. Furthermore, trained American kestrels rarely take a commanding pitch and have relatively little speed in stoop. However, kestrels are quite capable of catching starlings if these birds are placed at some disadvantage. If feeding or bathing in the open, they may be readily caught by a kestrel which has been slipped from a vehicle. Also, roosting starlings may be caught in flights from the fist where these birds congregate in buildings, trees and under awnings. Either method makes starling hawking a viable pursuit for a trained kestrel. (11b)

26. True or false. House sparrows are extremely difficult for American kestrels to catch.

False. American kestrels are ideally suited to hawking house sparrows (*Passer domesticus*) by any means available. Sparrows may be pursued successfully from the fist, from a rooftop perch, from a modest perch or while roosting in cover. A fit passage kestrel needs little encouragement or special entering to chase house sparrows, and can catch them with relative ease under most conditions. In fact, a kestrel which shows no interest in house sparrows is almost certainly ill, or too fat to be flown safely. (11b)

27. True or false. Only female kestrels are suitable for hunting avian quarry.

False. Both male and female American kestrels are fully capable of hawking starlings and house sparrows with regular success. Only where grackles (family *Icteridae*) are legal quarry will the slightly larger size of the female prove advantageous. (11b)

28. True or false. The weight of a trained kestrel flown at birds should not fluctuate more than two to three grams during a given season.

True. The weight at which a kestrel will respond immediately to the lure and consistently catch birds should vary little in the course of a season. Kestrels have very narrow combat weight "windows," and will perform consistently when flown within two grams of optimal weight. Ideally, the kestrel should be flown every day at exactly the same weight, given that the bird remains healthy, energetic, responsive, and able to process food normally without incurring sour crop. (11b)

29. Your male red-tail attacks and takes a great blue heron on one of its first hunting flights. You . . .

- a. Let them fight it out. May the best bird win.
- b. Leap with joy. This is what falconry is all about.
- c. Make in. Dispatch the heron and feed your bird a good crop but do not allow it to gorge. Collect the rest of the carcass and take it home for later feedings.
- d. Make in and control the heron. If your bird has inflicted damage put the heron down, let your bird break it open and eat, leaving the carcass in the field when the hawk is full but not gorged. If the heron is not obviously injured, try to get it free of your bird's clutches, release it and resume hunting.

Answer d. If you hadn't figured it out already, this is a question of ethics and the law. First, the great blue heron is a protected species and therefore, illegal quarry. Second, the great blue has a six inch long beak and will try to stab you and your bird in its desperation to escape. You owe it to your bird to control this dangerous quarry. If your hawk has injured the heron, your remaining choices are few. You must put the heron down or risk serious injury to your hawk or to yourself. Once dispatched, your bird can be allowed to plume and



consume, but you cannot “collect” the carcass—the “let-it-lay” law. If the heron is not obviously injured, you are in murky legal and ethical considerations. Legally, once the quarry is “reduced to a possession” in the talons of your hawk you cannot willfully release it back to the wild. Ethically, you must deal with the fact that the great blue heron is a noble creature fully deserving of continuing the life it was leading before you came along. If you dispatch it, you are following the law. If it is unharmed and you release it you are acting ethically—at least as far as the editor is concerned. Not to mention how much easier it is to explain to casual passer-bys and game wardens why you released an uninjured animal rather than as to why you killed it. As far as resuming hunting, quarry gets away all the time. Your bird won’t mind resuming after a few minutes. This question may seem contrived but it is not. These episodes happen when you hunt. The most difficult part is that you will only have a few racing heartbeats to decide what to do. The life of your bird depends on your actions. Welcome to falconry! While these episodes make great campfire stories, avoid documenting them in print.

29. Match the hawk to the “normal” falconry quarry.

<u>Hawk</u>	<u>Quarry</u>
gyrfalcon	<i>starlings</i>
peregrine	<i>voles</i>
prairie falcon	<i>jack rabbits</i>
merlin	<i>cottontail</i>
kestrel	<i>waterfowl</i>
	<i>desert birds</i>
goshawk	<i>squirrels</i>
Cooper’s hawk	<i>ptarmigan</i>
sharp-shinned hawk	<i>insects</i>
red-tailed hawk	<i>English sparrows</i>
ferruginous hawk	<i>pheasant</i>
Harris’ hawk	<i>grouse</i>
	<i>quail</i>

<u>Answers:</u>	<u>Answers:</u>
gyrfalcon	ptarmigan, pheasant, waterfowl, grouse
peregrine	waterfowl, pheasant, grouse
prairie falcon	waterfowl, grouse, pheasant, quail
merlin	starlings, English sparrows
kestrel	English sparrows, starlings, voles, insects
goshawk	pheasant, waterfowl, grouse
	cottontail, jack rabbits
Cooper’s hawk	sparrows, starlings, cottontail, quail
sharp-shinned hawk	sparrows, starlings
red-tailed hawk	cottontail, jack rabbits, pheasant
ferruginous hawk	jack rabbits, cottontail
Harris’ hawk	cottontail, jack rabbits, pheasant, quail

OTHER STATES’ LAWS: When it comes to what is legal quarry and what is not, seasons, hours, “let-it-lie” rules (if any), licensing requirements and the like, you must be familiar with your own state’s laws. While this may seem blindingly obvious, feedback from individuals taking the test in other states beside California indicate some surprise that their state did not accept the California answers.

31. Your sponsor is out of town and a close falconer friend of his offers to take you and your kestrel car-hawking. You . . .

- a. accept his kind offer. Go and have a good time.
- b. go, but drive while he releases his Harris' hawk from the moving car against ducks sitting in a pond.
- c. decline, as you aren't sure if this is legal.
- d. decline and tell him you are pretty sure that taking quarry from a moving vehicle is against the law.

Answer d. Fish and Game regulations concerning hunting with falcons come directly from the gun-hunting regulations. A close study of the regulations will show that taking quarry from a moving vehicle is against the law. Your sponsor's friend has put you in a very difficult position. The chance that he is unaware of the legalities is unlikely, but possible. Be diplomatic but firm in declining this and any other offers you are not crystal clear on the legalities of.

SECTION 3.3 TERMS AND PHRASES

1. The medieval falconer was most likely to **enseam** his hawk . . .

- a. when it was **hood-shy**.
- b. immediately after capturing the hawk.
- c. when the hawk was too fat.
- d. when the hawk was **sharp-set**.

Answer c. **Enseam** means to prepare a hawk for flying by eliminating her reserves of fat. Today it sometimes refers to the feeding of washed meat to lower the hawk's condition. The medieval term referred to certain purges (e.g., **rangle**—small stones) given to a hawk to rid it of excess fat and mucus, thus making it more eager to fly. Undigested grease and fats accumulate in the crop. As the small stones are worked around in the crop, they become coated in the grease and fats. When cast up, the stones remove the fat. Don't confuse this with the fat that is the hawk's internal energy reserve. Follow your sponsor's advice on using rangle. **Hood-shy** refers to hawks that are reluctant to be hooded. **Sharp-set** means hungry, keen, and ready to hunt.

2. A hawk is most likely to **put over** its crop . . .

- a. when entering a **stoop**.
- b. while being **entered** on new quarry.
- c. just before eating.
- d. just after eating.

Answer d. To **put over** a crop is the action of a raptor when it, through movements of the neck and shoulders, forces food from the crop into the stomach. A crop has been **put away** when all the food in the crop has been moved into the stomach. [12] Entering is introducing the hawk to a new type of quarry. A stoop is the attack dive at quarry or to the lure.

3. A hawk is most likely to **feak** just . . .

- a. before making a kill.
- b. after taking a bath.
- c. after a meal.
- d. before **breaking in**.

Answer c. To **feak** is the stropping action of a raptor wiping the beak clean against the perch or on the glove after feeding. [12] **Breaking in** is the act of tearing through the quarry's skin.

4. True or false. The term **austringer** refers to one who normally flies passage longwings rather than eyasses.

False. **Austringer**, a term from classical falconry, strictly means one who keeps and hunts with the accipiters. From the Latin *astur*, the generic name for the goshawk (now included in scientific literature with the *accipiters*). [12] Sometimes used in modern terms for an individual who works with shortwings, the accipiters, and/or broadwings, the buteos.

5. True or false. **Seeling** is a practice not commonly used by North American falconers.

True. **Seeling** is a practice used in the Middle East and in medieval falconry, of closing the eyes of a freshly captured hawk by means of a fine thread sewn through the lower eyelid in a single stitch, then tied. This was part of the manning process to get the hawk accustomed to being hooded and making the hood fit properly. Once the hood was fitted perfectly and the hawk was accustomed to the feel of the hood, the seeling thread would be slackened a bit at a time as the hawk became progressively manned. The hawk's eyes are, of course, protected by the nictitating membrane.

6. True or false. An example of a **slip** is when you flush quail for your shortwing.

True. **Slip** is a falconry term with three closely related meanings. A **slip** is a chance at quarry. The flushed quail is a **slip**. A **slip** is the flight of the shortwing after the quail. To **slip** is the release of the shortwing after the quail.

7. Your hawk is most likely to **throw-up** . . .

- a. following a meal of rancid meat.
- b. following a stoop, particularly after quarry takes cover.
- c. while sitting on a perch.
- d. while taking a bath.

Answer b. In the falconer's vernacular **throw up** means to rise steeply on outstretched wings, particularly after a stoop as the hawk converts the kinetic energy of their dive into potential energy of altitude and the possibility of another strike from the altitude. The phrase **cast gorge** is used to describe the act of vomiting up the contents of stomach or crop.

8. True or false. It is desirable that your hawk **crab** after striking a quarry.

False. **Crabbing** is a clash or fight between hawks flying in a cast. Sometimes it happens in the air, sometimes on the ground over quarry.

9. The word **strike** used by a falconer means . . .

- a. the instant of contact between a hunting raptor and either quarry or lure.
- b. loosening the hood.
- c. both "a" and "b".
- d. neither "a" nor "b".

Answer c. **Strike** describes the moment of impact and also the act of loosening the braces of a hood without removing it. [12]

10. True or false. The phrase **rake away** means to abandon the flight and careen away.

True. **Rake away** is used to describe a flight at prey or to the falconer that is abandoned. The hawk flies too wide of the falconer or leaves the falconer altogether. The low flight of the longwing and the slashing strike of a goshawk or Harris' hawk is known as raking.

11. True or false. **Intermewed** describes a medieval practice considered archaic by North American falconers.

False. **Intermewed** simply describes a hawk that has been kept a full year. Literally it means "interval in the mews," referring to the summer period of inactivity in the mews while a hawk moults. Hence an **intermewed** hawk is a hawk that has moulted in captivity. [12]

Operation FALCON

As you progress in your falconry career, you will hear of "Operation FALCON". The spin you are going to get on what happened depends on whether or not the people you are talking to lived through that watershed event in American falconry or became falconers afterwards.

Falconry today with the access to captive breeding is not the falconry of the late 1970's and early 1980's when the official policy of the United States government was that captive-breeding in commercial quantities was absolutely impossible. With that thought in mind, then where were the "captive-bred" birds coming from? The official answer was "the wild" and the birds were being laundered through the breeders and then sold overseas for high profits.

In order to prove this was true, the United States Fish and Wildlife Service hired John Jeffrey McPartlin, an American falconer, in 1982. Mr. McPartlin, on the basis of USFWS Special Permitting, set up a smuggling ring to take birds from the wild and sell them overseas for obscene profits. As United States falconers are a generally law-abiding bunch, Mr. McPartlin did not find that US falconers were going to cooperate; therefore he performed the wild capture himself and laundered them through a Canadian breeding facility.

The Canadian facility was actually taking small numbers of birds from the wild and laundering them to overseas markets, primarily in the Middle East.

Mr. McPartlin did find, however, that there were a number of US falconers that were willing to cut corners on their paperwork, to take birds out of season, and to take adult birds. He then started setting up situations that were 95% perfectly legal and aboveboard and 5% on the shady side. These transactions were then filmed and audio-taped and transcribed for later court evidence. This continued through late 1982, all of 1983, and early 1984.

The United States and Canada were running parallel operations, however the United States knew of the Canadian efforts, but it was not until Mid-May of 1984 that the Canadians were told of the USFWS operation; and then only when Canadian officials told their USFWS counterparts that they were investigating Mr. McPartlin. They were then told that Mr. McPartlin was running a sting under their very noses.

"Takedown" was June 29, 1984. Teams of USFWS, State Game Departments, and the FBI descended upon the United States falconry community and in front of intense media coverage, arrested, handcuffed, and hauled off scores of falconers. Many of the suspects were close friends of Mr. McPartlin who were jailed for the moral equivalent of running a stop sign.

As the months wore on, most of the cases fell to pieces simply because there was insufficient evidence to get grand juries to indict. Most of the few cases that did end up in a courtroom were tossed out due to entrapment. Of course, since the media hoopla had died down only the falconry community was left with its reputation in tatters, intense paranoia and a well-earned distrust of the USFWS and state game departments.

It has been nearly twenty-five years, and the veterans of that period are still reluctant to discuss the Operation. In most cases, attitudes towards officialdom have mellowed.

The falconry community demonized Mr. McPartlin. Mr. McPartlin never understood that though widespread, the falconry community in the United States is quite small and has long memories. While technically legal, Mr. McPartlin did focus on those falconers that thought of him as a friend. He taped and filmed their minor infractions and then testified against them in court.

Keep this in mind when you call some falconer out of the blue and ask them to be your sponsor.

For a more complete discussion of Operation FALCON, see the 1999 California Hawking Club Journal. Available through the website <http://www.calhawkingclub.org/>

REVIEW QUESTIONS - SECTION 3.0 HUNTING

- T F 1. A broken primary feather should be cut off at the base of the shaft. (Section 2.1, #29)
- T F 2. It is illegal to keep moulted feathers. (Section 3.1, #35)
- T F 3. Apprentices may not hunt waterfowl. (Section 3.2, #13)
- T F 4. The hawk should be allowed to gorge on its first 10 kills. (Section 3.1, #29)
- T F 5. House sparrows are good quarry for kestrels. (Section 3.2, #26)
- T F 6. A falconer prefers his hawk to be sharp-set before he enters the field to hunt. (Section 3.1, #5)
- T F 7. If a toe is bitten off by a squirrel, it will probably not grow back. (Section 3.2 #22)
8. The training of a hawk is done by . . .
- rewarding with food (for achievement).
 - punishing the bird for bad performance.
 - starving the bird until it performs properly.
 - love, affection, and compassion. (Section 3.1, #6)
9. When hunting ducks, a raptor may be used to do so . . .
- only in states that recognize falconry as a legal means for taking ducks.
 - during duck season with a proper license, just like other sportsmen and hunters.
 - after obtaining a duck stamp.
 - all of the above. (Section 3.2, #13)
10. You hunt cottontails with a male red-tail. They are . . .
- easy quarry for male red-tails to catch.
 - easy quarry for male red-tails to kill.
 - difficult for a male red-tail to catch.
 - "b" and "c". (Section 3.2, #21).
11. A falconer should never allow his hawk to kill a live-lure because it . . .
- is unethical.
 - reflects poorly on the sport of falconry.
 - can ruin a hunting hawk.
 - all of the above. (Section 3.2, #15).
12. A good reason to stop flying your hawk before the vernal equinox (March 21) is the . . .
- frequency of soaring weather.
 - resurgence of latent migration urges.
 - end of cottontail hunting season.
 - all of the above. (Section 3.1, #36).

SECTION 4.0 REGULATIONS, LAWS, AND ADMINISTRATION

NOTE: Falconry laws and regulations, like all hunting and/or live animal rules and policies, exist in a state of constant change. The questions and answers below represent the best information at the time of writing (Spring 2010). “CFR” stands for the California Falconry Regulations 670, “Practice of Falconry” and Section 678, “Captive Raptor Breeding,” and are shown as “CFR 670” or “CFR 678.” “FWS 21” refers to the Federal Fish and Wildlife Service Regulation also known as Title 50 - Consolidated Federal Regulations - Section 21: para §21.28, “Falconry permits,” para §21.29, “Federal falconry standards;” and, para §21.30, “Raptor propagation permits,” “FG361a” is the



REQUIREMENTS FOR OBTAINING A FALCONRY LICENSE published by the California Department of Fish and Game. New Federal regulations go into effect January 1, 2010. The states must implement these by January 1, 2014 or falconry will become illegal in the states that have not done so. A work sheet page (-vi-) (In the front of this Study Guide) is set-up for you document your research into your state’s position on these evolving regulations.

1. A falconer wants to breed two of his Harris’ hawks legally possessed under a California falconry license. This is . . .

- a. of no concern or interest to federal/state authorities.
- b. legal, since the hawks are possessed under a falconry permit.
- c. illegal without a federal Raptor Propagation Permit.
- d. a waste of time, since they will not breed in captivity.

Answer c. A falconer may not breed hawks which are legally possessed under a falconry permit alone. The falconer may transfer the hawks to a federal Raptor Propagation Permit to breed them, and may continue to use them for falconry, but only if designated on both propagation and falconry license. (FWS §21.30(d)(11)) Most captive breeding hawks in this country are kept only for that purpose and are not used for falconry.

2. Assuming an apprentice falconer in California has been licensed for at least two years, what is the youngest age he/she can become a general class falconer?

- a. Sixteen years.
- b. Eighteen years.
- c. Twenty years.
- d. Twenty-one years.

Answer b. (FWS §21.29(e)(I))

3. In California which class of falconer may legally trap or take an endangered species from the wild?
- a. master falconers with at least twenty years' experience.
 - b. all master falconers.
 - c. both master and general falconers.
 - d. none of the above.

Answer d. No one may take an endangered species from the wild for falconry purposes in California, or any place else for that matter. (FWS §21.29(e)(3)(iii))

4. California falconry regulations state that an apprentice falconer may take from the wild . . .
- a. an eyass red-shouldered hawk.
 - b. a kestrel.
 - c. passage red-tailed hawk.
 - d. "b" or "c," but not "a".

Answer d. Only passage red-tails and kestrels (both passage and haggard—never an eyass) may be taken by apprentice falconers in California, and only during the authorized trapping season. (FWS §21.29(e)(1)(iv)), (FWS §21.29(I)(4)) and (CFR 670(c)(2)(D)).

5. To be eligible for a California apprentice falconry license, an applicant must be at least . . .
- a. fourteen years old.
 - b. sixteen years old.
 - c. eighteen years old.
 - d. none of the above.

Answer a. An individual can become an apprentice falconer at age fourteen, but cannot be advanced to general until reaching age eighteen. [FWS §21.29(e)(1)(i)] This implies a four-year apprenticeship is possible if the individual becomes a falconer on his or her fourteenth birthday.

6. To be eligible for a California general falconry license, an applicant must be at least . . .
- a. fourteen years old.
 - b. sixteen years old.
 - c. eighteen years old.
 - d. none of the above.

Answer c. An individual can become a general falconer at age eighteen (FWS §21.29(e)(2)(i)) but only if they have at least two years experience in the practice of falconry at the apprentice level or equivalent [FWS §21.29(e)(2)(ii)] and receive the authorization of their sponsor (CFR 670(1)(I)).

7. FWS §21.29(e)(2)(ii) says that an apprentice must have "at least two years experience in the practice of falconry at the apprentice level" to be advanced to general. In California, this means the apprentice. . .
- a. must possess a hawk for a minimum 6 months for each of the two years of apprenticeship.
 - b. can become a general falconer exactly two calendar years to the day their first license was issued.
 - c. can become a general falconer as soon as they have twenty-four months on their falconry license.
 - d. must trap, man, train and hunt with an allowed species of hawk for two seasons.

Answer a. California policy was to count the number of months since license issue, but is now leaning toward only counting the days you hold a hawk. If you kept your license current throughout the two

calendar years since the license was first issued, then answer “b” is not incorrect, just coincidental. If you let your license lapse during that time or do not have a hawk, your calendar stops and does not start again until you renew your license and possess a hawk. Answer “d” is correct for the State of New York, and is the basic rule-of-thumb requirement that most sponsors have. This policy is in a state of flux and may be revised even before it is printed.

8. To be eligible for a California master falconer license, the applicant must . . .

- a. complete five years’ experience as a general falconer.
- b. be at least twenty-three years old.
- c. “a” and “b”.
- d. “a,” but not “b”.

Answer c. The law requires five years’ experience as a general falconer before advancement to master. The law also requires the individual to be eighteen or older for advancement from apprentice to general. Therefore, $18 + 5 = 23$. (FWS §21.29(e)(3)(I))

9. Unlike apprentice falconers, California general and master falconers may take from the wild . . .

- a. gyrfalcons.
- b. peregrines.
- c. Harris’ hawks.
- d. ferruginous hawks.

Answer d. Currently, masters and generals may take the ferruginous hawk from the wild. In addition, master and general falconers may take the goshawk, Cooper’s hawk, sharp-shinned hawk, red-tailed hawk, kestrel, merlin, prairie falcon, and great-horned owl (CFR 670(c)(4)(C)).

10. Federal Form 3-186A is required when . . .

- a. an apprentice falconer loses his passage red-tail.
- b. an apprentice advances to general and transfers his adult red-tail to another apprentice.
- c. an apprentice falconer pulls his/her first passage hawk from the wild.
- d. all of the above.

Answer d. **All** captures, transfers or losses, including thefts and deaths, of birds of prey must be reported on the U.S. Fish & Wildlife Service Form 3-186A, and sent to the regional US Fish & Wildlife Service office. They will provide California Department of Fish and Game a copy for their files. (FWS §21.29 & §21.30)

11. Unlike the apprentice, a general falconer may . . .

- a. capture eyasses.
- b. work with a greater number and variety of raptors.
- c. be a sponsor.
- d. all of the above.

Answer d. (CFR 670(c)(4)(F)) and (FWS §21.29(e)(2)(iii)) These are, in fact, what the apprentice program prepares you to do. Preparation is very different from training or experiencing. As an apprentice, you experience the manning and training of either the red-tail or kestrel. Keeping two raptors in hunting condition is a challenge. After “getting your feet wet” with a single red-tail or kestrel, as a general falconer you may work with two birds at one time, hunt with accipiters and longwings and/or capture and raise eyasses, which are natural progressions in the art of falconry. Being a sponsor implies passing on that hard-won knowledge earned at the hands of your sponsor and the talons of your hawks. Note: some states require the sponsor to be a master falconer.

12. The sponsor must, besides being a general or master falconer . . .

- a. decide if the apprentice is qualified to advance to general.
- b. be accountable for the care and treatment of the apprentice's hawk.
- c. be available to and supportive of the apprentice and his needs.
- d. have unending patience, a sense of humor, and the desire to teach.
- e. all of the above.

Answer e. All are correct and vital—particularly “d.” Although once written into law, sponsor duties are no longer part of the code. Advancement to general falconer means that the sponsor believes the apprentice will be able to work with more than one hawk at a time, develop skills with accipiters and longwings and train and/or capture eyasses. If, as an apprentice, the falconer does not show the subtleties and skills required for these duties, then the sponsor must not allow the apprentice to advance. The sponsor and the hawk are preparing the apprentice to hunt with many different raptors in the future. An ill, poorly skilled red-tail or kestrel (even if perfectly plumaged) is a failure, not only of the apprentice, but the sponsor as well. The apprentice may be a contributing factor, but the failure is that of the sponsor. [13] (FWS §21.29(e)(1)(ii))

13. You have just turned general and want to buy a male Harris' hawk from a captive breeding program. The new eyass is going to cost \$400. An apprentice offers you \$600 for your wild-caught passage male red-tail. You . . .

- a. accept without question as the market rate for male red-tails is only \$300.
- b. negotiate as you think the hawk is worth more.
- c. patiently explain that the buying and selling of wild-caught raptors is illegal.
- d. none of the above.

Answer c. **THE BUYING AND SELLING OF WILD-CAUGHT RAPTORS IS STRICTLY PROHIBITED BY LAW.** (FWS §21.30(d)(5)(I)) and FWS §21.30(d)(5)(ii)) Answers “a” and “b” are incorrect as there is little legal commercial market for captive-bred red-tailed hawks and none at all for kestrels. There are no prohibitions against the captive-breeding of kestrels or red-tailed hawks, which would wear a seamless band, and would therefore be legal to buy or sell. Practically speaking, however, breeders market species of birds that otherwise may not be taken from the wild or are very difficult to take from the wild. One possible result of choosing answer a or b, is for the apprentice to suddenly flash a badge, announce that he/she is a US Fish and Wildlife Service Agent, that you are under arrest and starts reading you your Miranda Rights. It has happened. See the discussion on Operation FALCON before Section 3.3

14. True or false. The California falconry regulations and federal falconry standards prohibit general falconers from possessing more than two raptors on their falconry license.

True. A general falconer may have two hawks with two replacement hawks in a twelve-month period. (FWS §21.29(e)(1)(iii))

15. True or false. In California, you may buy or sell wild raptors for captive breeding purposes.

Absolutely False. (CFR 670) (FWS §21.30) See question #13 above.

16. True or false. The “Lacey Act” pertains to illegal interstate traffic of wildlife.

True. Under the Lacey Act it is a violation of federal law to import, export, transport, sell, receive, acquire, or purchase in interstate or foreign commerce any wildlife that is taken, transported, possessed, or sold in violation of any state or foreign law. (Lacey Act - 18 USC. 42)

17. True or false. Individuals licensed as master falconers in California may possess a marsh hawk for falconry if received from Department-approved rehabilitation facilities.

True. (CFR 670(c)(2)(E)) However, marsh hawks are not normally permissible falconry hawks in California nor are they known as good falconry hawks. Their hunting style and temperament do not lend themselves to cooperative hunting with humans. General or master falconers may possess any raptor for falconry (with the exception of bald eagles), as long as the hawk was acquired legally with special permission from the state. While apprentices may also receive hawks from a rehabilitation agency, they are still limited to kestrels and red-tailed hawks.

18. True or false. While hunting quarry with a hawk in California, the falconer must observe the same hunting hours as those prescribed for the gun or bow-hunter.

True. The falconer must also purchase a hunting license and abide by the prescribed hours. (CFR 670(b)) Currently, the hours are from one half-hour before sunrise to a half-hour after sunset.

19. True or false. A California state falconry license permits master falconers to possess a golden eagle for falconry.

False. Under federal law qualified master falconers may obtain depredating (raptors that are killing or destroying livestock) golden eagles and train them for falconry. (FWS §21.29(I)(4)) However, California requires additional permitting and, as of Winter 2002, issued precisely one.

20. True or false. The holder of a state/federal falconry license and a valid small game hunting license is not required to have a federal "duck stamp" to hunt waterfowls legally with a raptor.

False. (CFR 670(b)) Any hunter who hunts a migratory waterfowl must obtain a federal "duck stamp" under the Migratory Birds Treaty Act. Note: the state duck stamp is also required in every state.

21. True or false. An annual apprentice report is only required when the falconer's activities have included hunting.

False. All apprentice falconers must file an apprentice report annually regardless of quarry taken during the hunting season. An additional report is required when the apprentice upgrades at the end of their first and second license years. (CFR 670(c)(1)(I))

22. True or false. American crows, English sparrows, and starlings may be hunted with a raptor.

True. However, all other passerines are protected from any type of hunting. (California Hunting Regulations, Title 14, chapter 6, paragraph 472)

23. True or false. The "permit year" for California falconry licenses begins on January 1st.

False. The permit year for California is July 1st. License renewal applications are due in June. (CFR 396 (a)).

24. True or false. You may buy, sell or barter captive-bred and raised raptors for use in falconry in California.

True. Previously prohibited, a new ruling allows the purchase and sale of captive-bred raptors pursuant to federal breeding permits. (FWS §21.30) and (CFR 670)

25. True or false. You may capture adult red-tailed hawks for falconry in California.

False. The key word is "adult". You may take only eyass and passage red-tails from the wild for falconry purposes. (CFR 670(c)(2)(D))

26. True or false. No falconer shall capture passage hawks after January 1st.

False. The legal trapping season in California extends from October 1st to January 31st. (CFR 670)
Check to make sure what the current laws allow.

27. True or false. Game wardens may enter the premises of any falconer at any reasonable hour to inspect housing, equipment, raptors and records.

True. (CFR 670(c)(1)(J)) However, Game wardens rarely make unannounced inspections unless they have reason to believe you are not taking care of your hawk or you possess a hawk not listed on your license.

28. True or false. Applications for renewal of a falconry license or written notification of non-renewal must be submitted to the Department postmarked no later than February 28th.

True. (WPD 141, paragraph 7)

29. True or false. If you capture a raptor in adult plumage, you must immediately release it.

True. You may not trap an adult raptor for falconry purposes. (FWS §21.29(I)) Exception: You may take kestrels and great horned owls over one year of age. (FWS §21.29(I)(4))

30. True or false. Apprentice falconers may not capture nestling raptors.

True. (CFR 670(c)(4)(F) and (FWS §21.29(I)) Under California falconry regulations an apprentice falconer may not capture nestling raptors (eyasses).

31. True or false. California falconry regulations stipulate that nestling raptors may be captured only between the dates of May 20th through July 15th.

True. Only general or master level falconers may take nestling raptors (eyasses), and the current harvest season is May 20th through July 15th. (CFR 670(c)(4)(F))

32. True or false. A falconer who captures a raptor must submit form 3-186A within 5 days of capture. You may fill out this report just prior to mailing.

True. You must file a resident capture permit with the State of California within 5 days of the taking of a suitable raptor. You must also send in a 3-186a form within the same time period to the U.S. Fish and Wildlife Service. (FWS §21.28(d)(4))

33. True or false. A general or master falconer may capture only one nestling raptor from only one nest.

False. A general or master falconer may capture up to two eyasses during the permit year, providing there is at least one nestling remaining in the nest and there is room on the falconer's license. (FWS §21.29(I)(2)) and (CFR 670(c)(4)(F))

34. True or false. A California falconry license expires on December 31st of the year it is issued.

False. All California falconry licenses expire on June 30th each year. (CFR 396 (a)).

35. True or false. A falconer must report in writing to the Department within five days of the escape, loss or death of a raptor in his or her possession.

True. (FWS §21.28(d)(4)) Practically speaking, you should not give up hawk for lost for at least two weeks. Some red-tails may have "drifted" only a few miles from the loss site. If you fill out the paperwork on the fifth day and mail it in, and subsequently recover the hawk, simply fill out another Form 3-186A and mail it.

36. True or false. A falconer may release to the wild any non-native raptor in his or her possession if the raptor is untrainable.

False. A falconer must get authorization from the Department before releasing to the wild any non-native raptor in his or her possession. (FWS §21.29(j)(3)) You may NEVER intentionally release a hybrid into the wild. (FWS §21.30(d)(14)(ii))

37. True or false. An apprentice falconer may not possess more than one raptor and may not obtain more than one raptor for replacement during any twelve-month period.

True. (FWS §21.29(e)(1)(iii)) The California replacement year begins on March 1st. (CFR 670(c)(4)(H))

38. True or false. You may use adult red-tailed hawks for falconry in California.

True. This is a “trick” question and the key word is “use.” You can only **take** immature red-tails for falconry purposes. You can, of course, use them for falconry after they have matured to adulthood. (FWS §21.29(I)(2))

39. True or false. You may give moulted feathers to a friend to use in crafts.

False. You may retain moulted feathers for later use in imping or destroy them. You may donate them to Native Americans for use in religious ceremonies provid the Native American received prior written approval from the state. (FWS §21.29(j)(5))

40. True or false. You are required to display your falconry license to game wardens and law enforcement officials upon request.

True. (FWS §13.44) Falconers must carry their falconry license and hunting license with them whenever they are away from their premises with their hawk.

41. True or false. You may entrust the care and feeding of your passage red-tail to your neighbor before going on vacation if you provide them with prepackaged meals and a feeding and weathering schedule.

False. Only another licensed permittee (licensed falconer or licensed rehabilitator) may provide care for your falconry hawk. Additionally, you must provide the permittee a copy of your original Form 3-186A on which the hawk was registered in your name and a letter of authorization you signed to the licensed permittee to hold the bird for you. (FWS §21.29(j)(4))

42. True or false. You do not have to have a sponsor until you have a hawk.

False. (FWS §21.29(e)(1)(ii)) A sponsor is required prior to notifying the state that you are ready for your facilities and equipment inspection. Currently, the sponsor must countersign the form to request the inspection. (FG361a, paragraph 4 & 6) This allows the sponsor to advise you on the readiness of your mews, weathering area, perches, and so on, prior to the inspection.

43. True or false. As an apprentice in California, you may possess a Harris' hawk if transferred to you by a department approved rehabilitation facility.

False. Currently, the wording of the California regulations says that “any license holder” can have a raptor transferred to them by a department approved rehabilitation facility. (CFR 670(c)(2)D and E)) However, apprentices are still restricted to kestrels and red-tailed hawks by the federal regulations (FWS §21.29(e)(1)(vi)) and the common sense of their sponsor. Without the federal restriction, a brand-new apprentice could receive a golden eagle from a department approved rehabilitation facility!!
Having said all that, answer “True” if you find this question on the California test.

REVIEW QUESTIONS - SECTION 4.0 LAWS AND REGULATIONS

- T F 1. An apprentice may permanently transfer their red-tail to another apprentice without a Form 3-186. (#10)
- T F 2. An apprentice may take an eyass from the nest as long as one eyass is left in the nest. (#4 and #30)
- T F 3. You must apply for your falconry license within seven days after obtaining a hawk. (#42)
- T F 4. In order to obtain a master license, a general falconer must have at least 5 years experience after a two-year apprentice. (#8)
- T F 5. A general may possess the same raptors as a master falconer. (#9)
- T F 6. A general falconer must be 18 years old and have had 2 years experience as an apprentice. (#5)
- T F 7. In California, a falconer must observe the same rules and regulations as do those that hunt quarry with bows and firearms as far as seasons and hours. (#18)
- T F 8. A master falconer is the only class of falconer that can have a gyrfalcon or peregrine in California. (#9)
- T F 9. A master falconer may take up to two eyasses in one season as long as there is one remaining in the nest. (#33)
10. The trapping season in California is from . . .
- April 1st to May 31st.
 - May 20th to July 15th.
 - November 1st to January 31st.
 - October 1st to January 31st. (#26)
11. An apprentice falconer in California may only possess a . . .
- red-tail or kestrel.
 - red-tail or Cooper's hawk.
 - kestrel or sharp-shinned.
 - marsh hawk or Cooper's hawk. (#4)
12. A raptor possessed under a falconry license may be temporarily held and cared for by a person other than the permittee if that person is . . .
- a family member.
 - a person with experience working with falcons.
 - another licensee who is permitted.
 - all of the above. (#41)
13. Which raptor may not be taken from the wild in California?
- sharp-shinned hawk.
 - great horned owl.
 - red-shouldered hawk.
 - ferruginous hawk. (#9)
14. Birds that may be hunted as quarry are:
- starlings.
 - English sparrows.
 - American crows.
 - all of the above. (#22)
15. The eyass capture season in California is from . . .
- April 1st to May 31st.
 - May 20th to July 15th.
 - November 1st to January 31st.
 - October 1st to January 31st. (#31)

GLOSSARY

So the old-time falconer says to the newcomer, "There we were. I slipped my intermewed tiercel eyass gos at a flush. He pursued, checked, then struck, binding hard. Then he carried it over the ridge, hiding in brush so deep I couldn't find him. So I pulled out the yagi and got a bearing on him. Finally I got an eyeball on him and made in on my hands and knees and used a chick to get him to step-off and onto the fist. Believe me, drawing the hood was the first thing that made me feel good all day."

What the new person heard was "There we were. I . . . a . . . to my . . . He . . . Then he . . . over the ridge, . . . hiding in brush so deep I couldn't find him. So I pulled out the . . . and . . . on him. Finally I got an eyeball on him and . . . on my hands and knees and used a . . . to get him to . . . and . . . Believe me, . . . was the first thing that made me feel good all day." Well, it sounds exciting with a happy ending, but what the heck was he talking about?

Reading glossaries is much like reading the phone book. Lots of interesting characters, but not much in the way of story line. Glossaries are usually stuck in the back of the book by the author who, understanding exactly what the terms mean, treats this vital collection of definitions as an afterthought. Authors frequently overlook the point that the very people they hope to educate may not understand all this arcane language. And while this glossary is seemingly banished to the back of the book also, it's more a matter of logistics than importance.

Falconry is by no means unique in having its own technical jargon. But falconry is unique in its use of words and phrases that have remained unchanged since the Renaissance; old terms are mixed with utterly modern phrases. This annotated glossary combines the original strict meaning of a phrase or word within the modern usage. I've tried to leave as much of the ancient richness intact as possible. While there are numerous contemporary works on falconry, this glossary may assist in understanding older works. In several cases multiple definitions are given for the same word or phrase, some of which contradict each other. There is a reason for this, beyond the editor's whim, as it points out the occasional misuse and confusion generated when precise technical terms are sloppily used. On the last page is a layperson's translation of the opening paragraph above. One clue, it does have a happy ending.

Accipiter: A short-winged hawk identified by short, rounded wings, long tail and light eyes, primarily hawks of the forest. More specifically the Latin for the genus of shortwinged hawks (*Accipiter*), which includes the goshawk (*A. Gentilis*), the sharp-shinned hawk (*A. Striatus*), and the Cooper's hawk (*A. Cooperii*). Also a vernacular name for these birds.

Apprentice falconer: The beginning stage of falconry in the United States. To get the apprentice license, the individual must be a minimum of fourteen years of age, and must pass a written test that demonstrates mastery of book knowledge. Following this and under the supervision of a master or general level falconer sponsor, the apprentice acquires and proves to the state wildlife service that he/she has the facilities and equipment to properly care for and house a red-tailed hawk or an American kestrel. An apprentice falconer may only take from the wild a passage red-tailed hawk or a kestrel. Apprentices may have transferred to them a kestrel or red-tailed hawk of any age from another licensed permittee. The apprenticeship periods last for a minimum of two years.

Arboreal: Frequenting trees. [18]

Aspergillosis: A form of fungus infection, leading to lethal inflammation of the lungs. [16] A fungal (mold) disease of the respiratory tract, specifically the air sacs and lungs. Insidious in onset, difficult to treat, and nearly always fatal. Recent medical advances and successes make this disease somewhat more responsive to treatment, but still usually fatal.

Austringer, astringer, ostringer, autoursier: (1) One who flies a short-winged hawk. Various derived from Latin *astor* or *austor*, or the French *autour*. [16] (2) One who keeps and hunts shortwings and broadwings. [7] .

Aylmeris, Aylmeri jesses: A modern variant of the restraints used to control raptors. The Aylmeri jess consists of three parts: anklets, bracelets or cuffs which are fitted around the hawk's tarsus, mews jesses with a swivel slit which are fitted whenever the hawk is tethered, and slitless field jesses which are fitted whenever the hawk is flown free. Aylmeris are required by law. The problem of the traditional jess that is shared by the Aylmeri mews jesses is the high probability that the swivel slit will get caught and the hawk will not be able to free itself. Falconers should always change to a slitless field jess before flying the hawk free. See also Traditional jesses.

Bagged quarry, bagged game: Some live creature let out freely for the hawk to chase. Normally used only when entering, or when a natural quarry is very scarce, to ensure that the hawk will get a flight. [16] Considered unethical when employed for everyday hawking. See also **trains**.

Bal-chatri: A wire cage trap festooned with slip nooses made from monofilament fishing line. Baited with a bird or mammal and placed in view of a wild hawk, it serves as a trap in which neither raptor nor bait is injured. The bal-chatri works well with ground-quarry-oriented raptors.

Barbary falcon (*Falco pelegrinoides*): This falcon is considered by some to be a subspecies of the peregrine, which it replaces in the inland desert regions of Africa. The red shaheen is considered by some to be a genetically isolated subspecies of the barbary.

Bate, to: The wild jumping off and beating of wings in which most hawks indulge at one time or another, while still held to perch, block, or fist. May be caused by wildness, fright, boredom or plain temper, or at the lure or quarry.

Beam feathers: The long feathers of a hawk's wing, also called the "primaries."

Bells: Small bells, usually of brass, nickel or stainless steel. Bells are attached to the hawk's legs by a bewit, to the Aylmeri bracelet, to the tail on a tail mount, or around the neck on a halsband. The bells alert the falconer to the bird's location in the field, be that in a tree, in the sky or down on quarry. An additional benefit is the ability to monitor the hawk's activities in the mews or on the perch.

Bewits: Short thin strips of light leather by which bells are fastened to the legs. Recently, plastic tie-wraps or cable ties have become popular, but have many shortcomings and dangers.

Bind, to: Seizing quarry or lure with the feet in a tight, clamped-on hold.

Bird hawk: A hawk that preys mainly on other birds.

Block, block perch: (1) Upended log, cone or pyramid, usually of wood or stone, perhaps with padded top and swiveling ring, to which a longwing is tethered outside. [16] (2) A wooden or concrete perch with a padded top; it tapers from the top to the bottom, and at the bottom end is a spike which can be driven into the ground. [21]

Blood feathers: New feathers not yet fully grown, whose shafts contain blood at the top. [7]

Bloom: A mantle of gray sheen which protects the hawk's back feathers, keeping her waterproof. [7]

Blue hawk: A peregrine in adult plumage. [16]

Bob: Up and down movement of the head made by longwings when especially interested in something. [7]

Bow-perch: A semicircular bar or piece of wood, padded in the center with rope or heavy cordage, and provided with a tethering ring. The free ends are thrust firmly into the ground. Used for shortwings and broadwings that normally perch in trees when weathering them outside. Also can be mounted to a heavy flat base for use indoors.

Bownet: A net trap for catching hawks. Made of a semicircular bar of light tubular aluminum or wood over which is stretched netting. One half-loop of a circular net is folded back upon the other half when set. Either sprung automatically by springs or elastic [21]

Bowse, to: Drinking by a hawk. Hence bovszer or boozzer and boozing. [16]

Brace, braces, traces: The leather straps or braces whereby a hood is loosened (to strike the hood) or tightened (to draw the hood). [16]

Brail, brayle: A long soft leather strap with a three or four inch slit in the middle and used to restrain a wild hawk. One wing is held in the slit and the two ends of the brail are tied about the bird so that the other wing is free. The brail prevents bating and calms restlessness.

Brancher: (1) A young bird of prey which has left the nest, but is still learning to fly and is fed by its parents [7]. (2) A young raptor capable of testing its wings by hopping from branch to branch in its nesting tree, but that has not yet successfully flown. (17) Also called a ramager. [16]

Break in: The act of breaking through a kill's skin—usually starting at the soft underbelly. [7] The hawk breaks into her quarry when, having caught and plumed (or plucked) it, she starts to eat it. [16]

Brooding: Parental sitting on or over the young, as opposed to incubation (the sitting on eggs). [18]

Brown hawk: A term (British usage) used to describe an immature peregrine. [7] See also Red hawk.

Broadwinged hawks: The vernacular name for the species of *Buteo* or *Parabuteo*, the soaring hawks. Usually described as having large core wings and a short, stubby tail. Classical falconry did not use broadwinged hawks as European buteos lack the spirit to cooperatively hunt with men for quarry much larger than mice. Only with the discovery of this spirit within the red-tail, ferruginous, and Harris's hawks, found in the New World, have these birds been used for falconry. American falconers are restricted to the use of the red-tail and the kestrel (and in some states the red-shouldered hawk) for apprenticeship, and, therefore, tend to discount the red-tailed hawk as a "serious" bird of prey. English falconers appreciate both the red-tail and the ferruginous hawks as extremely serious birds of prey. See also Buteo.

Broad-winged hawk (*Buteo platypterus*): A woodland buteo about the same size as a Cooper's hawk and with nearly the same coloration but slightly smaller than the red-shouldered hawk. Not currently legal for falconry in California. Average measurements: length: 15" (37 cm); wingspread: 34" (86 cm); weight: 14 oz. (401 g). [4] Mentioned here to help avoid confusion between "the broad-winged hawk"—the species—and "broadwinged hawks"—the group discussed above.

Bumblefoot: An infection in the bottom of a hawk's foot. It is difficult and time-consuming to cure and can cripple or kill a hawk.

Buteo, buteos: (1) The Latin name for a genus of raptors. The buzzards of classic falconry, they are now sometimes termed broadwinged hawks, broadwings, or just "buteos." The use of broadwings is generally accepted today. (2) Buteo is Latin for "kind of a hawk or falcon." "Buzzard" is the proper name for these raptors. It comes from the same Latin root as Buteo through Old French and Old English. [4] See also Broadwinged hawks.

Buzzard: European vernacular for the buteos. When the English colonists came to the New World, they used buzzard when referring to vultures by mistake. This led to the ultimate confusion between hawks and buzzards. The red-tailed hawk should be called a "red-tail buzzard" and it is in Europe. By the same token the turkey buzzard is correctly called a "turkey vulture."

Cadge: (1) A portable perch used for carrying hawks in the field. From this, the common terms codger and cad. (2) A low rectangular frame, with padded edges, for carrying hooded hawks. A leg at each corner allows the cadge to stand on the ground without disturbing the perched hawks. A traveling cadge often takes the shape of a lidless box, with a perch across, in which the droppings (mutes) are caught. The cadge is carried by a cadgeman hence cadging a lift. [16]

Call, call off, calling off: (1) To attract a hawk to the trainer by voice, signal, or lure from a perch or from an assistant. (2) During training, or for exercise, a falconer calls off his hawk when he gets her to fly to him from the fist of an assistant or from a perch some distance away. [16]

Captive breeding: As applied to falconry, the (sometimes commercial) breeding of captive birds of prey. Captive-bred raptors may be bought, sold, and transferred. Captive breeding became popular among falconers in the 1960's to produce falconry hawks of species whose numbers were in sudden decline. One result of these programs has been the release of breeding stocks of the endangered peregrine. In captive breeding parlance, F1 describes the first generation from wild-taken parents. The F2 generation's parents were the F1. The F2 are currently considered "domestic" fowl.

Carry, to carry, carrying: (1) When a hawk flies off with the quarry she has just killed as the falconer is approaching, she is carrying (an annoying habit, not easily cured). Merlins are particularly prone to it. [16] (2) The act of carrying a hawk on the fist to man it.

Cast, a: Two or more hawks flown together (traditionally, always longwings) at a difficult quarry. Flying hawks together in a cast made a kill more likely in a reasonable distance and much of the beauty of the flight is in the way the hawks work together.

Cast, to: (1) To propel a hawk forward off the fist to get it airborne. (2) The act of disgorging a pellet of the undigested parts of a meal—fur, feathers, bone etc. (3) To hold a hawk in a cloth between the hands for imping, putting jesses on, etc.

Casting: An ovoid wad of indigestible feathers, fur, toes, bone fragments, snake scales, and the like, separated from meat in the hawk's stomach, bound together by the superfluous mucus or gleam in her stomach and regurgitated some hours after eating.

Cere: The bare, waxy area between the beak and crown of a bird.

Check, to; to fly at check: To change from one quarry to another during flight, or to hesitate because of sighting another quarry. [7]

Chick, cockerel A day-old male chicken: Used by some falconers as either a supplement to the diet or as tid-bits for hawks. Chicken farms need only a few cockerels to sire the next generations, yet half the chicks born are male. The “extra” ones are collected, frozen, and sold as pet food. Chicks lack the complete nutritional value needed by hawks for good health.

Clutch: The number of eggs laid and simultaneously incubated by a female during nesting. [18]

Condition: Most often refers to the weight of the bird relative to flying weight. The hawk is in high condition when she is fat, and in low condition when she is too thin. When condition is correct, she is at flying weight or “combat weight.”

Cooper’s hawk (*Accipiter cooperii*): A crow-sized accipiter midway between the size of the goshawk (*A. Gentilis*) and the European sparrowhawk (*A. Nisus*). Found only in the New World and therefore unknown to classic falconry. More inclined to hunt out over open fields than goshawks. An excellent falconry bird, most often taken as an eyass, is legal to capture from the wild in California by general and master falconers. Average measurements for males: length: 15” (39 cm); wingspread: 29” (73 cm); weight: 12 oz. (341 g). Average measurements for females: length: 18” (45 cm); wingspread: 33” (84 cm); weight: 19 oz (528 g). [4] **Editor’s note:** the weights given above, and throughout this glossary, are for free-flying wild hawks. They are provided for natural history information and are not guides for your hawk’s specific flying weight.

Cope, to cope: To trim or cut back and reshape an overgrown talon or beak.

Crab, crabbing, to crab: When a hawk seizes another, either by mistake when with another on a quarry, or on purpose when quarreling or fighting. [16]

Creance: A light line attached to the swivel of a partially-trained hawk before she is allowed to fly free. [7]

Crines: The short hairlike feathers about the cere. [7]

Crop: The vascular sac above the breast bone where food is first stored as soon as it is swallowed. It permits storage of a large amount of food which is later digested slowly. See also Putting over the crop.

Crossing flight: When some other bird flies between the hawk and the quarry she is pursuing.

Deck feathers: The two center and dorsal-most feathers of a hawk’s tail, or train. They come straight out in a parallel line with the backbone, whereas those to right and left can be spread out fan wise.

Dho-gazza: A square or rectangular net of various dimensions suspended vertically next to a live bird. It is secured loosely so that it drops over a hawk that attacks the bait. A trap from the Middle East. [15]

Dispersal: Unpredictable and multidirectional movements from a common point or origin. In predatory birds, dispersal occurs shortly after fledging (juvenile dispersal) or by adults after breeding (post-breeding dispersal). [18]

Diurnal: Active during the day, as opposed to nocturnal. [18]

Downwind: Flying with the wind.

Draw, to: (1) To draw a hawk from the mews is to take her up for the first time after she has completed her moult. Comes from withdrawing her from her moulting quarters. (2) To draw the hood is to tighten the braces which keep the hood on, as opposed to striking the hood or loosening it.

Droppings: Normally called mutes (longwing) or slices (shortwing and broadwing) if expelled out with some vigor. If merely dropped down as of a domestic fowl, then they are droppings. [16]

Endangered: A conservation category defined by the International Council for Bird Protection (ICPB) as including those taxa that are in danger of extinction and whose survival is unlikely if the factors causing their decline continue operating. "Endangered" is defined by the U.S. Endangered Species Act as including taxa in danger of extinction throughout a significant portion of their ranges based on the best available information. [18] "Tax" or "taxa" refers to a "taxonomic" classification. Taxonomy is the science, laws, or principles of classification, especially of organisms in categories based on common characteristics.

Enseam, ensayne, to: The act of cleansing or purging a hawk of unwanted fat, after a period of idleness, and so making her ready to fly. The process of ridding the hawk of her internal fat at the end of the moult. Most falconers simply diet their hawks. In the old days, and to a much lesser extent today, falconers fed their hawks rangle, small stones. The action of these in the stomach loosened the grease and when the stones were cast up they would be smothered in this grease.

Enter, entering: The setting up of a situation whereby a raptor in training is sure to be able to catch a kind of quarry new to it. The first time a hawk is flown at a particular quarry, she is entered to that quarry. She is entered to the lure the first time she comes properly to it, after which she can be defined as made to the lure.

Eyass, eyas, eyess: (1) From the French *niais*=a nest, in turn, from the Latin *nidasius*=a nest, referring to the fact that an eyass is a hawk taken from the nest: a nestling. If taken from the nest for falconry, she is always described thereafter as an eyass, as opposed to grown birds trapped during their first passage in life. [16] (17) (2) Sometimes also applied to the young of raptors while they are still in the nest.

Eyrie, eyry: The hawk's nest, or place where the eggs are laid if she has not built a proper nest. [16]

Falco: Latin name of the genus that includes the eight species of longwings in North America. The terms *Falco* and "falcon" are derived from the Latin *falx*, meaning "sickle" in reference to the falcon's wing shape in flight or, perhaps, the shape of their beaks and talons. [4]

Falcon: As a traditional falconry term, it describes the female peregrine. Recently, the term has become slang to denote any longwing, male or female, as opposed to any hawk or shortwing. A falcon is a female peregrine, but a female goshawk remains a "female goshawk," not "goshawk falcon;" in like manner a female prairie falcon is a "female prairie falcon" not a "prairie falcon falcon."

Falconry: The taking of wild quarry in its natural state and habitat, using trained birds of prey. (British Falconer's Club)

Feak, to: When a hawk cleans her beak on her perch after feeding, wiping it briskly back and forth. A sign of great confidence and well-being if she will do this on your finger or glove. An ailing hawk will rarely, if ever, feak.

Feed-up, to; fed-up, to be: When a hawk is fed above flying weight to start moulting, in preparation to release, routine feeding at the end of the day, or some other activity.

Ferruginous hawk (*Buteo regalis*): The largest of New World buteos. A raptor of the open plains, unknown in classic falconry, currently legal to capture from the wild in California by master and general falconers. Average measurements are: length: 23" (59 cm); wingspread: 56" (143 cm); weight: 56 oz (1578 g). [4] Pronounced "fe-rü-jee-nes" or "fur-u-gee-nuss"

Fetch, to: When a longwing gets up to her quarry and turns it, or starts to work it, she fetches it. [16]

Fist: A vernacular term for the falconer's gloved and protected hand. A hawk "feeding on the fist" is eating a piece of meat held by the falconer while perched on the falconer's gloved hand.

Fistbound: A hawk that does not hunt wild quarry. Also called a "pet."

Flags: The secondary feathers in the wing, lying next to the primaries.

Fledge, to: The achievement of flying for the first time.

Fledgling: A young hawk that has only recently learned how to fly and is still dependent upon its parents for food.

Flight feathers: The main feathers used in flight, the primaries and secondaries. [7]

Flush, to: The act of causing game, quarry, or prey to bolt from cover.

Flying weight: The weight at which the hawk is healthy enough to fly and hunt, yet sufficiently hungry to respond to the falconer's control and to any quarry that is flushed. See also keen and sharp-set. Recently slang is "combat weight."

Foot, to: (1) A hawk foots her quarry when she clutches it with intent to kill. A bad footer is one that is clumsy or inaccurate with her footing. A good footer describes a hawk that clutches well and holds. [7] (2) One of several manifestations of eyass aggression toward their falconer. Eyass red-tails will occasionally foot and bind to their falconer's hands. Eyass Cooper's, if taken too early from the nest, tend to attack the falconer's face. Eyass ferruginous have been reported to attack the falconer's face and upper body. These do not appear to be random attacks but can be predicted—and prevented—with experience.

Free-lofted: When the hawk is allowed free flight in the hawk-house as opposed to being tethered.

Fret marks, also called stress marks: Usually found on the tail of a raptor are generally thought to mark a point in feather growth when there was prolonged nutritional or psychological stress.

Frounce: A canker or sore in the mouth and throat, usually seen as a colored coating on the tongue. A disease of the upper digestive tract, caused by the protozoan, *Trichomonas gallinae*, usually contracted from eating infected pigeons and doves. Formerly the most common lethal disease afflicting trained raptors, now easily and very quickly cured by oral administration of Flagyl® (generic: metronidazole).

Full-summed: At the end of the moult, when all the feathers which are going to be renewed that year are completely grown out. There is not necessarily a complete renewal every year. The feathers are no longer in blood.

Game: Traditionally only pheasant, partridge, and grouse are referred to as game. All other animals the hawks are released after are called quarry.

Gamehawk or game hawk: Strictly speaking, the gamehawk is a longwing trained to wait-on and take game (pheasant, partridge, and grouse) flushed by the falconer and/or his dog. The term "hawking" describes all other flights at all other birds and mammals.

General falconer: The second stage of contemporary falconry. An apprentice, 18 years or older, may advance to general with the approval of the sponsor, after a minimum period of two years. General falconers may possess any of the legal falconry birds, capture eyasses, have two falconry raptors at any one time, may replace two from the wild in any one year, and may sponsor apprentices.

Gleam: (1) A sort of slime which a hawk sometimes throws up casting. (2) Also the slightly slimy coating of the casting.

Gorge: To allow the hawk to eat as much food as she can at a single meal. [7]

Goshawk (*Accipiter gentilis*): The largest accipiter. Well known to classical and modern falconry. The name comes from the Anglo-Saxon words gos for goose and havoc for hawk—thus, a hawk that captures geese. *Gentilis* is Latin for "noble." Average measurements are for males: length: 19" (49 cm); wingspread: 39" (101 cm); weight: 29 oz (816 g). Average measurements are for females: length: 23" (58 cm); wingspread: 43" (108 cm); weight: 37 oz (1059 g). [4]

Great-horned owl (*Bubo virginianus*): The only owl currently legal for falconry in Californian. Unknown in classical falconry. Average measurements are: length: 18"-25" ; wingspread: up to 60" (115 cm); weight: 46.5 oz. - males, 62.5 - females (1318 g - males, 1769 g - females). [18a]

Gyrfalcon (*Falco rusticolus*): An extremely popular bird in modern falconry. They are well known for chasing their quarry long distances and a disinclination to wait-on. Average measurements are for males: length: 20" (52 cm); wingspread: 45" (115 cm); weight: 40 oz. (1135 g). Average measurements are for females: length: 23" (59 cm); wingspread: 50" (127 cm); weight: 60 oz (1700 g). [4] Pronounced "jer-fal-ken" or "jeer (rhymes with cheer)—falcon."

Hack (wild hack): Flying at hack is the practice of allowing young birds (usually only longwings) to fly freely about, sometimes for as long as six or seven weeks, after they have been taken from the nest and before their training or reclaiming starts. Hack-bells are especially large bells they often wear, designed to prevent them making a kill on

their own account when at hack. The falconer provides food tied to a hack-board, at a specific time and place every day for the free-flying hawk. Eventually the hawk kills for itself and does not return to the hack-board on schedule. This is the signal that the bird has learned to hunt on its own. The next time the hawk shows up for its meal on the hack-board, the falconer takes it up. See also tame hack.

Haggard: A wild hawk in mature plumage, caught after having moulted at least once, thus being more than a full year old. [16] No haggard of any species may be taken for falconry in this country except for kestrels and great horned owls.

Halsband: German for "neck-band," being a soft cord usually of twisted silk, or leather, put around a hawk's neck to steady her when being launched from the hand at quarry, or for attaching a bell, or both.

Hard-penned, hard-down: When the feathers of a newborn hawk are fully grown and the shafts have hardened off to a quill.

Harris' hawk (*Parabuteo unicinctus*) also Bay-winged hawk, Louisiana hawk: A raptor new to falconry and therefore unknown to classic falconry. This goshawk-sized bird was only very recently recognized as having the potential for falconry and is a responsive, excellent bird in this role. The northern limit of this hawk's natural range extends into Louisiana, Arizona and Texas. Average measurements are length: 20" (52 cm); wingspread: 43." (108 cm); weight: 32 oz. (890 g). [4]

Hawk: A most confusing term. Strictly speaking, a hawk is a member of the genus *Accipiter* or a shortwing raptor, as opposed to members of the genus *Falco*—the longwings and the members of the genus *Buteo*, the buzzards or broadwing raptors. However the word is often used to cover shortwings, broadwings and longwings, and hawking is done with all of them.

Hawk-house: Place where a hawk is normally kept, as opposed to the mews which, strictly speaking, is the place where she is put to moult. They may well be the same place. [16]

Hobby (*Falco subbuteo*): A European longwing somewhat larger than the merlin, smaller than the peregrine or prairie falcon. Predictably migratory to Africa below the equator. There is no comparable North American longwing.

Hood: Of several different designs, Anglo-Indian (often shortened incorrectly to "Indian"), Dutch, rufter or a combination of these patterns. The hood serves to shut off the flow of visual information to the hawk's brain. Since much of the hawk's brain is tied to vision, the hood serves to calm it down and prevents undue anxiety.

Hood block: The wooden block on which some types of hoods are blocked or molded to shape them or store them.

Hood-shy: When a hawk dodges about and tries to avoid being hooded, it is hoodshy. Hooding a hawk is an art, and some well-coached novices learn it quickly. Some, including the editor, don't. Apprentices having a non-hood-shy bird to practice with are more likely to learn how to hood skillfully. An untrained, uncoached apprentice learning on a wild bird freshly taken from the trap may result in a hood-shy bird.

"HOO-HA-HA": The traditional cry of the falconer to ensure his falcon's attention is focused on quarry which he has just served her, or put up for her. [16] "Hi! Hi! Hi!" or "Ho! Ho! Ho!" are also used, except when the flush is an out-of-season quarry. Then the falconer must shout "No! No! No!" The bird won't care but the game warden will, since sending your bird after an out-of-season or prohibited prey is against the law.

Hover: A form of flapping flight during which the bird remains nearly stationary. [18] Kestrels and kites are well known for this maneuver, but red-tails can do it too where it known as "stilling." A truly impressive display.

Hunger-trace, fret-marks: Blemishes or weakening imperfections which appear like light fraying cuts across the web of growing feathers due to temporary starvation (twenty-four hours can be enough), or incorrect feeding, or severe nervous stress, either in an eyass newly taken, or in any hawk during the moult. The feathers may subsequently bend or break at the point of the hunger trace. [16]



Hybrid: A crossbred hawk or falcon with parentage from at least two different species. [7] Hybrid vigor often allows for the best of both worlds. For example, a gyrfalcon x peregrine mix is likely to produce a bird midway in size between the parents, with the speed of the gyrfalcon and inclination to wait-on as with the peregrine. Hybrids, by law, must be sterilized or imprinted to prevent them from reproducing in the wild should they escape. Hybrids may not be intentionally released to the wild.

ICBP: International Council for Bird Protection. [18]

Imp; imping; to imp: To mend broken feathers, usually by joining the old or a new piece on with "imping needles." These are small bits of steel wire, triangular in cross section, pushed up the quills to effect a joint. [16]

Imprinting: (1) A process, usually begun in early life (with some species immediately following hatching) of birds by which they identify themselves. Originally applied by Conrad Lorenze to the precocial young (to hatchlings that are able to quickly walk and feed themselves) of ducks and geese, which, upon hatching, imprint to and recognize as "parent" the first thing larger than themselves that moves. The term has since been broadened to include a number of similar processes which happen somewhat later in life. (2) Occurs when a raptor is obviously human raised. One common manifestation is that of screaming continually, begging food from its recognized parent. Another result is lack of fear of humans, coupled with aggression toward their falconer. Human behavior that prompts imprinting is fairly well known and should be avoided.



Intermewed: Describes a hawk which has moulted (mewed) in captivity. One that has moulted wild is a haggard. Literally "interval in mews," referring to the period, usually extending from the vernal to autumnal equinoxes (March 21st to September 21st), when a trained raptor is confined within a building to molt old and grow new plumage. Hence, a hawk which has been moulted in captivity, whether molted in the "mews" or not.

Jack: A male merlin.

Jerkin: The male gyrfalcon.

Jesses: The leather straps fastened to a trained hawk's legs, by which the falconer holds her, or by which she is secured. See also Aylmeri jesses and Traditional jesses.

Keen: When a hawk is responding with enthusiasm. [7]

Kestrel (*Falco tinnunculus*): Here in America it is called the European or Eurasian kestrel, is about the same weight as a merlin, but with somewhat larger wings and tail. The kestrel of classical falconry is about twenty-five percent heavier than the American kestrel, *F. sparverius*, with average measurements: length: 14.5" (36 cm); wingspread: 27" (68 cm).

Kestrel, American (*Falco sparverius*): Formerly known as the American sparrowhawk. The smallest longwing in the United States is legal for falconry by apprentices. Sparverius in Latin means "pertaining to a sparrow," after the hawk's first name, sparrowhawk. "American kestrel" comes from its Eurasian counterpart, the Eurasian kestrel (*Falco tinnunculus*). "Kestrel" is an Old English name for *F. tinnunculus*. Average measurements are for males: length: 9" (24 cm); wingspread: 21" (55 cm); weight: 3.8 oz (109 g). Average measurements are for females: length: 10" (25 cm); wingspread: 22" (57 cm); weight: 4.3 oz (123 g). [4]

Kite, White-tailed (*Elanus leucurus*): A whitish, medium-sized raptor with a falcon-like wing-shape, slightly smaller and much lighter in weight than the prairie falcon. Coloration and flight is much like a gull. There is little size difference between the sexes. Males average 11.2 oz (315 grams); females average 12.3 oz (350 grams). Wingspan averages 39" (101 cm); length averages 15" (38 cm). Kites hunt from either a hover like the kestrel or from high exposed perches like buteos. Prey is primarily small rodents. Data is for the white-tailed kite (often known by the European name of "black-shouldered kite") (*Elanus caerulus*), which is common in California. [4]

Lanner (*Falco biarmicus*): The male is termed lanneret, rare in Europe, more common in North Africa, mainly in dry, inland mountains. Resident and nomadic. The European birds feed on avian prey, while the African race prey on ground-dwelling animals

Leash: The traditional leather thong, not less than three feet long, by which a hawk's jesses are secured, via the swivel, to block or perch. Modern materials of nylon and kernmantle type rope are proving to be much more reliable and resistant to damage from rain, talons, mutes, and food decay products than traditional leather. Leather is far more prone to sudden failure and subsequent escape of the hawk than the newer materials.

Longwing: A vernacular term used to cover all Falconidae which have long, pointed wings and dark eyes. [7]

Luggar (*Falco jugger*): A large longwing native to India. In some older literature, it was thought to be the Indian name for the saker. The male is the luggaret.

Lure: (1) The object by which a falconer, whirling it round his head, attracts a trained hawk, when she is flying free on her own. It may be a dead bird, or a pad with feathers secured to it like wings, and garnished with meat. To lure her is to bring her up to the lure, if a long way off, or down to the lure if she is waiting-on ready to come down at once. [16] (2) A realistic imitation bird or animal used to provide a reusable training quarry to teach young hawks how to strike, bind and foot quarry.

Lurebound: The longwing equivalent of fistbound. A longwing that will not hunt but is excellent to the lure.

Made to: A hawk is made to the hood, made to the lure, made to the fist, etc. It means she is thoroughly trained to be hooded without difficulty, or will fly readily to the lure or the fist. The falconer makes her to these various things. When she is completely trained in all necessary ways, then she is made. [16]

Make-hawk: A thoroughly-trained hawk which is put up to fly with an eyass or young or untrained hawk, to help her by example. Also useful in cases where a hawk lacks courage for some particular quarry, and a hawk already entered to that quarry gives her fresh encouragement.

Make in to: The act of slowly and carefully approaching a hawk when she is on her quarry on the ground to take her up.

Make point, to: The act of a hawk swooping up directly above the spot where she has put in her quarry in some form of cover.

Manning: To man a hawk is getting the hawk thoroughly accustomed to the sight and presence of people, animals and things of all sorts, so that she is at ease in any company. See also reclaim.

Mantle, to: (1) When a hawk leisurely stretches one wing over her outstretched leg on the same side, and her train (tail) as well. (2) When she crouches over her food or quarry with wings and tail spread out all over it, to hide it from view or to discourage interference. A well-mannered hawk will not do this: it usually signifies jealousy or greed. [16]

Mark, to keep at; to fly at mark: When a hawk marks the spot where she has put in quarry, either by flying round above it, or by taking stand (perching) close by until someone comes to chase it out for her.

Master falconer: With five years experience as a general falconer, a falconer may advance to master level. Master falconers may own three of the legal falconry birds and may replace two from the wild in any permit year.

Merlin (*Falco columbarius*): A kestrel-sized, but heavier longwing that is legal for falconry use by general and master falconers. Average measurements for males: length: 10" (26 cm); wingspread: 22" (57 cm); weight: 5.5 oz. (155 g). Average measurements for females: length: 11" (29 cm); wingspread: 25" (64 cm); weight: 7.4 oz (210 g). [4]

Mews: The place in which a hawk is put down to moult. Now generally used in falconry to mean any building where a hawk is kept at night or in bad weather. See also Hawk-house.

Morph: A vernacular term referring to an example of one of the recognized types of di- or polymorphism in an organism. Most frequently used to refer to the lightness or darkness of plumage such as a “dark morph” or “melanistic morph” or even a “light morph” and “albinistic morph” phase. [18]

Moult, to moult: The annual shedding and replacement of feathers. Except for kestrels and eagles, raptors shed their juvenile feathers for adult plumage at about one year of age. Kestrels moult during their first year. Eagles moult annually through a series of juvenile and adolescent plumages until mature at four or five years of age. Many falconers put up their hawks for the moult as moulting requires greater food value and energy to grow feathers. This higher weight is most often above the flying weight range. Some experienced falconers fly their buteos and Harris’ through the moult, paying special attention to plumage growth and care.

Musket: A male European sparrowhawk (*A. nisus*)

Mutes: The droppings or excrement of a hawk: a longwing is said to mute, whereas a shortwing and broadwing is said to slice. The result in either case is the mutes.

Nares: The nostrils of a hawk.

Nestling: A young bird still in the nest. A hawk is called an eyass on removal from the nest. [16]

Passage hawk, passer: A wild hawk less than a year old, captured when migrating or following the passage of migratory prey. A passer is therefore always trapped in immature plumage. A passage hawk used in falconry is always called a passer even after intermewing and in adult plumage.

Passerine, passerine: A generic term referring to birds that perch in trees including blackbirds, buntings, chickadees, crows, finches, flycatchers, gnatcatchers, grosbeaks, jays, larks, orioles, pipits, ravens, shrikes, sparrows, starlings, swallows, tanagers, thrushes, titmice, vireos, waxwings, wrens, and warblers. Most are protected species and cannot be hunted; however, starlings, sparrows (which are non-native introduced species) and crows are the exceptions in California.

Perch: Anything upon which a hawk is set down, apart from the block. A longwing has the perch at night and the block by day. [16]

Peregrine (*Falco Peregrinus*): The premiere birds of falconry. A very successful bird, as there are several subspecies adapted to every continent and climate except Antarctica. *Peregrinus* in Latin means “wandering,” for the hawk’s long distance migrations and dispersals. Average measurements for male tundra peregrines: length: 15” (39 cm); wingspread: 38” (97 cm); weight: 21 oz (581 g). Average measurements for female tundra peregrines: length: 17” (44 cm); wingspread: 44” (111 cm); weight: 29 oz (817 g). [4] There are not less than 22 named variations of the basic peregrine and some of these are larger and some smaller than the data given.

Pick-up piece: The piece of meat held in the gloved hand, used to cover the meat on the lure to entice the hawk from the lure or quarry onto the fist. [7] See also Tid-bit and Step-off.

Pigeon harness: A harness trap festooned with fishing line nooses that fits a pigeon like a vest. Extremely effective and only occasionally harmful for the pigeon.

Pitch: The height at which a longwing waits on above the falconer or his dog. The pitch of a good longwing sometimes exceeds 1,000 feet. [16]

Pitch, to: Landing on a perch point.

Plumage: The feathers of a hawk. [7]

Plume: The tuft on top of a hawk’s hood. Merlin hoods once featured the claws of her first kill bound to it. [16]

Plume, to; pluck, to: When a hawk strips the feathers off her quarry, or whatever bird is given by way of food.

Post-fledgling period: The period between first flight and complete independence of the juveniles. Also called “post-fledgling dependency period.” [18]

Prairie falcon (*Falco mexicanus*): This open country, dry land bird is legal for use by general and master falconers. Average measurements for males: length: 15” (38 cm); wingspread: 37” (94 cm); weight: 19 oz (524 g). Average measurements for females: length: 17” (44 cm); wingspread: 43” (109 cm); weight: 30 oz (848 g). [4]

Preen, to: When a bird straightens and smooths out its feathers, oiling and dressing them and generally putting them in order. [16]

Prey: The animals or birds caught by wild raptors. The term “quarry” specifies the prey of raptors used in falconry. “Game,” often incorrectly used, refers only to pheasant, partridge, and grouse.

Primaries: The longest wing feathers, ten outermost in each wing. [7] In a longwing, the second feather is the longest of all, in a shortwing or broadwing the fourth is the longest, or sometimes the third and fourth are equal. The secondary feathers in both are the “flags.” The longest feathers are called principals.

Pull through the hood, to: When a hawk feeds with her hood on. [16]

Put in, to: A hawk, driving her quarry to take cover, puts it in. Also used as of a quarry putting in to cover.

Put out: To serve quarry to your hawk.

Put over, to: Emptying the crop into the digestive system, an action performed with a back-and-forth motion of the body, and particularly with the neck.

Put up, to: (1) The act of casting off a longwing to wait-on. [16] (2) Used by modern falconers to describe keeping the hawk at a higher weight, and, therefore non-flying for the duration of the moult. “My red-tail has been put up for the moult.”

Quarry: A falconry term describing the prey at which a hawk is flown by a falconer. The term “prey” refers to the animals and birds hunted by wild raptors. “Game,” often incorrectly used, refers only to pheasant, partridge, and grouse.

Rake, to: The act of a hawk striking her quarry, whether bird or animal, without binding to it. [16]

Rake away: When a hawk leaves whatever she is supposed to be flying at, and goes off on her own. If she goes after some other quarry of her own choice, deserting the original, she is said to be flying at check. But if she just flies off for no apparent reason, perhaps when waiting-on, then she rakes away. Also used to describe a longwing flying away low and wide without mounting to her accustomed pitch. [16]

Ramage hawk, ramager: A young wild hawk which has just left the nest. Most often called a brancher.

Rangle: Small stones given to hawks to aid digestion. A hawk may pick them up and eat them of her own accord if they are put within easy reach. When they come up with the casting they are coated with the indigestible greases from the stomach.

Rare: A conservation category defined by the ICPB as including those taxa having world populations that are small but not currently considered endangered. [18]

Reclaim, to: (1) To man a hawk, or to retrain a hawk that has been idle for a period. [7] (2) The whole process of taming and training a hawk. Manning applies solely to getting her accustomed to people and things. [16]

Red hawk: A British term applied only to a peregrine before the russet or reddish-colored immature first year plumage.

Red-tailed hawk (*Buteo jamaicensis*): Most apprentice falconers begin with this hawk. A large robust hawk, with wide variations in color morphology, size and personality. Eastern varieties are thought to be larger by falconers but Clark and Wheeler disagree, stating the western varieties average larger. Average measurements for males: length: 19” (48 cm); wingspread: 45” (114 cm); weight: 36 oz (1028 g). Average measurements for females: length: 22” (55 cm); wingspread: 48” (122 cm); weight: 43 oz (1224 g).

Ring-perch: A circular padded perch; a modern, but no better, version of the bow-perch.

Refuse, to: When a hawk will not fly at the quarry at which she is supposed to fly.

Ring up, to; ringing flight: To rise up in a spiral, perhaps round quarry. See also to tower.

Rouse, to: When a hawk stands all her feathers on end at once and gives them a rattling shake. A sign of well being.

Saint Bavon of Valkenswaard and Saint Hubert patron saints of falconers. [16]

Saker (*Falco cherrug*): Long considered to be a Middle Eastern longwing, rather like a large peregrine, it in fact breeds in northern and eastern Europe across to China, passing through the Middle East during migration. The male is called a sakeret. The gyrfalcon is considered to be a northern-climate variant of the saker, but is a decidedly larger bird and slightly different in build. The saker is seen in open steppe and cultivated country with wooded elements or groups of trees. Often perches on telephone poles in its range. Feeds on rodents and avian prey. Males are sakerets.

Screen perch: A long horizontal perch from which is hung a coarse fabric weighted at the bottom, like a screen, to enable a hawk to get back easily onto the perch on the side she fell off, after bating off. Without this she might hang upside down, unable to get up again. [16]

Screamer: (1) An eyass (normally never a passager or haggard) which develops the nerve-wracking habit of incessant screaming, sometimes due to being taken too young from the nest. Occasionally wears off if the falconer can bear it that long. [16] (2) Screamers were more common before the concept of imprinting was understood. The eyass is merely begging for food from the creature it identifies as the food source. Human behavior that promotes screaming is well known and can be avoided.

Secondaries: The flight feathers of the wing, between the body and the primaries. [7]

Self-hunting: When a hawk strays in search of prey. [7] Also used to refer to a hawk at hack when they start hunting on their own.

Serve, to: The act of flushing the quarry for a waiting hawk, to serve her with quarry.

Set down to moult, put up to moult: To put into the mews for moulting.

Shaheen: The red-naped shaheen, *Falco pelegrinoides babylonicus*, is considered by some to be an isolated subspecies of the barbary falcon (in turn considered by some to be a subspecies of the peregrine). However, other experts consider the red-naped shaheen as its own species, *f. babylonicus*. Regardless, it is found in the middle east and replaces the peregrine in the desert climates. The black shaheen is a peregrine subspecies, *f. peregrinus peregrinator*, and is native to India. These obscure ornithological points bring home the diversity and success of the peregrine and its subspecies.

Shaft: The central hollow strut of a feather, giving it support. [7]

Sharp-set: Ready for food and ready to hunt. It is no good expecting a hawk to fly at prey unless it is sharp-set. Said of longwings when they are keen and in hunting condition. See also keen.

Sharp-shinned hawk (*Accipiter striatus*): Known as the "sharpie," the smallest accipiter is legal for falconry by general and master falconers. "Sharp-shinned" refers to the raised ridge on the inside front of the tarsus (not actually a "shin"). Average measurements are for males: length: 10" (26 cm); wingspread: 21" (54 cm); weight: 3.6 oz (101 g). Average measurements are for females: length: 12" (31 cm); wingspread: 25" (62 cm); weight: 6 oz (177 g). [4]

Short-winged hawk: Vernacular term for a hawk of the genus *Accipiter*.

Sky up, to: When a flock of birds take to the air in a flurry to escape an accipiter they are said to sky up.

Slicing: The way a shortwing or broadwing squirts out mutes, sometimes several feet away and especially over freshly cleaned carpeting. A radius of about five feet marks the zone unless the carpeting is very expensive or in your mother-in-law's home. Then a ten foot radius may not be enough.

Slip: A chance at quarry. The cottontail bursting out of the underbrush is a slip.

A slip: A flight at quarry. Your red-tail coming down out of the tree after the hard accelerating cottontail is a slip.

To Slip: To release a hawk in pursuit of quarry. [7] The release of your red-tail's jesses for it to chase a hard-running cottontail is a slip.

Soar, to; soaring: (1) To rise up on air currents like an eagle, without needing to beat the wings. Almost any hawk may do this without warning in suitable conditions. (2) When a hawk takes to the air and enjoys flying for the sake of flying by gliding on thermals and other air currents, rather than flying at quarry. [7]

Sparrowhawk (*Accipiter nisus*): The sparrowhawk of classical falconry. Sized midway between the Cooper's hawk and sharp-shinned hawk. Average male measurements are: length: 15" (37 cm); wingspread: 24" (62 cm); weight: 5.3 oz (150 g). Average female measurements are: length: 15" (37 cm); wingspread: 30" (77 cm); weight: 10.2 oz (290 g). [20] Commonly known on this side of the Atlantic as the European sparrowhawk. Originally this prevented confusion with the American sparrowhawk (*F. sparverius*), now called the American kestrel. This latter prevents confusion with the kestrel (*F. tinunculus*), which of course is commonly known on this side of the Atlantic as the European or Eurasian kestrel.

Step off: The act of a hawk giving up its prey for a tid-bit so that the falconer can hide the quarry and thereby control the hawk's eating. Getting your hawk to step off its kill is a skill that apprentices must master to control their hawks in the field.

Stoop: A term to describe a steep dive toward prey from a substantial height. [18]

Strike a hood: Loosen a hood by the braces at the back, making it ready to be taken off instantly the moment the hawk is to fly. [16]

Swivel: The device which links a hawk's jesses to her leash, enabling her to move freely on her block or perch without getting tangled up in the jesses. It features two rings, connected in a figure-of-eight fashion with a bolt or rivet.

Take the air, to: The act of mounting up into the sky. [16]

Take down, to: The act of bringing a longwing back to the lure. [16]

Take up, to; taken-up: (1) To recover a lost hawk. [16] (2) The act of capturing a hawk from hack. (3) The act of "capturing" a captive-bred eyass in preparation of falconry. (4) The act of removing an intermewed hawk from the moult for reclaiming.

Take stand: To perch in a tree.

Tame hack: The process of hacking for imprints when the falconer is in attendance and stays in the general vicinity of the birds being hacked for the duration of the hacking period. The hawks are taken-up each evening and released the following morning.

Tarsus: The leg of a hawk between foot and hock. [7]

Talons: The sharply pointed and curved claws of a raptorial bird. [18]

Telemetry: Contemporary method of radio location of falconry birds.

Territory: A definable area having resources that are consistently controlled or defended by an individual against others of its own species or, less often, against individuals of other species, at least, for some part of the year. [18]

Territoriality: The advertisement and aggressive behavior associated with territorial establishment and defense.

Threatened: A conservation category of federal U.S. and Canadian wildlife agencies for designating those taxa that are not yet believed to be endangered, but whose known numbers place them at risk of falling into that category. [18]

Throw off: To cast off a hawk from the fist. [16]

Throw-up: To rise steeply on outstretched wings after missing a stoop. [12]

Tid-bit: A small piece of meat or quarry used to control the hawk in the field. With a tid-bit the falconer can call the hawk to him. With the proper tid-bit, the falconer can get his hawk to leave, or step-off, its kill.

Tiercel, tercel, tassel, tassell: The male peregrine. From the French tierce, meaning third. Refers to the male, as opposed to the falcon, which describes the female, from the fact that the male is usually about a third smaller than the female. Often incorrectly used to refer to any male hawk, as in "tiercel red-tail." A male red-tail is a "male red-tail."

Tiring: A tough piece of meat or a wing of pigeon or such like, given to a hawk in training while on the block or perch with which she can amuse and exercise in order to prolong the meal and exercise the muscles of the back and neck. Useful for bringing up an overdue casting. Also very useful in manning to keep the hawk occupied on the fist while being carried about. Also, it prevents the hawk from becoming bored or unduly nervous.

Tower, to: When a hawk rings up into the air vertically.

Traditional jesses: An earlier method of jessing a raptor with a single strap of leather. Traditional jesses have a well-known disadvantage. If the bird escapes, it has long dangling straps permanently attached to its legs making it vulnerable to being trapped from the swivel slits catching on obstacles. See also Aylmeri jesses and jesses.

Train: (1) A hawk's tail. See deck feathers, the two middle feathers of her train. (2) the live bird or animal which used to be given to a hawk when entering her to that particular type of quarry. Dead quarry now serves the same purpose. See also bagged quarry.[16]

Truss, to: To seize a quarry in the air and fly on with it. See also to bind and to carry [16]

Unreclaimed: A hawk still wild. [16]

Unsummed: Before a hawk's feathers are fully replaced during the moult. [16]

Upland game birds: Any of the ground dwelling birds such as grouse, pheasant, prairie chicken, chukar, quail, partridge and the like.

Upwind: Into the wind.

Waiting-on: The action of a longwing circling round above the falconer waiting for him to serve her with quarry to give her something to fly at. See also pitch. [16]

Wake, watching: One of the traditional methods of manning a wild-caught hawk. Sitting up all night with a newly-taken hawk to prevent her from sleeping, perhaps for two or even three nights running, as part of the process of taming or reclaiming her without daunting her spirit or setting her against the falconer. She is kept awake the whole of this time.

Warble, Warbling: To stretch both wings upwards over the back till they nearly touch and, at the same time, to spread the tail. [7]

Weather: To place a hawk outdoors so that it is exposed to fresh air, sun, and also people and animals. Hawks are said to be weathering when out on their blocks or perches in the open air.

Weathering ground, weathering area: The area where the hawks are kept on perches to weather. The area must meet standards of protection and comfort for the bird.

Webbing: The soft strands on each side of the feather shaft.

Wedded to [a quarry]: When a hawk prefers one type of quarry. [7]

Wind up, to: A method of capturing an escaped hawk which, although too wild to be taken up normally, does not mind the falconer being within about thirty yards. The hawk's legs are entangled in a thin line by the falconer walking round and round her as she eats food placed out for her. [16]

Yarak, to be in: An Eastern word, applied only to a shortwing, meaning that the hawk is in flying order, ready for quarry.

Translation of the opening paragraph:

"There we were. I **slipped** [released my hawk at prey] my **intermewed** [has moulted at least once in the mews] **tiercel** [male hawk—used here incorrectly] **eyass** [hawk taken as a nestling and raised by the falconer] **gos** [goshawk] **at a flush** [made a quarry animal nervous enough to break from cover and try to outrun or outfly a hawk]. He pursued, **checked** [hesitated], then **struck** [grabbed the quarry], **binding** hard [and held on tight]. Then he **carried** [picked up and flew off with the quarry] over the ridge, hiding [drag the quarry out of sight] in brush so deep I couldn't find him. So I pulled out the **yagi** [telemetry antennas/receiver] and got a **bearing** [direction] on him. Finally I got an eyeball on [visually located] him and **made in** [approached the bird while on quarry] on my hands and knees and used a **chick** [day-old chicken] to get him to **step-off** [give up the quarry] and onto **the fist** [my gloved hand]. Believe me, **drawing the hood** [closing the hood by pulling on the on braces] was the first thing that made me feel good all day."

See! It was exciting and it did have a happy ending.

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Editor's final note: The above numbering sequence for the glossary takes into account that some books were used for both study guide and glossary. I saw little utility in giving the same book two different numbers just for the sake of making the above lists neat.