

BAYWING\_DB: A pedigree and hunting performance database for Harris' hawks

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The discovery of Harris' hawks as falconry birds is one of the greatest advances ever made in the sport. A good Harris' hawk has a unique combination of calm temperament, willingness to tackle a wide range of game, adaptability to a variety of hunting circumstances, and social behavior that allows dogs, humans, and other Harris' hawks to join in the hunt. At least in North America, it is a rare falconry meet where Harris' hawks do not account for the majority of the game taken, attesting to their popularity and versatility.

The growing demand for Harris' hawks over the past 30 years, coupled with their very restricted geographic range in the U.S., has led to widespread captive breeding efforts. Fortunately, Harris' hawks have proven to be among the easiest raptors to propagate. There are "backyard" breeders of Harris' hawks in most U.S. states. American falconers and propagators are also lucky to have continued access to wild populations of Harris' hawks; even passage birds frequently become sufficiently comfortable to reproduce in captivity. There are essentially no limits on the availability of breeding stock, an enviable state of affairs indeed when compared with many of the other species used in falconry.

We have reached an important point in the history of Harris' hawk breeding. The combined experience of dozens of breeders and hundreds of falconers flying thousands of Harris' hawks has revealed that there is tremendous variation among the offspring of different pairs of Harris' hawks, and much of this variation appears to be under strong genetic control. Astute falconers and breeders have begun to focus their efforts on bloodlines that consistently produce Harris' hawks with desirable falconry characteristics: tameness and trainability, intelligent use of height and position in the field, good social skills with other hawks and dogs, eager and persistent pursuit of quarry and athletic ability. We find ourselves at the beginning of the domestication process for Harris' hawks, and there is good reason to believe that the transformation from wild hawk to specialized falconry bird will be every bit as dramatic and successful as was the domestication of modern hunting dog breeds from their wolf ancestors.

The key to progress in any long-term breeding program is meticulous record-keeping. One need only note the ever-increasing speed of thoroughbred racehorses, all of which can trace their ancestry to just 3 Arabian and Turkish stallions brought to England in the 1600s, to obtain ample evidence of the value of pedigree records. It is imperative that falconers now develop and maintain comprehensive pedigree records for Harris' hawks, and link these pedigree records to hunting performance data, so that superior individuals and bloodlines may be recognized and improved by selective breeding. At the moment there is no centralized database of pedigree information for captive-bred Harris' hawks. For instance, the annual reports submitted by licensed raptor propagators to the U.S. Fish and Wildlife Service do not contain pedigree information, although each propagator is supposed to keep pedigree data in his or her own personal records.

I propose to address the need for a comprehensive pedigree and performance database for Harris' hawks by the creation of BaywingDB, an international public database accessible via the World Wide Web. BaywingDB at <http://falconry.cfr.washington.edu/Baywing> was inaugurated in April 1999. As of this writing (June 1999), BaywingDB contains pedigree information for more than 300 Harris' hawks from around the world. These 300+ birds represent an excellent beginning; however, I estimate that at least 2000 Harris' hawks have

been bred in captivity in the U.S. alone over the past 30 years, so there remains a great need for breeders and falconers everywhere to contribute information about their Harris' hawks to BaywingDB. I hope that those who contribute information to BaywingDB will in turn use the database to aid in the genetic improvement of this marvelous falconry bird.

What are the advantages of participating in the BaywingDB project? If you are a breeder, the database records will allow you to track the performance of the birds derived from your breeding project. You will be able to determine the genetic relationship of new breeding stock to your current program and to the programs of other breeders. This will permit you to manage levels of inbreeding to intensify desirable characteristics of individual birds and bloodlines, while simultaneously flagging potential genetic problems which may arise as line breeding is done. If you are a falconer, BaywingDB will help you find a breeder and perhaps a particular pair of birds which produce the kind of offspring you'd like to fly. You can find out how the relatives of your hunting birds are performing for other falconers around the world. My fondest wish is for breeders to produce the best possible Harris' hawks for falconry, and for falconers to get the most enjoyment from their birds. It will require a cooperative effort. The free and open exchange of pedigree and performance data will facilitate this cooperation.

This is a particularly auspicious time to begin a venture such as BaywingDB. First, many of the "old timers", who pioneered the use of Harris' hawks in falconry and who initiated the first captive-breeding projects, are still around and able to remember the origin and pedigree relationships of the founding stock. This historical perspective is especially important for the time period before the USFWS Raptor Propagation Permit system, with its annual reports and seamless bands, was put into place. Second, the inaugural edition of BaywingDB reveals that some breeders are already producing their fourth generation of captive-bred Harris' hawks, increasing the immediate value and applicability of detailed genealogies. Some unexpectedly close relationships among breeding birds acquired from various sources have already been discovered, and there are probably more surprises of this kind in store. Third, the nearly universal presence of the web makes it possible to collect, analyze, and disseminate up-to-date information quickly, with relatively little difficulty, and at low cost. The majority of the work to establish BaywingDB will come in the first year, when a rich 30 years of "legacy" data must be entered. Subsequent annual updates should be much easier. Fourth, more and more falconers are becoming discriminating in their purchases of captive-bred Harris' hawks. While it is certainly true that the average Harris' hawk is more than adequate for the average falconer, a wise falconer naturally prefers to start with the very best available bloodlines so that his or her substantial investments in time and effort are rewarded fully. A really well-bred Harris' hawk practically trains itself, in the same way that an Elhew pointer learns its trade with only minor human intervention. I find that my own expectations for a new Harris' hawk have grown remarkably over the years. Twenty years ago I was satisfied with just catching cottontails and jackrabbits on a regular basis. Today, I still expect a Harris' hawk to fill the freezer with rabbits, but I won't keep a young bird unless it also is completely tame (even during the molt) and at ease in an open flight cage, is well-mannered in the company of other Harris' hawks, hunts well with (not for!) small dogs, learns quickly the essentials of rabbit hunting tactics in all types of terrain, and is unstinting in its efforts to catch quarry. A first-class Harris' hawk will do all these things, and not scream even at home! If falconers set high standards for their Harris' hawks, and are willing to pay a premium for quality (money well spent, in my opinion), breeders will rise to the challenge and meet the demand. Believe me, not all Harris' hawks are created equal, and you can really simplify and improve your falconry life by purchasing a young bird from proven

bloodlines. "Blood will tell" in Harris' hawks, just as we know that it does in gun dogs, racehorses and homing pigeons.

There are several ways for breeders and falconers to contribute Harris' hawk pedigree and hunting performance information to BaywingDB. The simplest is to use the web-based data entry forms which can be found at the BaywingDB website <<http://falconry.cfr.washington.edu/Baywing>>. If you have information on many birds to enter at once, there are Excel97 forms which can be downloaded from the BaywingDB site, filled out, and e-mailed to me <[toby@u.washington.edu](mailto:toby@u.washington.edu)> as attachments. If you are unable to use the web-based forms or Excel spreadsheets, a list of the required information is included at the end of this article. Simply write the necessary information on a piece of paper and mail it to me - Toby Bradshaw, 17721 3rd Pl SW, Seattle WA 98166.

Dan Pike <[danpi@microsoft.com](mailto:danpi@microsoft.com)> is helping develop a web-based system to allow falconers and breeders to search BaywingDB directly, but at the moment the database is stored in 3 file formats: in Breed Mate <<http://www.breedmate.com>> pedigree software format, as a Microsoft Excel97 spreadsheet, and as a comma-delimited ASCII text file. Anyone with web access may download BaywingDB from the website. Breed Mate software has been chosen as the primary pedigree database because of its ability to draw and diagram pedigrees, track ancestors and descendants, and calculate inbreeding coefficients. However, it is possible for falconers and breeders who do not have Breed Mate to do a great deal of analysis (sorting, ranking, etc.) in the Excel97 version of BaywingDB, and of course the data also could be imported into a relational database program such as Microsoft Access if sophisticated queries are needed.

#### BaywingDB data entry.

The information requested for each Harris' hawk in the BaywingDB pedigree and hunting performance database is shown below. A short description of each database field follows. When filling out data forms, it is vitally important that no incorrect data be entered. It is much better to leave a space on the form blank than to guess or enter bad data! This is particularly true for pedigree data for captive-bred birds and geographic origin information for wild-caught birds. It is OK to estimate numbers of quarry taken on the Hunting Performance form if you don't have accurate written records. Please try to resist the temptation to estimate head counts the same way that anglers estimate fish weights!

#### PEDIGREE INFORMATION:

Bird's name. Each bird in BaywingDB must have a unique name. In the event that duplicate names are contributed to the database, all except the first one contributed will have the initials of the owner appended. For example, the first entry of a Harris' hawk named "Delta" was made by me, so it is simply listed as "Delta". Jennifer Coulson subsequently contributed information on her bird "Delta", so this bird was entered into Baywing DB as "DeltaJC". Captive-bred birds contributed by breeders are first assigned BaywingDB names defined by the breeder's initials followed by a number. For example, "TJC203" was bred by Tom and Jennifer Coulson. When "TJC203" is sold and the new owner submits hunting performance data, the band number will be checked against the database and the bird's record updated with the new name given by the bird's owner.

Sex. Male (M) or female (F). Leave blank if uncertain.

HY. Hatch year, 4 digits (e.g., 1999).

Bird's father's name. If the father's name is unknown, any information you can

provide that might help track him down would be helpful. Please make sure that the father's name is spelled correctly - computers are very unforgiving of spelling errors. If you are reporting on wild-taken eyas birds, please note if more than one bird was taken from the same nest in a given year, since it is generally safe to assume that these birds are full- or half-siblings.

Bird's mother's name. See above.

Bird's band number. Self-explanatory.

CB/WC. Captive-bred (CB) or wild-caught (WC).

Father's band number.

Mother's band number.

Owner. Current owner's name. Last name; first name. Contact information (other than first and last name) about breeders and falconers who have contributed to BaywingDB will not be released to the public.

Breeder. Breeder's name. Last name; first name.

Country of origin. Only applies to wild-caught birds (e.g., USA).

State of origin. Only applies to wild-caught birds (e.g., AZ).

Locality of origin. Only applies to wild-caught birds (e.g., 100 miles east of Tucson).

Disposition. Bird's fate (e.g., death, lost, transferred).

Year of death. 4 digits.

Cause of death. Electrocution, injury, disease, accident, etc.

Alternate band number and comments. If the bird has had band numbers other than the one given under "Bird's band number" above, list them here. Any other comments (up to 250 characters) about the bird or its pedigree can be written here.

Last updated. Today's date.

#### HUNTING PERFORMANCE:

Unfortunately, there are no particularly objective measures of hunting performance. In falconry we don't yet have any reliable standards like a horse race or even a dog field trial. Nevertheless, any bird that runs up a big score must have something going for it - a favorable combination of genes, training, game abundance, and falconer perseverance.

Weight. Flying weight in grams (1 ounce = 28.3 grams). Use the weight that gave the most reliable performance on difficult quarry.

Seasons. Number of seasons hunted. Fractions are OK. For instance, a "full season" could be considered six months of hunting five or more days per week. Six months of weekend hawking could therefore be listed as 0.4 seasons.

Rabbits. Total number of rabbits caught over all seasons hunted.

Hares. Total number of hares/jackrabbits caught over all seasons hunted.

Upland. Total number of upland game (quail, pheasant, etc.) caught over all seasons hunted.

Waterfowl. Total number of waterfowl (ducks, moorhens, etc.) caught over all seasons hunted.

Miscellaneous. Total number of miscellaneous game (crows, squirrels, etc.) caught over all seasons hunted.

Total kills. Total number of kills over all seasons hunted.

Kills best season. Total number of kills in the bird's best single season.

Owner best season. Bird's owner in its best season. Last name; first name.

Overall hunting performance. Rank 1-5, "1" = worst, "5" = best. Enter "ND" if there is insufficient data to make a judgment. Remember that even an average Harris' hawk (a "3") is a pretty good bird!

Group hunting. Rank 1-5 (or ND). A "1" fights with other Harris' hawks at every opportunity. A "3" might fight with certain other individuals, or if provoked. A "5" will not fight even when provoked by another bird.

Hunts well with dogs. Rank 1-5 (or ND). A "1" attacks most or all dogs at every opportunity. A "3" might grab a particular dog, or pick on small dogs but not large ones. A "5" has never attacked even a small dog wriggling through the brush inches behind a rabbit.

Following and position. Rank 1-5 (or ND). A "1" is nearly always out of position, and hunts best directly off the fist. A "3" follows fairly well, lagging behind occasionally. A "5" responds to the falconer by moving to the indicated position, mounts to tall structures, slope soars when possible, constantly adjusts its position to deal with changes in cover and the location and activity of the dogs, and often leads the hunt. There is nothing more deadly in cover than a Harris' hawk that positions itself well.

Flight speed and quickness. Rank 1-5 (or ND). A "1" loses ground to a rabbit in the open. Thankfully, these are rare. A "3" can overhaul any rabbit or hare in the absence of a headwind. A "5" is the closest thing to a goshawk with brains. Differences in speed are most notable on hare/jackrabbit flights and in pursuit of upland game, especially when hawking with a group of Harris' hawks.

Footing. Rank 1-5 (or ND). A "1" misses easy catches. A "3" is a solid performer that catches most quarry at which it has a fair shot. A "5" seems to have a tractor beam.

Hunting comments. You have a small space (250 characters) to sum up the bird's ability. This is a good place to note the capture of unusual quarry (e.g., deer, bobcat, turkey, swan).

I look forward to your contributions to BaywingDB, and would appreciate any suggestions you may have for improvement of the database.

Acknowledgments: I wish to thank Dan Pike for providing advice and hardware for the BaywingDB website. Tom and Jenn Coulson generously made their extensive records of captive-bred Harris' hawks available to BaywingDB, and have spent many years breeding and flying the kind of Harris' hawks that make the sport what it is today.

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