Mounting a European White-Tailed EAGLE

PHOTOS AND TEXT **by Berend Koch**

A WHITE-TAILED EAGLE, *Haliaeetus albicilla,* is on the CITES list of endangered species, and so it is a rare opportunity and great chance for a taxidermist to mount one of these large birds of prey. In Germany, the white-tailed eagle, which is a relative to the American bald eagle *(Haliaeetus leucocephalus),* has a breeding population in the northeast of the country.

The bird that was mounted was a large adult female found in February 2001 with the following measurements: length overall length 35.43 inches, length of wings 26 inches, spread of the wings 90.15 inches and weight 8.82 pounds. (A bird this size in good condition normally should weigh about 14.3 pounds). There was no visible cause of death. No injury was to be seen, the inner organs looked healthy and the feathers were clean, but the eagle hadn't had any food for a long time.

Such a precious and rare animal is predestinated for mounting, both the bird and the skeleton. Because of this, it was necessary to make a boneless mount and duplicate the visible parts, like the bill and the feet.

BEREND KOCH was born in 1963, and is married to Dr. Ute Koch, who is a graduated biologist. They have two children, Jan (born in 1995) and Sigrid (born in 1999). When he was 20 years old, he became an unpaid assistant at the Mainz Museum of Natural History, department of taxidermy. Then Koch graduated from Ruhr University of Bochum as Preparator / Taxidermist. His next position was at Präparationsatelier Hannes Wimmer, Pfarrkirchen/ Germany. Since 1988, Berend Koch is the taxidermist at the Institute of Zoology of the TU Darmstadt. He is a member of the German Preparators' Association (VDP); Vicechairman and Treasurer of the VDP/County of Hesse; electet expert (biology) of the VDP; and Swiss Association of Preparators of Natural Sciences (VNPS).

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1. First of all, I made a lot of photos of the dead eagle. But the colors (bill, legs etc.) of a living eagle are different than those of a dead one. Therefore, it is very important to have good reference material.

Skinning and Tanning. The skinning procedure is the same as used on most other birds. Everyone has his or her preferred technique. In this case, I also cut on the line between the feathered skin and the featherless parts around the bill (head) and the scaled skin of the tarsus (legs). The skin of the legs was cut completely towards the belly incision in the same way that is useful in medium and large mammal taxidermy. For skinning the wings, I made incisions underneath.

2. As it is necessary to undertake anatomical studies, head, neck, body, legs and if possible wings shouldn't be separated during skinning.

3. The skin was preserved by tanning with Tannit VGS (Boehme Chemie, Germany), but using Lutan F will also provide good results. Meanwhile, I'm tanning all my bird skins like mammal skins because it's the only way to get a really preserved, not dehydrated, skin. Some advantages are better handling during mounting and less shrinkage during drying. Moth- and bug-proofing were performed in an extra bath with Eulan SPA (Bayer, Germany) after the tanning process. After tanning and proofing it was very useful to separate (remove) the wings for the mounting process of a bird of this size.

Reproduction of Body and Neck. While doing skin preservation the body was prepared for casting. After the anatomical studies and photographic documentation were done, legs and head were separated from the body with neck.

4. Now body and neck were frozen in the desired attitude and covered in aluminum foil, prepared for the carcass cast.

5-6. The frozen body was bedded in sand for making a two parts plaster negative mold.

7-8. Out of this negative mold, a plaster positive was cast with a wire inside for stabilization. To fill up the whole mold, a very thin batch of plaster was mixed. Vaseline was used as a release agent. Because the bird was very meager I had to build up some muscles on the plaster body,

especially the breast. This was done with modeling clay. The next step was a four-parts negative mold of the plaster body.

9A-B. After covering the mold with Vaseline as a separator, the plaster body was bedded in clay for molding the dorsal side as one part. I made the first section of the mold with an epoxy lamination reinforced with fiberglass cloth.

10. The ventral side was molded in three parts by using clay as dams with locks for fitting the parts together better.

11. For separating the parts of the negative mold, some wedges were made of clay and placed at the flange of the mold.

12. After removing the last clay dam, the fourth part was made.

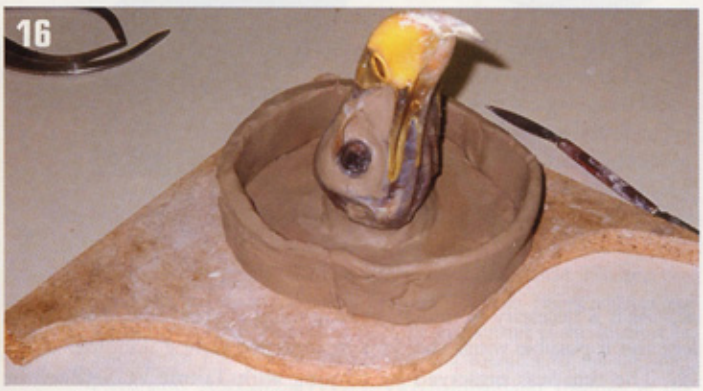
13. Before disassembling the parts, holes (5mm) were drilled through the flange of the mold for later fixing with cap screws, nuts and washers. After removing the plaster body, the four parts of the negative mold were smoothed out with thickened epoxy to eliminate any air bubbles. Note the holes drilled through the flange.

14A. While assembling the parts, a 40x40-mm, quadrangular pine wood was inserted into the negative mold where the knees were. The threaded rods of the legs were fixed through this pine wood later in the mounting process. A wire for neck stabilization was also inserted.

14B. After assembling, the four parts were screwed together. A two-compound polyurethane foam was poured through a paper funnel into the negative mold.

15. After curing, a foam body of the white-tailed eagle was the result.

Reproduction of Head and Bill. One advantage of an epoxy reproduction is to keep the original head for the skeleton; the other is that it makes the finishing and painting process much easier.



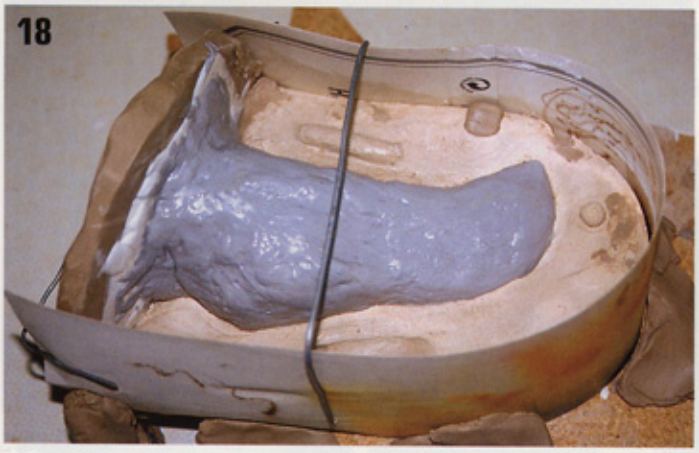
16. All undercuts were filled and smoothed with clay. The head was bedded in clay with the bill pointing to the top.

17. Using a paintbrush, the head was covered with a thin layer of silicone rubber to pick up the details and lessen the possibility of air bub-

bles. I used Wacker Elastosil M 4503 (the former name was RTV-M 533) with Catalyst T-46. All air bubbles were worked out during this thin coat application.

When this white-colored layer of silicone rubber had gotten a sticky surface, a second thick layer was applied without undercuts. This silicone rubber was colored with oxide black dry pigments to a light grey. To get a paste-like consistency, Additive M was added to the silicone rubber.

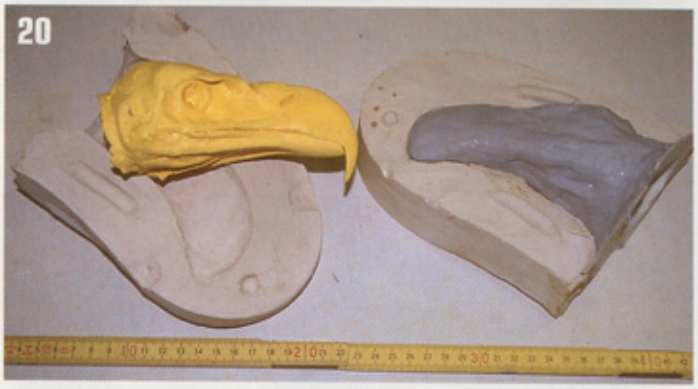
After curing, a two-part plaster mother mold was made. For this purpose, half of the silicone-covered head was bedded in clay and edged with a dam of cardboard. Some locks were made in the clay surface, which was necessary for a better fitting of the two parts of the plaster mother mold later.



18. After pouring and curing the plaster, the mold was turned and the clay was removed. Then the plaster and the cardboard were coated with Vaseline to act as a separator.

19. Now the plaster for the second half of the mother mold was poured. After the plaster was cured, the head was removed and the inside of the silicone mold was cleaned and coated with Reckli Mould Wax, a release agent.

20. After assembling the three parts (1 part silicone rubber, 2 parts plaster), the mold was ready for casting the reproduction. For casting the epoxy reproduction I chose Reckli Epoxy Compound 71-30, an ivory-colored, fast epoxy resin which also works great on bone reproductions.



Chromium oxide yellow dry pigments gave the right color base for the bill of the white-tailed eagle.

Only a little color finishing was needed. The epoxy resin, mixed with color pigments and catalyst, was poured into the negative mold of the eagle's head. To avoid resin overheating, a small amount of resin was poured into the mold. To get a first thin layer, the mold was rotated by hand. After curing and air bubbles escaping, the bill and forehead were filled. The rest of the "skull" was filled with two-compound polyurethane foam, producing a solid, lightweight casting.

Reproduction of the Legs.

21. The wired legs were fixed in the desired position, bedded in clay and put into the freezer.

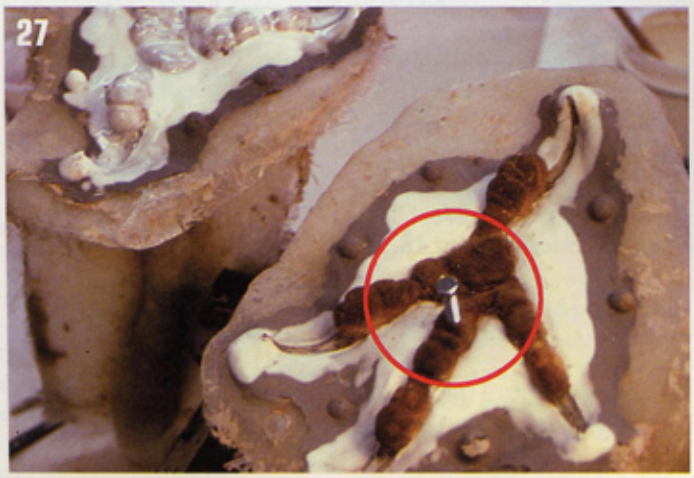
22. The lower legs, tarsus and the topside of the toes were covered with silicone rubber, the same ma-

terials and procedure used in the head reproduction.

23. To produce the mother mold for stabilization, a dam was built of cardboard along the silicone mold of each leg. The cardboard was leveled where it met the silicone with clay A separator (Vaseline) was applied to the dam of cardboard and clay.

24-25-26. The front side of the leg (with the three toes) got an epoxy-laminated mother mold, reinforced with fiberglass cloth. Then the cardboard dams were removed and the back side of the leg got an epoxy-laminated mother mold in the same way.

27. The next step was to turn the mold with the underside of the toes to the top and fix it in a vise. The clay was removed and the toes were cleaned. Where the threaded rod (6 mm) should come out of the reproduction later, a short screw of this diameter was screwed in the underside of the middle toe.



28. Then all was covered with silicone rubber and the epoxy laminated mother mold was made over it. I used Reckli Mould Wax as a release agent between the two parts of the silicone mold.

29. Before disassembling the parts of the mold and removing the original legs, the edges were trimmed and holes (5 mm) were drilled for bolting the mold together later. After that, the original legs were removed.

30. The most difficult part, casting the reproduction legs, was done as follows: First, the inside surface of the silicone mold parts was coated with mold wax. Then the mold parts (silicone and mother mold) of the leg and upper half of the toes were assembled, screwed together and fixed in a vise. The open (toe) side shown to the top. A threaded rod (6mm) for inserting into the mold was bent in the way not to touch the sili-

cone rubber. It came out of the top (knee) of the mold straight, without any angle, and on the (toe) side, hitting the prepared opening for the threaded rod in the mold at the toes made during molding, also without any angle. It is very difficult to re-bend a threaded rod after having made a mistake, so I recommended making a pattern out of wire first. The threaded rod was fixed in position with masking tape and light wire and also covered with masking tape to avoid epoxy resin curing in the threads of the rod. The second leg underwent the same procedure.

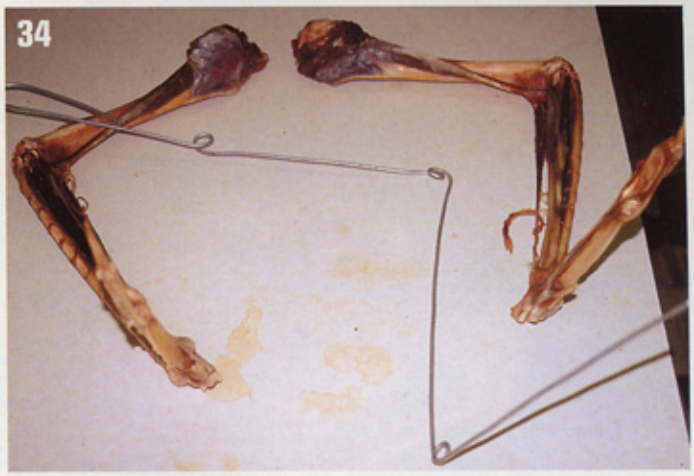
The same epoxy resin used to cast the head (with the same pigments) was used to cast the legs. For the dark claws, a nice realistic effect was obtained by brushing a small amount of graphite powder into the mold where the claws were pictured.

As seen in the photograph, a first thin layer of the chromium oxide yellow-colored epoxy resin was applied with a paintbrush into the parts for the top and underside of the toes.

After all visible air bubbles were removed, the molds were filled with paste-like epoxy resin. This was obtained by mixing the colored Reckli Epoxy Compound 71/30 with Reckli Filler C. The under-part of the mold was put over the end of the threaded rod covered with masking tape, and both parts were pressed and screwed together. Later, the masking tape with the sticking resin was removed and the rod showed a clean thread.

31. The partly-filled epoxy resin mold was turned in a vise so that the knee opening with the second end of the threaded rod showed to the top. Now the rest of the mold was filled up with chromium oxide yellow-colored epoxy resin.

32-33. After disassembling the mold, the result was a precolored cast leg. Only a little finishing work was needed. The seams were removed with a Dremel grinder.



Carving the Wings. In contrast to the other artificial parts, the process of making the wings was a little bit easier. I decided to carve them.

34. Galvanized wire was bent in the form of the original wings.

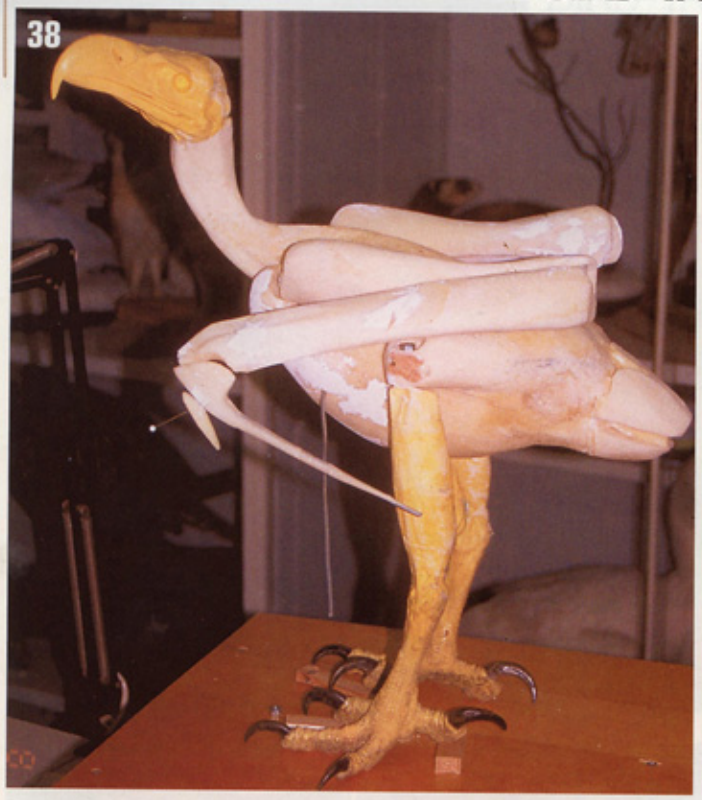
35. Around these bent wires, a plastic bag was heat-sealed at the various points to form the shape of the wing.

36. It was filled with two-compound polyurethane foam and held in such a way that the wire was always located in the center of the expanding foam.

37. After curing, the shapeless foam was rasped down to the natural size of the original and the skin was tried on several times for fit. For a secure connection between artificial and natural parts, the end of the wire should be long enough for inserting it into the quill of the outer primary later. For better wing flexibility, foam was removed at the joints (elbow and hand).

Finishing the Artificial Parts.

38. The cast and carved parts were assembled temporarily for the first time before the final mounting. First of all, there were drilled holes at the knee locations through the pine wood of the foam body to insert the threaded rods of the leg reproductions. The leg rods were inserted and fixed with nuts. Then this unit was also attached with nuts on a mounting base. The body angle in relation to the leg position was refined with



a rasp. The transition was filled and smoothed with Sculp-All. To avoid a permanent connection, plastic foil was laid between the thighs and lower legs.

39. The same procedure was practiced with the head to neck conjunction.

40. With two-compound polyurethane foam, thigh muscles and a tail slot were supplemented. The tanned skin was tried on several times. Then holes were drilled into the shoulder for inserting the wing wires.

41. After all the body areas were completed, the foam parts were covered with black-colored, thin, clear epoxy resin to seal the surface. Black oxide pigments were added for better control and to make sure all areas were covered. At the precolored cast parts, a little paint work with paintbrush (talons) and airbrush (bill) was added.

42. For eye setting, the iris of the cast head reproduction was ground out large enough to accept 16-mm acrylic Europe Eyes by Erling Morch. For a correct eye setting with Sculp-All, it was very important to have the right measurements such as eye angle and eye distance. When the artificial eyes were in place, all the parts were ready for mounting.

The Mounting Process.

43. First the legs were connected to the skin. Using cyanoacrylate-gel adhesive (Super Glue), the skin was glued around the edges from metatarsus up to the heel and after that, the leg to belly incision was sewn.

44. Then the skin was turned back inside out and Dermocoll hide paste by Philipp Bauer from Switzerland was applied to the leg reproduction. The leg skin was drawn up over the hide-paste-covered cast leg and the skin was aligned.

45. The body was inserted and hide paste was applied to the tail area. The tail quills were positioned into the tail slot.

46. Now the leg rods were inserted into the knee holes and fixed with nuts and washers.

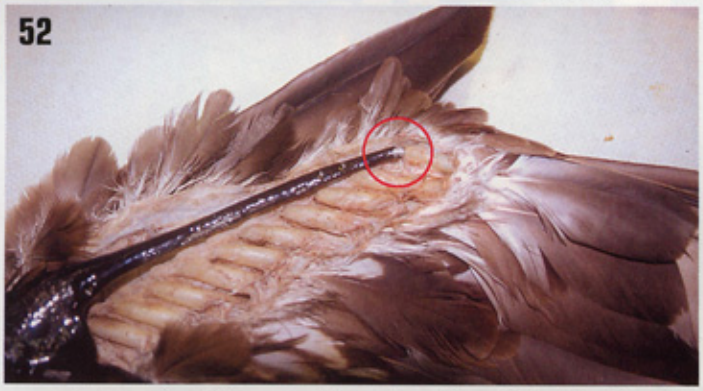
47. The next step was sewing the ventral incision and inserting a tail wire for stabilization of the large tail feathers.

48. The arising eagle was attached to the mounting base before the artificial head was fixed with hot-melt glue to the neck.

49. Hide paste was applied to head and neck and cyanoacrylate-gel adhesive (Super Glue) was applied at the base of the bill and the skin was placed in position. Normally, cyanoacrylate-gel adhesive holds skin in place, but in this case, I had to glue the edges at some points for a second time after drying with two-compound epoxy adhesive. For the eyelid setting I used dextrin based clay.

50. In a cool area, the still wingless white-tailed eagle was waiting for the next day, covered under a plastic foil.

51-52. The wings were assembled by inserting the end of the wire into the quill of the outer primary, before the carved hand and arm were covered with hide paste



to attach the quills of the secondaries and tertials and the skin. Then the wing incision was carefully sewn without bringing hide paste into the under-wing coverts. Subsequently, the wings were folded into their approximate positions and laid aside.

53. Through the large skin openings for the wings, the nuts of the leg rods were finally secured with hot-melt glue and hide paste was applied all over the body with a large syringe for a secure skin attachment. Considering the viscosity of dextrin-based hide pastes, I would prefer a dorsal incision for the next large bird. A seam could be leaky and a dorsal seam saves the resulting cleaning work.

54. Now the upper arm wire was shortened so that it would not extend through the body, it was then inserted into the predrilled holes at the shoulder.

55. The upper arm was placed in the desired angle and screwed with drywall screws against the body.

56. After screwing, the skin of the wings and the body were sewn together again.

57. Because of the heavy weight of the large primaries and secondaries, it was necessary to secure the lower arms with another extra long drywall screw. Before screwing, a very short, quickly sewn incision was made where the lesser coverts were located.

58. The eagle was carded with tissue-paper (lesser and middle coverts, tertials and scapulars) and cardboard (primaries, secondaries and tail feathers) and was now ready for drying.

There was only a little finishing work to do on the completely dried

mount: 1, rebuilding the eyelids and nictitating membranes with precolored Sculp-All and making them look wet by applying Lifetone Liquid Crystal; 2, filling and smoothing the transition between skin and artificial bill with precolored Sculp-All after gluing loose skin edges around the bill with two-compound epoxy adhesive.


59

A Note About the Base.

59. Because this white-tailed eagle was found in February, I wanted to show this fact by creating a suitable base. In winter, a white-tailed eagle often has to feed on carrion to survive, so there is a piece of hare fur hidden in the artificial snow. Snowo-System by Philipp Bauer from Switzerland was used, which is very easy to apply with alcohol and available for different kinds of snow.

60. Using this method for mounting large birds is a time-consuming procedure at the first glance. But it offers some interesting advantages, such as, assembling the skeleton and avoiding shrinkage by using artificial parts. Molding, casting and carving are time-consuming, yet the mounting procedure is time-saving. In addition, there is a high stability of the mount and the ability of producing parts for more than one mount.


60

Preparing this article has been most enjoyable and I hope to see many of you at the next World Show in April of 2003. ■