

# *When the bald eagles cried in Arizona, Wade Eakle listened.*

For three years, UA graduate student Wade Eakle took his microphone and recorder to eagle nesting sites along the Salt and Verde rivers. He was hoping to find an easier, safer way to tell individual eagles apart by their voice prints.

Bald eagles are an endangered, protected species in Arizona. Only 21 breeding pairs are known to exist, says Dr. William Mannan, UA wildlife biologist. He directed Eakle's research project.

The U.S. Forest Service has been keeping track of the bald eagles for years, trying to find out how long the eagles live — what kinds of habitat they prefer — if the young return to the same sites to nest — if pairs mate for life.

In any kind of research on animals that move around, scientists learn by being able to recognize individuals, Mannan notes. Some eagles may be distinctive enough for biologists to recognize, but usually they have to capture the young eaglets and mark them with leg bands.

It's an expensive, time-consuming and sometimes dangerous process — dangerous for the birds. Occasionally the eaglets can be injured or even killed; sometimes the process of banding can alter behavior patterns, making the research useless.

**By Lorraine B. Kingdon**

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Obviously, biologists would prefer to avoid taking such risks, especially when they are working with the few bald eagles remaining in Arizona.

Taking voice prints, or sonagrams, has been a successful way to tell individual perching songbirds apart, Mannan says. So he and Eakle decided to try the same method with bald eagles.

The equipment Eakle needed in the field was simple, though sophisticated: a directional microphone and a sensitive sound recorder. "Plus one million permits," Mannan points out.

Bald eagles are as precious a na-

tive desert resource as the saguaro cactus, and much better protected.

For the most part, the nesting sites are in fairly remote areas along the Salt and Verde river drainage systems. Eakle accompanied the bird-banders from the Forest Service when they did their research. The recordings had to be done quickly; biologists were only allowed to be in the nesting area for 30 minutes.

When humans, or other animals, approach an eagle's nest containing young birds, the parent eagles leave the nest, circle high overhead, and make a

territorial defense call. For three years Eakle recorded both female and male eagles crying.

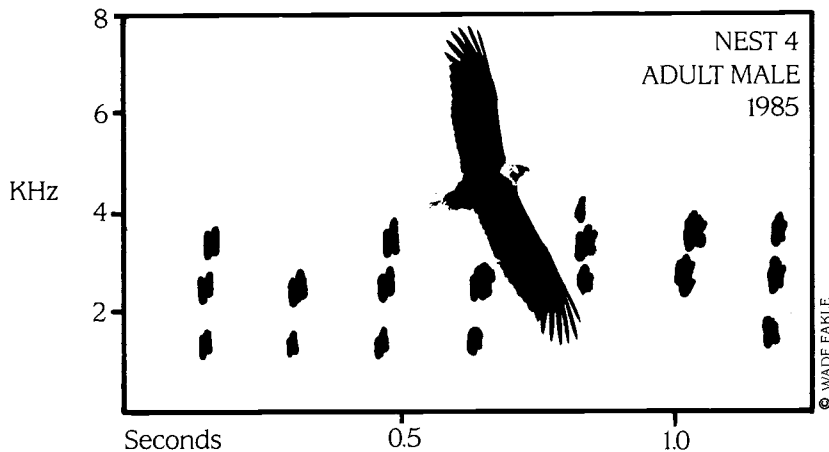
The sound recordings were then turned into pictures that graphically show the duration and frequency of each note in the eagles' calls.

Eakle wanted to know if he could tell the calls apart and if the calls remain consistent. He checked consistency from the beginning to the end of the breeding season and from one year to the next.

In 1985, Eakle recorded the calls of 16 birds, once at the beginning and



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again at the end of the breeding season. He tracked the calls of five specific birds all three years of his project, as well as running tests on two eagles in the zoo in Albuquerque, New Mexico.

Even though a bald eagle can weigh 10 pounds and has a wingspan of 6 to 7 feet, telling them apart isn't easy, especially when they're silhouetted against the sky. So, how did Eakle know which ones he was recording?

Volunteers helped by watching the nests from hidden observation points. They could check temporary identifying marks, such as a missing feather,


and could tell male from female birds (not easy to do, Mannan says).

Unfortunately, the story of the eagle sonagrams has a disappointing ending. As it turned out, the method doesn't always work too well, Mannan admits.

Within a given year, biologists can tell 83 percent to 100 percent of eagles apart through voice prints.

But, the call each bird makes varies from season to season, and from year to year. The sonagrams taken over a longer period of time are only correct 75 percent to 80 percent of the time —

not good enough for Arizona's small bald eagle population, Mannan says.

The results haven't dampened Eakle's interest in the majestic birds, however. Now that his UA research project has ended, he works for Dames and Moore in Phoenix. The U.S. Fish and Wildlife Service and the Bureau of Land Management have contracted with the firm to assess the impacts of developments on eagles. 

*(left) Using a directional microphone, UA researcher Wade Eakle field records eagle cries and later converts the recordings into identifying voice prints, or sonagrams (above).*



*UA entomology museum curator Carl Olson takes his crawling exhibits to schools where the kids learn to appreciate the insect world.*