

Is vitamin B deficiency adding to the challenges confronted with hand rearing of Common swift (*Apus apus*)?

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It has been more than 14 years since a CD “Rehabilitation of Swifts, Swallows and Martins” became available from the website: swift-conservation.org. Gillian Westray has specifically designed this CD for the wildlife professional rehabilitators to help them dealing with rearing swifts during breeding season in the UK.

Among the documents compiled by Gillian Westray, there is information on veterinary assistance to swifts, which comes from dr. med. vet. Christiane Haupt who heads the Frankfurt Swifts Clinic, and is also a world expert in treating and rehabilitating swifts. The Clinic website is: www.mauersegler.com and it provides relevant and comprehensive information like for example a guide to first aid and treatment.

The knowledge about swift rehabilitation is constantly being updated by new research. As a best example the work of Enric Fusté from Catalonia Wildlife Rehabilitation Centre is highly recommended. His research article (<https://www.jzar.org/jzar/article/view/33>) has convincingly shown the necessity of using a specific insectivorous food and how badly swifts could perform when they are fed with non-insects based diet. Even a small amount of these wrong foods can be enough to cause irreversible damage to body composition and feather condition.

In 2016 Enric Fusté set up a website <http://falcionegre.com> dedicated to teach people about contemporary methods of rehabilitating swift. This website contains all necessary information on rehabilitation of swifts that is illustrated with videos and photographs, so that it enhances our knowledge on the subject in easy and practical way. Moreover a specially written protocol (translated to many languages) for handling swifts from the admission to a rehab centre to the moment of release is also extremely useful.

In addition to the importance of an insect based diet, the proper composition of vitamins and minerals is a key element in successful rehabilitation of swifts. Available on the market, vitamin supplements added to the diet and intended for birds do generally meet the expected daily dietary requirements vitamins from all groups. Despite adequate supplementation of food for swifts with appropriate vitamins and minerals, one must take into account the possibility that swifts may still be deficient in some of them. Noteworthy is the high risk of developing vitamin B deficiency in hand-rearing swifts even if their diet was properly enriched.

This article is aimed to present the most relevant aspects related to occurrence and prevention of vitamin B deficiency in hand-reared swifts and was previously presented at Fifth International Swift Conference in Israel in 2018 year.

I believe that I first came across symptoms of B vitamin deficiency in hand-reared swifts roughly seven years ago. Although my knowledge on the subject was insufficient at that time, the information that was already available on the website of the Frankfurt Clinic helped me a lot to apply the appropriate treatment, so that the swifts could be released into the wild.

Later when I realised that wildlife rehabilitation centres and swift carers had various approaches to this problem, I decided to dig deeper into the problem. Twelve rehabilitators from seven countries were surveyed about their experience with vitamin B deficiency occurring in hand-reared swifts and about methods they use to prevent it. The survey questionnaire comprised of thirteen questions. Here are summaries of answers to some of them.

The results show that over 80% of respondents had experience with B-hypovitaminosis in hand rearing swifts. The reported prevalence of this condition ranged from 2 to 10% a year.

The occurrence of vitamin B deficiency in all age groups ranging from nestlings and fledglings to adult birds was reported. Fledglings with deficiency symptoms were mostly 4-6 weeks old and almost ready to be released. In addition, cases of vitamin B deficiency were observed in adult swifts kept for a prolonged period of time (e.g. over the winter).

Almost all respondents believed that there was a relationship between several factors like stress situations, adverse environmental conditions, illness, medical procedures and the prevalence of B-hypovitaminosis. All the rehabilitators, taking part in this study, agreed that the quality and variety of insects provided in swift diet was another very important factor influencing the wellbeing of birds. Moreover, some of the respondents believed that commercially raised feeder insects should be fed with a special enriched diet to enhance their nutrient content prior to being offered to swifts. Regardless of that the survey participants have agreed that it is still essential to offer the birds “the enriched insects” (e.g. dusted with minerals and vitamin supplements or soaked in an infusion of calcium gluconate and vitamin B complex) in one meal daily.

The survey also included a question about symptoms of vitamin B deficiency. Rehabilitators described these as appearing suddenly and often taking a dramatic course. Because the symptoms are usually nonspecific in the beginning there is always a high risk to easily overlook or underestimate them. Initially, there are changes in behaviour manifested by decreased appetite and head tremor. Birds are also prone to neuromuscular problems, resulting in impaired digestion, general weakness, “star-gazing” posture (opisthotonus), and frequent convulsions. If not recognised and treated in time, these neurological abnormalities can continue to worsen and have fatal consequences, even leading to death of the bird. Among young birds, the course may be even more dramatic. A case was described where a nine-day-old swift chick was dead within 30 minutes of the first symptoms. It is worth noting that it has been observed that symptoms can also occur in swifts fed a vitamin B-supplemented diet.

Six rehabilitators (50%) used prophylactic injectable form of B vitamin (regular injections of appropriate doses) following the recommendation from the Frankfurt Clinic. The remaining respondents did not inject their swifts and were using oral supplementation only unless deficiency symptoms had occurred. When the initial stage of hypovitaminosis were diagnosed, administration of vitamin B complex by a veterinarian by the subcutaneous (SC) route was usually sufficient to resolve symptoms in a short time (about a

half to one hour). The safest site for subcutaneous injection in swifts is the groin, (the skin fold above the knee).



Picture 1 Three healthy young swifts under the care from 2021 season.
(Photo by Piotr Szczypa)





Pictures 2 and 3 Swift showing neuromuscular problems and opist

Conclusion

Swifts are exclusively insectivorous and eat a vast range of insects. When hand-reared they are very sensitive to deficiencies of some minerals and vitamins.

B vitamin deficiency is only observed in hand-reared swifts. Wild swifts, whose diet is rich and varied, do not suffer from this condition.

The results from this survey seem to suggest that in spite of good general awareness of vitamin B deficiency in hand reared swifts among people engaged in carrying for swifts further research, effective communication and education are needed to prevent this condition from occurring.

hotonic posturing due to vitamin B deficiency. (by Maria Villegas from Mauersegler Hambach, Germany)

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. **The list of references is available on request**