

It's All in a Bill

The shape of an unfamiliar bird's beak reveals its identity.

by Brian L. Sullivan



The extremely long beaks on Long-billed Dowitchers allow them to reach prey far below the ground's surface, where other bird species cannot reach.

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Nothing says more about a bird than the shape of its bill. From seabirds to raptors, from flycatchers to finches, birds' bills are adapted to help them survive, especially so for capturing and ingesting food.

Every birder can learn to recognize the basic shapes of birds' beaks, which immediately helps to categorize them into groups and to identify them. It's as simple as this: If it's got a short, strongly hooked bill, it is likely a raptor. I should start looking in that section of my field guide to identify this bird.

Many bird groups show distinctive bill shapes. We'll explore some of those and shed light on one of the most interesting adaptations in the natural world. In fact, noticing the differing bill shapes among the look-alike finch species on the Galapagos Islands led Charles Darwin to form his theory of evolution.

Seabirds

They don't call seabirds "tubenoses" for nothing. This group includes albatrosses, petrels and shearwaters—all species that spend the majority of their

lives at sea. Their long bills with hooked tips are an incredible adaptation, enabling them to capture slippery marine prey items.

Their most remarkable adaptation is the ability to purify and drink salt water. Some of these species spend several months at sea, coming to land only to breed. Some of them spend years at sea without a visit to land.

The birds developed the ability to excrete salt through specially adapted tubes mounted on the top of their bills—essentially on-board water purification systems. Remarkable!

What Do You Think...

of the suggestions in this issue? What about the previous tips?

Tell us which of these conservation actions you've put into practice. Send a letter or, preferably, an e-mail to **WildBird Letters**, PO Box 6050, Mission Viejo CA 92690-6050 or wildbird@bowtieinc.com. Letters will be edited for length and clarity.

R is for Raptors

Some people love 'em, and some people hate 'em. My pulse never fails to quicken when I spot a raptor, even if it's the same Red-tailed Hawk that I see three times a week on the drive to work. There's just something about those birds of prey.

For others, raptors remain troublesome. We've come a long way from the days when thousands were shot for sport at Hawk Mountain in Pennsylvania, but many raptors still perish at man's hands.

Given the popularity of birdfeeding, I hear most about the conflicts right in our own yards — such as the avid participant on my birding field trips who practically bragged about shooting a Sharp-shinned Hawk that invaded his feeders. I think he was shocked by my reaction; he thought that he had done a good deed.

Witnessing a raptor grabbing one of your feeder birds is a sobering experience. Your responsibility is to provide the feeder birds with as much cover as possible so they can find safety quickly when the bird of prey appears. Dense clusters of shrubs and trees can make all the difference for a songbird when danger arrives. (See page 32 for more information. —Ed.)

In a natural system, birds forage for food and conduct their daily activities with an eye out for predators, and they typically stay in areas where they are safe or can reach safety quickly. It's our responsibility to provide them with the same options in our yards. **WB**

WildBird Advisory Board member Peter Stangel, Ph.D., works as director of science and evaluation for National Fish and Wildlife Foundation.

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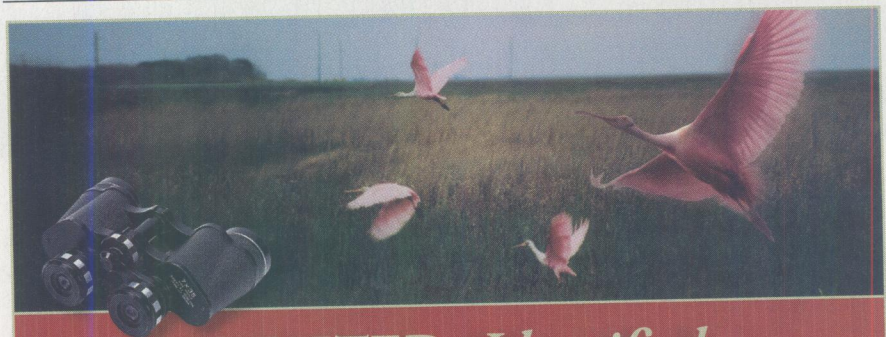


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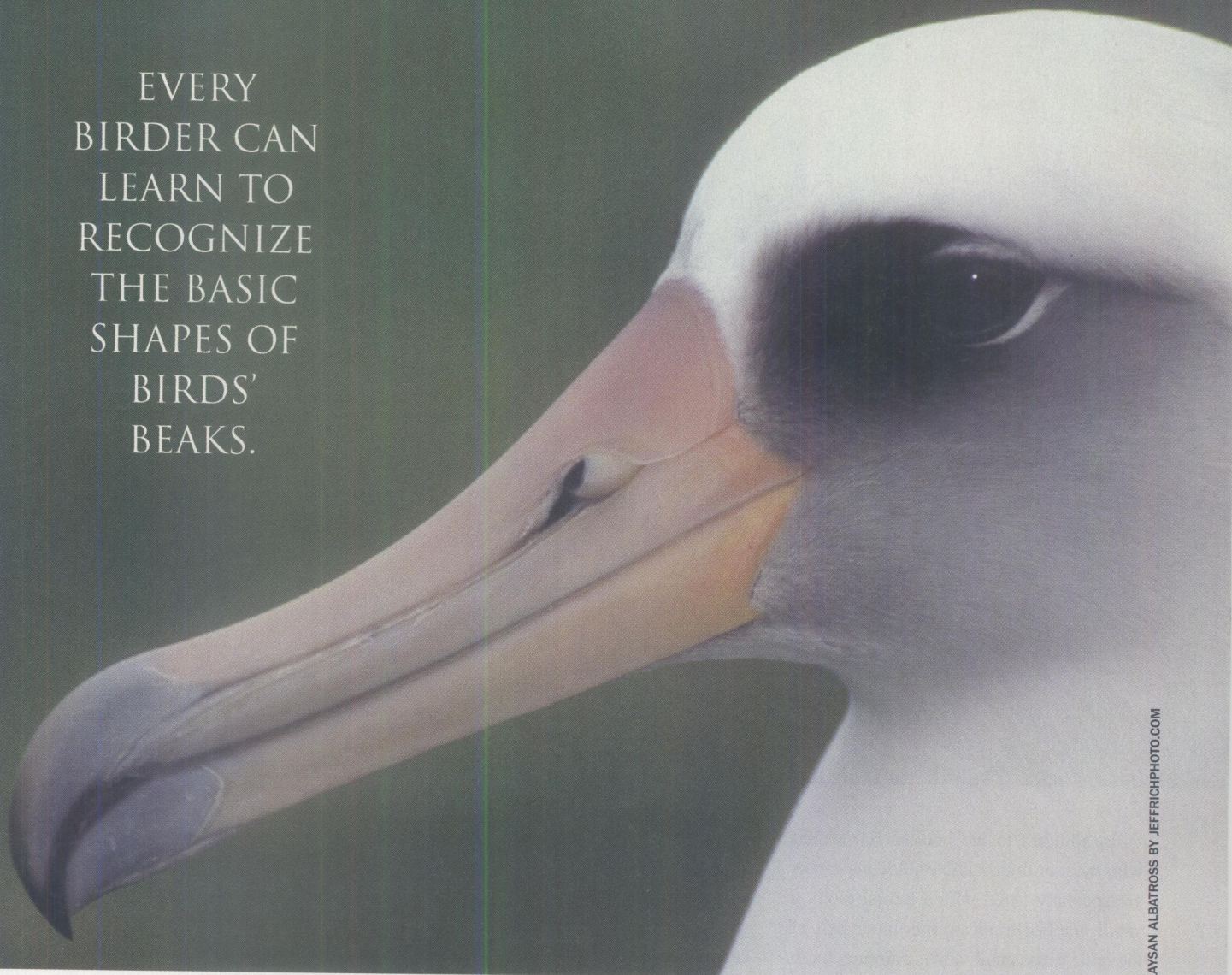
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BIRDER CAN
LEARN TO
RECOGNIZE
THE BASIC
SHAPES OF
BIRDS'
BEAKS.



LAYSAN ALBATROSS BY JEFFRICHPHOTO.COM

Shorebirds

As a group, shorebirds are incredibly varied and complex in their biology and their corresponding bill shapes. Some of the most striking are the long-billed shorebirds such as dowitchers, godwits and curlews.

These species have adapted outrageously long bills for probing deep into mud. This allows them to feed on prey items much farther below the surface than the other species with which they share the mudflats.

Plovers, peeps and other short-billed shorebirds exploit the abundant resources

on or near the ground's surface, whereas the long-billed group goes well below to find what they need. Dowitchers' characteristic sewing-machinelike motion while feeding results from having such long bills and the need to stick them straight down into the mud to dine on invertebrates. Incredibly, the tips of their long bills are pliable, allowing them to seize prey items well below the surface.

Raptors

For good reason, raptors have symbolized power and grace across generations and cultures. Often described as fierce in

appearance, the description comes in part from the birds' penetrating eyes but also their powerful, hooked bills.

It is a general misconception that most raptors kill their prey with their fearsome hooked bills. In reality, most hawks and eagles use their powerful talons to seize, capture and kill prey.

An exception to this rule is the falcons. Raptor prey items often are quite large in relation to their own body size, especially in falcons. How is a Merlin, approximately the size of a Blue Jay, supposed to eat the Horned Lark that it just captured on the open prairie?



WHITE-WINGED CROSSBILL BY ROB CURTIS



In addition to the hooked bill shared with most of their relatives, falcons' beaks are specially fitted with a tomial tooth, a small notched tooth on the upper part of the bill. This small down-pointing tooth

Flycatchers

An aptly named group of birds, flycatchers' bills help them do what — catch flies, of course. These birds are specially adapted to capture insects in flight, and they need bills

cats' whiskers and positioned around the base of the bill. The specially modified feathers add sensitivity to the area around the bill, allowing flycatchers to use their broad-based bills to snap up their prey.

FALCONS' BEAKS ARE SPECIALLY FITTED WITH A TOMIAL TOOTH, A SMALL NOTCHED TOOTH ON THE UPPER PART OF THE BILL

fits into a matching groove on the lower mandible. Falcons' long toes grasp prey in flight, but the predators often deliver the death blow by biting on a prey item's spinal cord, severing it with one quick turn of the head.

that they can wield with great accuracy.

Typically medium to short in length, flycatcher bills often are quite wide, allowing them a bit more leeway when trying to seize insects from the air. Helping the birds are rictal bristles, roughly equivalent to

Finches and sparrows

These familiar birds of our back yards and feeders share a similar adaptation: the ability to crack seeds. Typically conical and deep-based, their bills enable them to open seeds of varying sizes.

The most famous of all finch bills belongs to the aptly named crossbill. Both Red and White-winged Crossbills' upper and lower mandibles have elongated tips that cross over each other, one pointing up and one pointing down.

Crossbills are masters at opening pine cones, which are tightly sealed to keep their seeds hidden. With one twisting head

BIRDS' BILLS
GROW FROM
A SUBSTANCE
CALLED
KERATIN, THE
SAME
MATERIAL
FOUND IN
YOUR HAIR
AND
FINGERNAILS.



ALAN MURPHY PHOTOGRAPHY.COM

The rictal bristles at the base of a Cordilleran Flycatcher's wide bill (above) make the area more sensitive and useful. A White-winged Crossbill (left) uses its sharp mandibles with elongated tips to extract seeds hidden inside pine cones.

motion, a crossbill inserts its bill, pries open the cone and extracts the seed with its tongue. A truly fascinating adaption!

Bill deformities

Birds' bills grow from a substance called keratin, the same material found in your hair and fingernails. Some birds' beaks constantly grow but keep their shape through everyday use and wear. Often captive-bred raptors have longer hooked bills than those of their wild counterparts because they do not use their bills

as vigorously in captivity.

Overall, bird bills appear very consistent in shape and often are used as field marks among some of the harder-to-identify species groups (e.g., *Empidonax* flycatchers). That said, beware of anything that looks slightly "off," as bill deformities are not uncommon and seem to appear occasionally in all types of birds.

Typically these appear as either the upper

or lower mandible being overgrown or, on some occasions, both. This results in a bird that looks incredibly odd and off-balance in terms of structure. A bird that looks typical with a "weird bill" is probably just that — not a new species for North America. **WB**

eBird Project Leader Brian L. Sullivan also serves as photographic editor for Birds of North America Online and North American Birds.

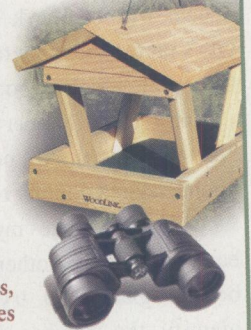
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