

A WORD OF CAUTION ABOUT SKULL-AGING AIDS - R. P. Yunick

In attempting to improve upon the technique of skull aging, some people have sought means to achieve quicker wetting of the feathers on the heads of birds under observation. I believe that some of the "improvements" may represent potential hazards to the birds so treated.

Specifically I am referring to the use of surfactants in the water used to wet a bird's head. Under the heading of surfactant I include various wetting agents, alcohol, detergents and soap. All of these agents have the effect of lowering the surface tension of water, making it, in effect, "wetter" and allowing more rapid coating or penetration of the surface to which the water is applied. This sort of action is very essential to the success of these materials as cleansing agents. There is no question that they aid in the ease of wetting feathers, and therefore, aid skull examination. The question is, however, "What else do they do?"

Photo-Flo

I became concerned with this problem after reading Arthur J. Wiseman's comprehensive paper, "Ageing by Skull Ossification" (Inland Bird Banding News, 40(2): 47, 1968), in which Mr. Wiseman recommends the use of Kodak's "Photo-Flo" wetting agent. Sometime later, when I happened to see a bottle of "Photo-Flo" at Island Beach, and read the label and learned that it contained ethylene glycol, I became even more concerned. Since then, I have inquired further among banders to learn that more than just a few people use surfactants of one sort or another.

Ethylene glycol is mildly toxic, and this fact sent me on a search of its hazardous properties. Sax in his "Handbook of Dangerous Materials" (N. Irving Sax, Reinhold Publishing Corp, N.Y., p.165) claims that externally, ethylene glycol "will cause ocular irritation and paresis (paralysis) of abductens nerve after some months. However, this material is not considered very toxic." He states further that it approaches the toxicity of methyl (wood) alcohol. In a later edition ("Dangerous Properties of Industrial Materials" Reinhold Publishing Corp, N.Y., 1968, p. 745) he lists it as a slight irritant giving rise to reversible changes that disappear when exposure is discontinued. As an ingested material, it attacks the central nervous system, and 100 ml. (about 3.5oz) is reported to be lethal in man. Let me state at this point, I do not know how these effects translate from man to bird.

Further, I do not know what the ethylene glycol content of "Photo-Flo" is, however, at the dilution rate of one drop to one ounce of water, as recommended by Mr. Wiseman, it is unlikely that the amount contained in the solution used in skull aging one bird, even if totally absorbed, would be toxic to that bird. However, since ethylene glycol is

a known irritant in man, it is possible that even at minute concentrations it may function as an irritant in birds. Since skull aging involves working in such close proximity to the eyes, one who uses it does run the risk of inducing irritation in that bird.

Alcohols

Some people use alcohols or alcohol solutions as skulling aids. The three commonly available alcohols are methyl (wood), ethyl (grain) and isopropyl (rubbing) alcohol. Sax (1968) classifies all three as slight local irritants. Anyone who has had rubbing alcohol enter an open wound knows the sensation. The internally toxic effects of isopropyl alcohol are not well known, because of contradictory reports on its effects. Ethyl alcohol is non-toxic internally. Both are readily metabolized and eliminated. Methyl alcohol, however, is toxic because it metabolizes so slowly, as to be accumulative, and its metabolites (formaldehyde and formic acid) are toxic. In the eyes, methyl alcohol causes atrophy of the optic nerve; ethyl alcohol is an irritant; and isopropyl alcohol causes corneal burns and is an irritant. In addition, all three are narcotic when consumed or absorbed in sufficient quantity. They evaporate readily at ambient temperature, so that, except for what is absorbed through the skin, evaporation of the alcohol leaves no secondary or lasting effects on the surface where applied. This is not so for ethylene glycol and certain detergents.

Detergents and Soap

The number of detergents and soaps (liquid, powder, bar, etc.) on the market is legion. Those of which are available in the supermarket are probably not toxic in normal usage, since they must pass rigid FDA testing to qualify for sale. I cannot comment on their irritant properties because there are too many kinds and frequently their chemical identity is shrouded by one of a multitude of brand names.

Regardless whether they are, or not, toxic or irritating, they are generally non-volatile and persistent. Namely, when applied as a water solution, and in time the water evaporates, the detergent or soap stays behind to do its job again when it comes in contact with water. These agents temporarily destroy the water repellancy of the plumage of a bird to which they are applied, until the bird can rid itself of the agent by wear, washing or other means. A fall migrant skull-aged with a detergent on one day may encounter a grounding front with rain and sharply dropping temperatures the next day. Rather than repel a chilling rain, the bird's treated plumage may readily wet, for that is the purpose for which the detergent was intended, and create an overly soaked creature. This bird's chance of survival has been altered.

This same situation prevails with ethelene alcohol. It is very high boiling (nearly 400 degr. F.), and slow to evaporate at ambient temperatures. Once applied, it persists for an undetermined amount of time produ-

cing repeated wetting when contacted with water, until it is thoroughly washed from the scene of application.

In addition, these persistent surfactants are potentially migratory. A drenching rain or bath, after once wetting the affected area, may produce a washing action that causes the surfactant to migrate into the ocular area or elsewhere.

Conclusion

Despite its slower wetting ability, water appears to be the soundest approach to wetting down a bird's plumage for purposes of skull aging. Alcohols present possible risks as irritants; ethylene glycol and various detergents and soaps present possible risks as persistent, migratory wetting agents; and until data are at hand to refute the risk potentials, I do not recommend the use of these surfactants as skull-aging aids.

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Letters To The Editor

I have been fascinated with "Twenty-four Eaglets: A Banding Odyssey" by John B. Holt, Jr. Thank you for publishing it.

Someday, would you write an article about methods of colorbanding birds? I'm in the boon-docks with little chance to go to meetings and would like to know how birds (geese, ducks, etc.) are marked with paint, dye, wing tags, nasal saddles, etc.

Mrs. John M. Stewart, Marietta, Ohio.

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Although we are presently determined to look further into the situation of the Evening Grosbeaks in central New Brunswick, it seems that EBBA News will no longer be interested in any future reports we may be able to offer. If we interpret certain current editorializing correctly that which has been a bulletin full of fascinating readable bits of worthwhile ornithology is about to be transformed into a carrier of "scholarly papers". Very suddenly we feel uncomfortable and dreadfully out of place.

Mr. and Mrs. G. H. Parks, Hartford, Conn.

(If members fail to submit enough material to fill six issues per year, we are forced to search for other material from a yet untapped source (for EBBA). We never said we were not willing to accept papers from our members and hope you will continue to send them. Editor).