

# SOUNDS OF THE SONORAN DESERT

A Dusk until Dawn Listening Experience

Listening Guide



## THE NOISE AROUND US

The sounds around us affect our bodies and brains. Even if not consciously “noticed,” noise from today’s mechanized world numbs our sense of hearing and deprives us of a vital connection with the natural world. For hundreds of years, health experts have known that natural sounds and undeveloped landscapes offer healing, restorative effects, now confirmed by modern brain scans, heart-rate monitors, and behavioral studies. People with the highest levels of stress benefit the most. Many people turn to the peace of parklands for safeguarding mental, physical, and spiritual health.

Human-induced noise also has negative effects on wildlife. Chronic traffic noise, for example, increases stress in animal populations, reduces wildlife diversity and abundance, and interferes with key survival behaviors, like the ability to establish territories, find suitable mates, protect young, and avoid predators. Noise can even affect plants that depend on animal populations for pollination or seed dispersal.

How noise travels in deserts differs from what happens in other terrestrial environments. With no big trees or dense vegetation to scatter and muffle sound, it travels farther. During a calm spring afternoon in the foothills of the Tucson Mountains, I could clearly hear the footsteps of a jogger on a dirt road  $\frac{1}{3}$  mile (536 m) from the

hilltop where I was standing.

Deserts commonly experience a shift in temperature of 20–30°F (11–17°C) from day to night, creating a dramatic inversion, with the temperature coolest close to the ground and getting warmer with increasing altitude. The part of a sound wave traveling in cooler air close to the ground moves more slowly than its counterpart in warmer air above. This bends the sound wave, directing it back toward the ground. As a result, nighttime noise can be heard more clearly over longer distances than during the day.

When a friend invited me to record screech owls roosting on his property in a rural desert neighborhood, I jumped at the opportunity. It was a windless evening, and as nighttime approached, I assembled my gear. But soon I gave up—a decision that puzzled my friend, until he had listened to what I was hearing through my headphones. He was completely unaware of the background noise from Interstate-10, almost two miles away.

To fine-tune your listening skills, instead of buying a new camera, get a handheld stereo recorder—several superb models with built-in microphones are available for \$100 to \$250—and start recording your sound environment. Smartphones can record sound, but

you'll get more storage, better audio resolution, and more recording options with a dedicated unit.

Document soundscapes in your favorite outdoor recreation area—a national park, for example. Visit the Natural Sounds & Night Skies Division of the National Park Service website to see what you can do to help protect and maintain healthy acoustical environments in our national park system. Sound recording is fun and provides a fresh awareness of the world around you!

## **A DESIGNED LISTENING EXPERIENCE**

This dusk-until-dawn listening experience is a rich and diverse blend of natural sounds from Sonoran Desert lowlands. It is a carefully designed program based on 40 years of the producer's fieldwork in southern Arizona and northern Mexico, a compilation made from hundreds of recordings arranged to keep listeners engaged from start to finish. For example, we challenge anyone to record a single coyote chorus that properly conveys the full experience of what those of us who live in the desert know it should sound like at its best. To achieve this we combined five separate recordings to re-create the experience with spatial depth.

Obviously, remaining true to nature requires intimate familiarity with each species in its habitat. A number of bio-specialists helped along the way (see Credits).

As you listen to this program, keep in mind that we have done our best to preserve the spacious sound environment characteristic of deserts. In extremely hot or cold environments, species diversity drops, so it's not uncommon to hear isolated voices, which to my ear enhances the experience. While editing, we had to keep the flow moving in a realistic way without uncomfortably long intervals of silence or too much repetition—much like designing a film. We used the coming and going of a nighttime thunderstorm as our climax. Every recording has a story behind it. The fly-by of a swarm of honeybees, for example, required help from a queen bee, pheromones, and six bee specialists over a two-week time period.



Most of the recordings in this program were made in southern Arizona—in the Tucson Mountains, Avra Valley, the Altar Valley, the Tohono O’odham Reservation west of Sells, and desert valleys southeast of the Little Ajo Mountains. We have included the voices of toads and frogs breeding in Pacific coastal lowlands of central Sonora, Mexico, in 1969. In those days I was using a Uher 4000 Report-L reel-to-reel tape recorder. With the advent of compact digital recorders, I moved to a Zoom H4n Pro system (with excellent built-in stereo mics), a Sennheiser MKH P48U directional mic, a Telinga Pro-8 parabolic stereo mic system, and a Cloudlifter, thanks to the generosity of Rodger Cloud. The Cloudlifter is a microphone activator that boosts mic sensitivity and delivers cleaner recordings.

Noise pollution coupled with habitat and biodiversity loss has crippled our ability to appreciate and record natural sounds outdoors. Bioacoustics specialist Bernie Kraus—who has traveled the world to record soundscapes in wild places—estimated the changes: “In 1968 it took 15 recording hours to get one hour's worth of natural sound. Now [in 2002], due to human noise and disturbed habitats, it takes about 2,000 hours to get the same result.” As a student at the University of Arizona in the late 1960s, I could capture clean field recordings of toads in Sonora along Mexico’s trade corridor, Federal Highway 15. Sadly, those days are long gone.

In a modern world choked with noise pollution, getting clean field recordings has become a growing challenge. With careful filtering, some recordings can be salvaged by removing unwanted noise—including wind, and digital “hiss”—provided the noise frequencies don’t overlap significantly with those of the target species or soundscape. Tucson audio engineers Daniel Lautenslager and Rodger Cloud performed their magic to save many of these recordings.

Without an editor who can deal with software complexities and idiosyncrasies, producing a program like this would have been impossible. Sound editor Jeffrey Cravath and I spent several months assembling this production. Jeff graduated from film school and is a Wild Horizons intern. He is a talented, kind, and patient soul who, most importantly, is “in sync” with me aesthetically. Thank you, Jeff!

~ Thomas Wiewandt, May 2021  
Tucson, Arizona

All photography by Thomas Wiewandt



# WILDLIFE SPECIES INDEX

## TRACK COMMON NAME

### AMPHIBIANS

- 1 Spadefoot Toad, Couch's Spadefoot
- 2 Spadefoot Toad, Mexican Spadefoot
- 3 Toad, Little Mexican Toad
- 4 Toad, Mazatlán Narrow-mouthed Toad
- 5 Toad, Sinaloan Toad
- 6 Toad, Sonoran Desert Toad (= Colorado R. Toad)
- 7 Toad, Sonoran Green Toad (= Reticulated Toad)
- 8 Treefrog, Lowland Burrowing
- 9 Treefrog, Lowland Burrowing (territorial call)

### BIRDS

- 10 Dove, Mourning (song)
- 11 Dove, Mourning (wing whistle)
- 12 Dove, White-winged
- 13 Finch, House Finch
- 14 Flycatcher, Brown-crested (call)
- 15 Flycatcher, Brown-crested (dawn chorus)
- 16 Hawk, Cooper's
- 17 Hummingbird, Costa's



**SCIENTIFIC NAME****SPANISH NAME**

<i>Scaphiopus couchii</i>	Sapo Couchi con Espuelas
<i>Spea (Scaphiopus) multiplicata</i>	Sapo de Oeste con Espuelas
<i>Anaxyrus (Bufo) kelloggi</i>	Sapito Mexicano
<i>Gastrophryne mazatlanensis</i>	Ranita Olivo de Mazatlán
<i>Incilius (Bufo) mazatlanensis</i>	Sapinto Pinto de Mazatlán
<i>Incilius (Bufo) alvarius</i>	Sapo Grande
<i>Anaxyrus (Bufo) retiformis</i>	Sapo Verde Sonorense
<i>Smilisca (Pternohyala) fodiens</i>	Ranita Minera
<i>Smilisca (Pternohyala) fodiens</i>	Ranita Minera
<i>Zenaida macroura</i>	Paloma Huilota
<i>Zenaida macroura</i>	Paloma Huilota
<i>Zenaida asiatica</i>	Paloma Pitahayera
<i>Haemorrhous mexicanus</i>	Camachuelo Mejicano
<i>Myiarchus tyrannulus</i>	Copetón Tiranillo
<i>Myiarchus tyrannulus</i>	Copetón Tiranillo
<i>Accipiter cooperii</i>	Gavilán de Cooper
<i>Calypte costae</i>	Colibrí de Costa

**TRACK    COMMON NAME**

**BIRDS**

- 18 Nighthawk, Lesser (trill)
- 19 Nighthawk, Lesser (fly-by)
- 20 Oriole, Scott's Oriole
- 21 Owl, Elf Owl
- 22 Owl, Great Horned (male/female duet)
- 23 Owl, Great Horned (begging juvenile)
- 24 Owl, Western Screech Owl
- 25 Phainopepla
- 26 Poorwill, Common
- 27 Pyrrhuloxia (= Desert Cardinal)
- 28 Quail, Gambel's (male call)
- 29 Quail, Gambel's (covey roosting)
- 30 Raven, Common
- 31 Roadrunner, Greater (bill-clacking)
- 32 Roadrunner, Greater (male courtship coo)
- 33 Sparrow, Rufous-winged
- 34 Thrasher, Curve-billed (call)
- 35 Thrasher, Curve-billed (song)
- 36 Towhee, Abert's

**SCIENTIFIC NAME****SPANISH NAME***Chordeiles acutipennis*

Tapacamino Garapena

*Chordeiles acutipennis*

Tapacamino Garapena

*Icterus parisorum*

Turpial de Scott

*Micrathene whitneyi*

Ticolote Enano

*Bubo virginianus*

Búho Común

*Bubo virginianus*

Búho Común

*Megascops kennicottii*

Autillo Californiano

*Phainopepla nitens*

Capulinerero Negro

*Phalaenoptilus nuttallii*

Chotacabras Pachacua

*Cardinalis sinuatus*

Cardenal Pardo

*Callipepla gambelii*

Colín de Gambel

*Callipepla gambelii*

Colín de Gambel

*Corvus corax*

Cuervo Grande

*Geococcyx californianus*

Correcaminos Norteño

*Geococcyx californianus*

Correcaminos Norteño

*Peucaea carpalis*

Chingolo Alirrufo

*Toxostoma curvirostre*

Cuitlacoche Pico Curvo

*Toxostoma curvirostre*

Cuitlacoche Pico Curvo

*Melospiza aberti*

Turpial de Scott

**TRACK      COMMON NAME**

**BIRDS**

- 37 Towhee, Canyon
- 38 Verdin
- 39 Vireo, Bell's
- 40 Woodpecker, Gila
- 41 Woodpecker, Gila (pecking on saguaro cactus)
- 42 Woodpecker, Ladder-backed (drumming)
- 43 Wren, Cactus
- 44 Wren, Canyon

**INSECTS**

- 45 Cicada, Cactus Dodger
- 46 Cricket, Field Cricket
- 47 Cricket, Tree Cricket
- 48 Grasshopper, Desert Clicker

**MAMMALS**

- 49 Bat, Mexican Free-tailed
- 50 Coyote (chorus)
- 51 Coyote (drinking)
- 52 Deer, Mule Deer
- 53 Javelina (= Collared Peccary; foraging)
- 54 Squirrel, Harris'/Antelope Ground Squirrel

**REPTILE**

- 55 Rattlesnake, Mojave

**SCIENTIFIC NAME****SPANISH NAME***Melospiza fusca*

Tecolote Enano

*Auriparus flaviceps*

Búho Común

*Vireo bellii*

Vireo de Bell

*Melanerpes uropygialis*

Carpintero del Gila

*Melanerpes uropygialis*

Carpintero del Gila

*Dryobates scalaris*

Pico Mexicano

*Campylorhynchus brunneicapillus*

Matraca Grande

*Catherpes mexicanus*

Cucarachero Barranquero

*Cacama moorei*

La Cigarra Cacama

*Gryllus sp.*

Grillo de Tierra (Grillo Negro)

*Oecanthus sp.*

El Grillito Cantor Chapulín

*Ligurotettix coquilletti*

Saltamontes

*Adarida brasiliensis*

Murciélago de Cola Libre

*Canis latrans*

Coyote

*Canis latrans*

Coyote

*Odocoileus hemionus*

Vernado Bura

*Pecari tajacu*

Cochi Jabalín

*Ammospermophilus harrisi*

Ardilla Antilope de Sonora

*Crotalus scutulatus*

Cascabel del Mojave

# CREDITS

## Producer & Sound Recordist

Thomas Wiewandt

## Sound Editor

Jeffrey Cravath

## Additional Editing

Levi Davis

## Additional Recordings

Greg Clark (Harris Ground Squirrel; Great Horned Owl duet)

Jeffrey Cravath (Costa's Hummingbird)

Richard C. Hoyer (Desert Clicker Grasshopper; Cooper's Hawk)

## Field Assistance

Stephen Buchmann

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Pat & John King, King's Anvil Ranch

Bob Pierson

### Bird Consultants

Greg Clark, Wild at Heart Inc., AZ

Richard C. Hoyer, Birder-Naturalist

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Shawnee Riplog-Peterson, Curator, Arizona-Sonora Desert Museum

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Tim Snow, Arizona Game & Fish Dept.

Bruce Taubert, Wildlife Photographer

Merlin Tuttle, Founder of Bat Conservation International

Janet Tyburec, Bat Survey Solutions

### Honeybee Specialists & Wranglers

Thomas L. Chester, Director, Southern Arizona Beekeepers Association

Greg Denker, American Bee Control

Gerald Loper (retired), USDA Carl Hayden Bee Research Center, Tucson

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### Cricket Consultants

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Credits (continued):

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Rodger Cloud, Cloud Microphones

Noise Reduction

Rodger Cloud, Cloud Microphones, Tucson  
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Mastering

CD 1 (program): Rodger Cloud, Cloud Microphones, Tucson  
CD 2 (species index): James Pavett, Allusion Studios, Tucson

Disk Manufacturing

Pressing Media, Santa Ana, California

Text Editing, Informative Booklet

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