

SONGS OF THE HUMPBACK WHALE

The Original Classic Album of Whale Recordings Poduced by Dr. Roger Payne



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Dr. Roger Payne, who produced this recording while associated with the New York Zoological Society, has spent the last 35 years doing research in biological acoustics. His studies began while an undergraduate at Harvard University with work on the directional sensitivity of the ears of bats. He received his doctorate in biology from Cornell University for work demonstrating that owls can locate the position of their prey in complete darkness (well enough to strike it), simply by hearing it move. He has done equally important work on hearing in moths, discovering their ability to judge the direction of bat sonar and thus evade capture. The common thread in all his work has been acoustics.

Dr. Payne has led over 100 expeditions to all oceans, studying every species of large whale in the wild. He pioneered many of the benign research techniques now used throughout the world to study free-swimming whales. He directs two long-term studies: one on the songs of the humpback whales; the other following the lives of over 1,000 individually recognizable southern right whales in Argentina, (the longest continuous study of a population of known individual whales, based on natural markings, in existence). He has received numerous honors and awards, including a 5 year MacArthur Foundation Fellowship (the so-called "Genius Award"), and has been knighted in the Netherlands for his work on the conservation of whales. When asked how he began studying whales, he replied:

"At the time I was a neurophysiologist at Tufts University and had never even seen a whale. I was in my laboratory one March night during a sleet storm when I heard through the local radio news that a dead whale had washed ashore on the beach. I drove out

there. The sleet had turned to rain when I reached the place. Many people had come to see the whale earlier, but by the time I arrived there were only a few, and when I reached the tidal wrack where the whale lay, the beach was deserted.

"It was a small whale, a porpoise of about 8 feet long, with lovely subtle curves glistening in the cold rain. It had been mutilated. Someone had hacked off its flukes for a souvenir. Two others had carved their initials deeply into its side and someone had stuck a cigar butt in its blowhole. I removed the cigar and stood there for a long time with feelings I cannot describe. Everybody has some such experience that affects them for life, probably several. That night was one of mine.

"At some point my flashlight went out, but as the tide came in I could periodically see the graceful outline of the whale silhouetted against the white foam cast up by the waves. Although it was at that time more typical than not of what happens to whales when they encounter humans, that experience was the last straw, and I decided to use the first possible opportunity to learn enough about whales, so that I might have some effect on their fate.

"I was extraordinarily lucky; the very first thing I happened to select for study about whales was the elaborate sound sequences produced by humpback whales during their breeding season. Working with Scott McVay, a pioneer in whale conservation, we discovered that the whales were actually repeating their elaborate, rhythmic sequences of sounds after several minutes. Any time an animal repeats itself in a rhythmic way, it can properly be said to be singing, whether it is a human, a bird, a frog or a cricket. Thus the humpback whales' sound sequences were, properly, "songs".

"They are different from the songs of other animals in several important ways: they are longer; they are repeated without any break between songs; whales change them all the time they sing them (so that at the end of about 5 years there is nothing left of the songs recorded 5 years earlier); and some songs may include rhyming endings on some of their phrases. These latter two fascinating discoveries were made by Katharine Payne (her work on rhyming being a joint study with Linda Guinee).

"The fact that whales sing, along with the beauty of their songs, gave us a chance to change the way people perceived whales. Human musicians like Judy Collins and Paul Winter began to include the sounds of whales in their performances and compositions. Killing and eating a whale now became killing and eating a "musician", and the "Save-the-

Whales” movement was born, founded on a new perception: the whale as artist. Conservationists from all over the world began to get involved, and what they accomplished is one of the great success stories of the conservation movement.”

At the start of the “Save-the-Whales” movement the whalers had already reduced to commercial extinction every species of large whale except the Minke whale. When this recording first came out in 1970, 33,000 whales were being killed each year. By 1990 the whalers were killing just 1% of that number. We had stopped 99% of the industry. In the process, other scientists like Sidney Holt, Justin Cooke, and William De La Mare had demonstrated before the International Whaling Commission (the international body which regulates whaling) the importance of applying an entirely new set of principles to the protection of whales. In doing so, they ensured that whaling would never be the same.

But the whales are far from safe – whaling may start again, and as they have survived into an age of high technology, whales now face threats which make harpoons seem minor.

Each year about 100,000 porpoises (which are also cetaceans, i.e. whales) have been drowning by accident in huge purse seine nets which are set for tuna. And each year it now appears that more whales and dolphins than are killed by purse seine nets and direct whaling combined are killed in drift nets – nets as long as 50 – 80 kilometers (30 – 50 miles) which hang from buoys at the surface of the water. Each day, 50,000 or more kilometers (30,000 or more miles) of drift nets are set in deep ocean, killing not only marketable and unmarketable fish, but whales, dolphins, porpoises, sea lions, seals, sea otters, sea turtles, and sea birds. Especially alarming are the so-called “ghost nets” – pieces of drift nets that break off and wander the seas, entangling everything in their path.

But even the wanton destruction of drift nets and ghost nets is minor compared to the destruction wreaked by tens of thousands of toxic substances which industrialized societies vent into the oceans. Of these, PCBs (compounds closely related to DDT) are known to constitute a major threat to marine life, owing to the fact that they are very soluble in fats, but almost insoluble in water, and therefore concentrate in living animal and plant tissues which contain fats and oils. PCBs have recently been found in porpoises in concentrations so high that some of

the porpoise's tissues could, in theory, qualify them as swimming toxic dump sites, thus making them eligible for clean up as Super Fund sites. Some scientists believe that if only a small percentage of the PCBs now in use reach the seas they could bring to extinction all carnivorous marine mammals, including, of course, the whales and dolphins, and render inedible most species of commercially valuable fish.

To quote Roger Payne:

"It is critical that people recognize the danger to life on earth itself, posed by the slow accumulation of toxic substances in the seas, and that we make the sacrifices in time and money necessary to prevent the further entrance into the seas of the most destructive of the toxic substances. If we do not, then this recording could become, in just a few years, the last cry from the last of the great whales, and humanity will be sentenced to live in the unimaginably boring world of our creation . . . forever.

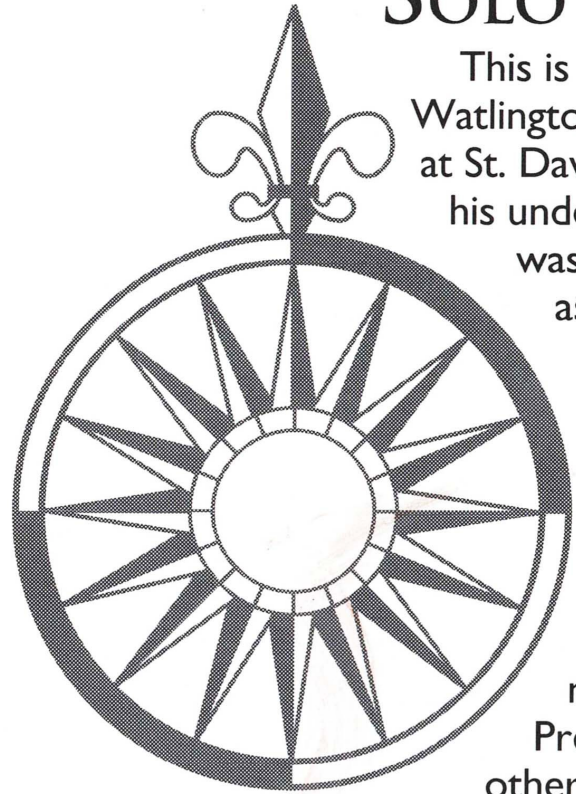
"Forever is older than the universe itself. Losing a species, or an entire ocean of species, forever, is a more inexorable loss than any we can ever comprehend. It is one thing to lose your friend. It is another to lose all your friends, along with everything that ever gave you sanity, and the whole species of which they were a part, thereby losing your future as well.

*"We must stop deceiving ourselves and face squarely the fact that the things with which we are concerned, and on which most of the time and resources of our governments are spent, are trivial alongside problems like the destruction of the seas. Having faced this fact we must act. We must radically change the way we spend our time and energy – stop wasting our potential on the inconsequential things – and dedicate our lives instead to persuading our governments, by whatever means, that they **must** address the important problems facing humans, and spend, if necessary, all their time and our money on measures that **will** prevent the destruction of the rest of life on earth.*

*"The consequences of failure are, by definition, infinitely worse than any costs of trying to succeed. Life has no time left for governments that cannot comprehend this urgent reality. It is not just governments, but **we** who must act now – the final hours of our species have arrived. If you and I continue to do nothing, we must face the harsh truth that we really have no intention of acting, will never act, and things really **are** hopeless. The only person who can deny this is you, yourself, by acting . . . Now!"*

TRACKING:

SOLO WHALE



This is a portion of a longer recording made by Frank Watlington of the Columbia University Geophysical Field Station at St. David's, Bermuda. In this case (as well as bands 2 and 4) his underwater microphone (properly called a hydrophone) was in water about 1,500 feet deep, with a cable leading ashore to a tape recorder in his office. One day a whale happened by and remained throughout the morning, singing its song over and over again. Two songs have been selected for this recording; they have been slightly edited by cutting out parts of two long, repetitive sections. Except for these deletions, the sounds have not been altered in any way – there is no speeding up, slowing down, or any other modification of the sounds made by the whale.

Presumably, this is the way the songs would sound to other whales.

The loudest sounds are followed by a series of echoes from the surface and the bottom. You can hear the propeller noise of a large freighter passing far away; it is audible as a very faint, high-pitched wavering sound. You can also hear, in addition to this whale, the occasional soft, low cries of a distant whale.

Near the end of the band there are two rumbling explosions, made by charges of dynamite used in acoustic experiments. The whale apparently did not respond to these sounds, for its song is the same as it was in other recordings lacking explosions.

With the above exceptions, everything here is the song of a single whale. The sound that follows the first two cries – a noise that sounds to many like a motor running – is part of the whale song. It is made up of a series of rapidly repeated pulses.

SLOWED-DOWN SOLO WHALE

This is two short cuts – the final, very high notes of three successive phrases from the previous selection. Here they are slowed to one quarter of their original speed. The intermediate loud, low sounds have been deleted as they do not reproduce well on most loudspeakers.

When slowed down, the echoes from surface and bottom are very noticeable. This selection is included here to demonstrate the extraordinary complexity of the highest tones in the humpback songs.

The last of the three phrases in this cut is the melody for “Humphrey’s Blues”, by Paul Winter on the album ‘Whales Alive’ (Living Music, #0013), a collaboration by Roger Payne, Paul Winter and keyboardist Paul Halley. In a fascinating example of interspecies work, the musicians adhered strictly to the melody composed by the whale, but added human harmonies and improvisations in the jazz style. (This was also done in all but two of the compositions on ‘Whales Alive’.)

TOWER WHALES

These songs, played at normal speed, are from recordings made over many years by Dr. Payne near Bermuda and greatly differ from those taped by Frank Watlington. This is an example of the way in which the songs of the humpback whales change over time. Payne made this recording in Bermuda seven years after Frank Watlington’s recording of the Solo Whale. It was recorded from a group of whales which would, however, have included many of the same individuals Watlington recorded in the first year. By now, however, all of the whales passing Bermuda had learned this song, (the new “hit”), and no one was singing the old one.

The low growls made by the first whale are actually trains of pulses following each other at a low rate. This creates the effect of a low-frequency tone.

Various creaks, groans, and sounds of ropes rubbing (heard particularly near the end of this segment) are from the *Twilight*, the sailboat towing the hydrophones. They must be typical of the sounds that a whale hears as a sailboat passes nearby.

Like any sailboat, the *Twilight* is quiet, but the Paynes found that their early recordings were cluttered with bangs and bumps which synchronized with the rolling of the boat. Even small items roll slightly in their places and create noises that carry through the sea to the hydrophones. Also, ropes slapping against the mast produce distinct noises on recordings.

“We spent hours hunting down various bumping noises”, says Roger Payne. “We wedged small items – batteries, cans of oil, and so on – into place until finally only one loud bang could still be heard. It occurred only in rough weather and was clearly synchronized with the roll of the boat. We searched from stem to stern, but could find nothing that was not secured. At last, one day we discovered that the rudder stock was slightly loose in its housing. As each wave rolled beneath us and tipped the boat, the stock swung from side to side like the clapper of a bell. You will hear the bang because the day the recording was made was very rough.”

DISTANT WHALE

These lovely, mysterious sounds are from a very distant whale. There is also an interesting high-pitched tone that comes from the “singing” of a far-away ship’s propeller.

THREE WHALE TRIP

There are three humpback whales singing at various times on this selection. There is also a lot of ocean noise. The winds had been strong the day before this recording was made, and during the day the sea was still running high. Both of the *Twilight*’s hydrophones were located near the ocean surface, where wave noise is loudest. After a few moments of listening, however, you learn to hear as much as a whale probably hears, by ignoring the background noises and focusing on the whale songs.

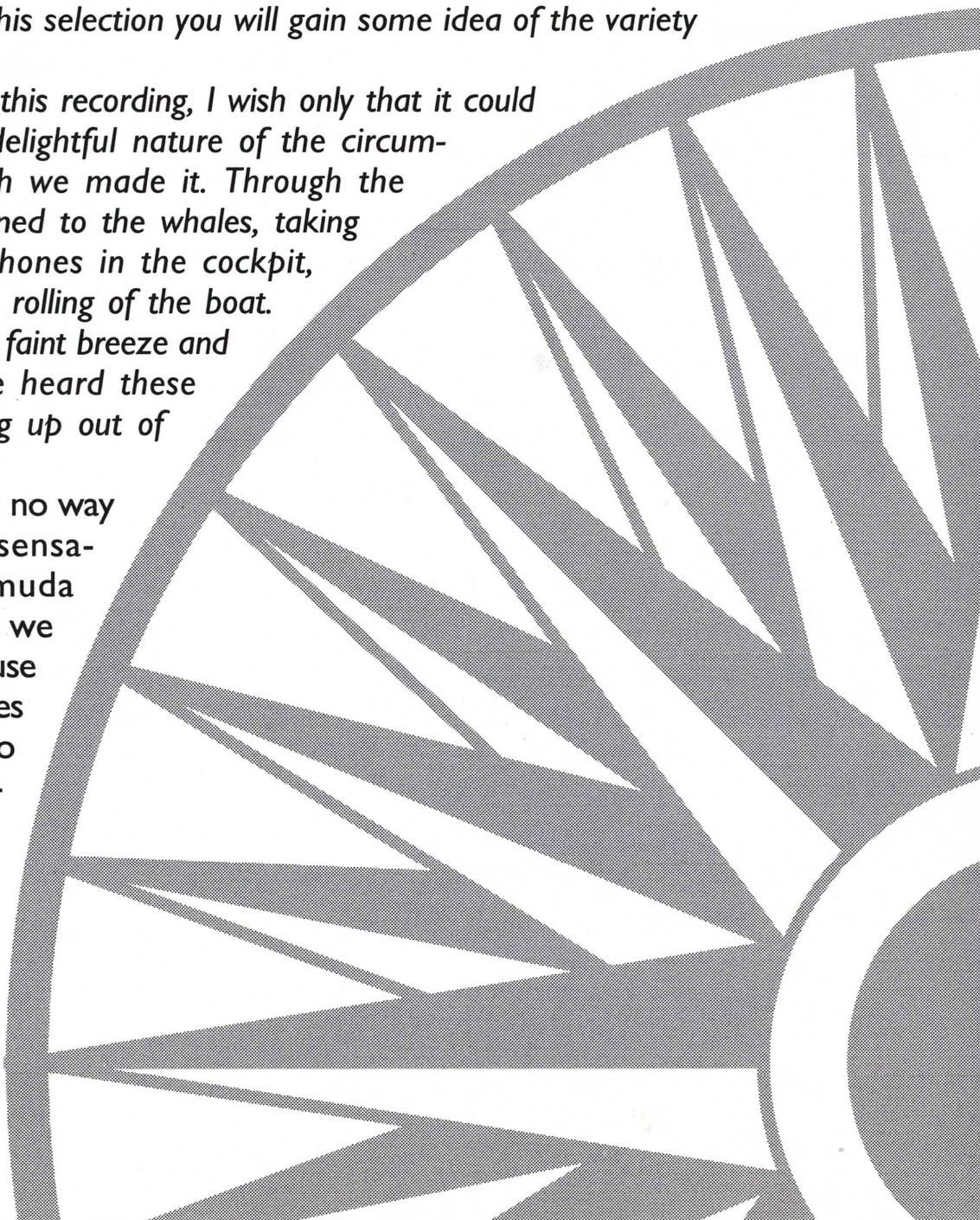
Roger Payne made this recording from a sailboat near Bermuda during his study of humpbacks there. *“We found one spot”, he says, “where the sounds of whales blended in a very lovely way. We occasionally stopped to listen while on the way to make recordings at other locations. The ‘Three Whale Trip’ was recorded at that favorite listening spot on*

an occasion when the whales sang all day and all night. We have deleted parts of some long, repetitive sections. The material on this recording is actually made up of four separate sections of our original recording spliced together, (but not overlapping). From this selection you will gain some idea of the variety of whale sounds.

"As you listen to this recording, I wish only that it could convey to you the delightful nature of the circumstances under which we made it. Through the whole night we listened to the whales, taking turns at the headphones in the cockpit, lulled by the smooth rolling of the boat. Far from land, with a faint breeze and a waning moon, we heard these lovely sounds pouring up out of the sea."

Although there is no way to bring you the sensations of that Bermuda night on a sailboat, we have found that the use of stereo headphones comes the closest to creating the beautiful, mystical mood that Roger Payne describes.

As you listen, you may notice a strange effect, particularly on the higher notes.



A cry is heard, softly at first; a moment later the same sound repeats itself, but much louder. Because of the peculiar acoustics of this location, we have the unusual situation of an echo that is louder than the original sound. The first cry is probably travelling directly to the boat. The sound ray moves just beneath the surface and is soft because much of the sound energy has been bent downward through the water before it reaches the shallow hydrophones. The second sound (the repetition) is probably caused by sound rays which travelled a longer distance and were reflected from the bottom, but had a direct shot at the hydrophones on their first bounce, hitting them with all of their sound energy.

The title of this side refers to more than the day's trip on which the recording was made, or the voyage of the three whales who lingered near Bermuda to sing that day. Its title acknowledges that travel of any kind is broadening, even mental voyages. If we can open our ears to another kind of music it could help us to rouse ourselves in time to heal enough of what is left of the natural world, so that, in the end, we heal ourselves as well.

As Roger Payne notes:

"There are over 5 billion of us humans on the planet. We have a choice: either to be the greatest heroes in the history of life on earth – remembered for longer (probably forever) than any other generation before for having made the effort and roused ourselves in time to heal the world around us, or we can be the greatest villains in the history of life on earth – remembered for longer than any other generation before (and probably forever) for having sat on our hands and done nothing while the consequences of both our action and our inaction destroyed the natural world.

"This recording is offered in hopes that when you hear the whales you will take up the cause of life on earth."

LIVING MUSIC CATALOGUE

- LM0001: **Callings** • *Paul Winter*
- LM0002: **Missa Gaia/Earth Mass** • *Paul Winter*
- LM0003: **Sun Singer** • *Paul Winter*
- LM0004: **Icarus** • *Paul Winter*
- LM0005: **Concert for the Earth** • *Paul Winter Consort*
- LM0006: **Canyon** • *Paul Winter*
- LM0007: **New Friend** • *Eugene Friesen & Paul Halley*
- LM0008: **Living Music Collection I** • *Paul Winter & Friends*
- LM0009: **Pianosong** • *Paul Halley*
- LM0010: **Oscar!** • *Oscar Castro-Neves*
- LM0011: **Homecoming** • *Denny Zeitlin*
- LM0012: **Wintersong** • *Paul Winter*
- LM0013: **Whales Alive** • *Paul Winter & Paul Halley*
- LM0015: **Earthbeat** • *Paul Winter*
- LM0016: **Living Music Collection II** • *Paul Winter & Friends*
- LM0017: **Arms Around You** • *Eugene Friesen*
- LM0018: **Wolf Eyes: a Retrospective** • *Paul Winter*
- LM0019: **Earth: Voices of a Planet** • *Paul Winter*
- LM0020: **Angel on a Stone Wall** • *Paul Halley*
- LM0021: **Songs of the Humpback Whale** • *Dr. Roger Payne*

"Hearing this album was a milestone experience in my musical life. I was thrilled by the haunting beauty of these humpback whale voices, much as I had been when I first heard jazz saxophonists like Charlie Parker. Studying the long, complex songs which the whales repeat again and again, I was amazed by their musical intelligence, and shocked to learn that these magnificent beings were rapidly being hunted to extinction. The whales opened my ears to the whole symphony of nature, and expanded my world forever.

"SONGS OF THE HUMPBACK WHALE is a timeless classic of the earth's music. It deserves a place in our cultural pantheon, alongside the music of Bach, Stravinsky, and Ellington."

Paul Winter

