UNITED STATES
DEPARTMENT of the INTERIOR

★ news release

FISH AND WILDLIFE SERVICE

Evans - 343-5634
FEATURE MATERIAL

For Release FEBRUARY 2, 1964

AQUATIC ANIMALS WILL BE TRAINED AT NATIONAL FISHERIES CENTER

When the National Fisheries Center and Aquarium opens in Washington, D. C., in about three years, it will feature a collection of unusually active aquatic animals.

Dolphins will make spectacular leaps into the air--apparently just for the fun of it. Archer fish will shoot insects off overhanging branches. Octopuses will emerge from their rock fortresses to attack crabs. Schools of piranha will slash viciously at food containers.

The aquatic animals will be doing what comes naturally, but only because they will have been carefully trained. If they were just dumped into their new habitat, practically nothing of public interest or scientific value would happen.

Planners for the Fisheries Center are trying to prepare the nearest thing to natural habitats for the marine mammals and fish, but they know this isn't enough. An aquatic animal is inhibited by captivity, and research scientists at the Center will wish to study natural behavior. And even in natural habitat, the aquatic animal doesn't perform often enough to please either the scientist or a changing audience.

To help accustom the aquatics to their new homes and make them carry out their natural activities more often, the Fisheries Center has engaged Keller Breland, nationally known animal behaviorist and psychologist.

Breland and his wife, Manian, have trained more than 7,000 animals since 1950, most of them at their farm at Hot Springs, Arkansas. Both have doctors degrees in psychology. Some of the more than 40 species they have trained have learned to perform almost human-like tasks.

Breland's training of dolphins and other aquatic animals at the National Fisheries Center will have the basic purposes of making the Center more useful as a scientific and educational facility. At the same time, the results will be of high interest to spectators.

Breland's work will be a departure from his usual training of aquatic animals. At the Marine Studios in Florida and the Marineland of the Pacific in California he trained dolphins to seize a baton or jump through a hoop. At the Fisheries Center, the leap of the dolphin will be more natural, without the frills of a public show. Breland will not be trying to create a circus. He will be trying to make the dolphin behave naturally in a near-natural habitat for the benefit of both scientists and public viewers.

What Breland will get in the beginning is a newly captured dolphin, a creature that fears its new surroundings and has never eaten a thawed-out frozen fish.

Breland will flip the dead fish in the water to make it appear alive. Gradually the dolphin will come closer. Eventually it will grab the fish and make a panicked retreat. If the dolphin happens to grab one of Breland's fingers, it will let loose. The dolphin has up to 100 spiked teeth, but it seldom leaves a tooth mark on a human.

The dolphin's fear will begin to subside. It will learn to take the fish more slowly. Then it will learn to wait for a pat on the head before it can take the fish. Then will follow a pat on the head and a scratch on the stomach. Within a month, the dolphin will allow itself to be picked up by the trainer before it gets the fish.

Breland's technique is based on a reward for the desired response. When an animal does something wrong, the incorrect action is ignored. Punishment and fear are never used in training.

After the dolphin learns to eat dead fish, a feeder will be installed in its raceway. The dolphin will be taught that every time he hears a certain signal, he can go to the feeder and find that a fish has been released.

Next a photocell will be installed on the sides of the raceway, just above the surface of the water. The dolphin's natural curiosity soon will cause him to stick his head out of the water at the right place. When he does, the photocell beam will be broken and the signal will sound. The dolphin will dive to the feeder box.

Now the photocell beam will be gradually raised to higher elevations. The dolphin has to leap higher and higher to break the beam. Breland is certain the dolphin will leap as high as 15 feet to get his reward.

A further refinement is a background signal--a light or supersonic tone--to let the dolphin know when the feeder circuit is in operation. He will learn that without this signal, there is no point in jumping. In that way, his leaps will be confined to periods when they are desired.

Dolphins at the National Fisheries Center will be taught to broad-jump, an accomplishment never before seen in public. The dolphins will learn to leap, then travel up to 25 feet in a horizontal line to break two photocell beams.

Another "first" in public demonstration will be the dolphin's ability to use sonar to find food and avoid obstacles in murky water. Study of this capability will have important scientific benefits.

The dolphin will be blindfolded by placing small rubber cups over his eyes. He will send out high-frequency signals and use the bounced-back signals to find a designated target. As he scans for the hidden object, the audience will be able to watch his underwater search. Spectators also will see the dolphin's high frequency signals registered on an oscilloscope. And sound transducers will lower the frequencies to an audible range so the signals can be heard as pings. The dolphin will "home-in" on the target, touch it with his nose and dart to the feeder box for his reward.

Breland said the dolphin's natural sonar is much more efficient than the similar man-made device, and that researchers would like to duplicate the original sonar of the dolphin. They also are interested in the ease with which he moves through water, causing only a minimum of turbulence and drag. More than streamline design and smooth skin are involved. As the dolphin moves through the water, his skin ripples, matching the turbulence and reducing it.

Finally, there will be attempts to train the dolphin in the use of his audible "voice." These sounds come from his blow-hole, and while the source is not known, Breland said they are not the sounds of breathing. It is already possible to teach the dolphin to make whining and "raspberry" sounds for controlled periods of time. Now Breland wants to increase the range of sounds and shape them into patterns that resemble such human words as "thank you."

"This won't mean that the dolphin will be speaking the human language," Breland said, "but it will show the vast degree to which he can learn different patterns of behavior."

The Center will be operated by Interior Department's Bureau of Sport Fisheries and Wildlife. The Bureau will provide research laboratories at the Center for its own scientists, for those of other Federal Government agencies, and for scientists of other countries.

Planning for the Center has reached the point where design criteria soon will be turned over to the architects. Congress has authorized the $10 million research and educational facility with the proviso that construction and operating costs be repaid to the Federal Treasury. This will be accomplished by charging admission, except to student groups. As a result, the Center will impose no costs on the taxpayers of the Nation.

Aquatic animals from all parts of the world will be placed under the closest scrutiny ever achieved in a single location. The studies will include research into genetics, reproduction, nutrition, fish diseases, antibiotics produced by marine animals, and experimental ecology.

When the Fisheries Center and Aquarium is completed, about 1967, it will easily rate a place on visitors' "must-see" list when they visit the Nation's capital.

x x x