

*Midwest Creation Fellowship  
Student Essay Contest 2019  
Senior High School Division  
Second Place - \$250*

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Age:18  
Homeschool

# **Birds and Bullet Trains**

Bullet Trains and Birds- what do these two have in common? How do vultures help to keep our streets clean? What solved a problem a whole team of engineers couldn't figure out? Birds- You might be surprised to know that many of the advancements in technology we're all familiar with were actually modeled after these feathered creatures. Indeed, birds have captured our imaginations with their striking beauty. In fact, they are so intricately designed that renowned atheist Richard Dawkins once said **“One of the greatest challenges to the human intellect (, over the centuries,) has been to explain how the complex, improbable appearance of design in the universe arises.”** (allaboutscience.org)

This poses a question: Are birds evidence of an intelligent, all-knowing God? I'm going to unlock this by examining three elements of birds: their beauty; their impact on our ecosystem; and lastly, their complex design. But before we dive right in, I'll share a little background about myself, and how I became so fascinated with birds in the first place...

I've always had an interest in birds. And I loved hearing their sweet songs in the crisp spring morning air; but until I really studied the complexity and variety in them, to me they were just 'birds'. Then one gloomy winter day was brightened up when I looked out the window, and saw a gorgeous red Cardinal come out onto the snow. The color was so vibrant and pretty, I wondered what other colorful birds could be out there that I was missing-right in my own backyard. So I began to head out and try to capture their beauty with my camera, and started noticing striking beauty even in the birds of my own backyard: From geese on the pond, to Chickadees in the trees; to a Mourning Dove's peaceful calls on a summer afternoon; and the list

goes on, and on. These feathered friends of ours possess amazing beauty. Where could all this beauty have come from?

Well, not only are they beautiful, but birds are also of great importance to our ecosystem. Our roads wouldn't stay pretty for long if it weren't for the help of a common scavenger: Turkey Vulture. Unlike other raptors, Turkey vultures never eat live prey. But they circle the sky and use their keen sense of smell searching for fresh road kill instead. According to all about birds.org, **“vultures appear to have excellent immune systems, happily feasting on carcasses without contracting [diseases]”** (www.allaboutbirds.org). So although it may seem ugly at first, this raptor is a very important asset to our ecosystem, and it actually serves to keep our streets clean. In contrast to vultures, owls don't have a terrific sense of smell, and will even hunt skunks.

Another common bird of prey- the Red-tailed hawk can be of assistance in reducing the number of pesky rabbits in your garden or field mice getting in your garage.

But the vast majority of birds, like Swallows for instance, eat insects; making them a natural remedy for pesky mosquitoes (www.allaboutbirds.org).

All of these birds are contributing to a healthy environment for us to enjoy- The vulture serves to rid our streets of road-kill that would otherwise spread harmful disease; hawks and owls help to keep rodent populations in check; and the Barn Swallows help to prevent insects from devouring vital crops across the world. Does this seem like survival of the fittest, or the handiwork of an intelligent Designer? The very fact that ecosystems exist is evidence of an intelligent Designer.

By looking at the individual characteristics of just one type of bird, the woodpecker, we see even more evidence of God's handiwork and ingenuity shine through. Woodpeckers can peck up

to 20 times per second - twice the speed of a machine gun –and between feeding, excavating nest cavities and drumming, woodpeckers can peck a total of 8,000-12,000 pecks in a single day. And they do this with an impact velocity of 1,300 mph - twice the speed of a bullet! Despite this, woodpeckers don't get headaches from pecking. How is this possible? Well our Creator has accommodated this need and has designed woodpeckers with a built-in shock absorber. The reinforced structure of the woodpecker's skull is ideal to spread the impact force, and their brains are tightly cushioned and protected against repeated impacts. In addition, the skull is physically separated from its beak by a remarkable sponge-like cartilage, **“recognized by scientists as being better than any shock absorber manufactured by man”** According to [evidenceofdesign.com](http://evidenceofdesign.com) ([www.evidenceofdesign.com](http://www.evidenceofdesign.com)). And it allows the woodpecker's brain to withstand a force 250 times greater than astronauts face at liftoff. In addition, woodpeckers also have bristle-like feathers over their nostrils to keep wood chips from being inhaled while digging ([www.evidenceofdesign.com](http://www.evidenceofdesign.com)).

Even the woodpeckers' feet and tail are designed to best suit their behavior. Unlike most other birds, they have two forward-facing toes, and two rear-facing toes, which allow them to better cling to vertical trees. And they use their stiff tail feathers for support against the tree. Many woodpeckers also have a barbed tongue that sticks out three times longer than their beak, and wraps around the skull when it is retracted to extract insects from trees- A trait found exclusively in woodpeckers. Just like with any machine, for the woodpecker to operate, all of these elements had to be in place at the same time. Clearly this is the handiwork of an all-knowing God, and not the result of Natural Selection. ([www.thespruce.com](http://www.thespruce.com)).

In fact, birds are so cleverly designed that engineers have emulated them in their own designs. Consider the Bullet Train. Its aerodynamic shape and high-speed rails allow it to travel at speeds of almost 200mph. But did you know the bullet train's aerodynamic design was actually derived from a bird? Well this wasn't the case back in 1964, when the first Japanese high-speed rail, Shinkansen was opened to the public. The original bullet train was not as aerodynamic and shaped more like a bullet. But there was a problem with this design: every time the train left a tunnel, there was a sonic boom, that could be heard 400 meters away, annoying nearby residents within a quarter-mile radius; and Japan had strict laws regarding sound pollution. Yet by 1989, engineers were pushing to make the bullet train even faster, so the design engineers got to work to find a solution to the problem. It was discovered that this sonic boom was the result of a rapid expansion of air that had become compressed in front of the train while it passed through the tunnel. Eiji Nakatsu, lead engineer and general manager of the technical development department, was attending a lecture on birds and realized that the Kingfisher could be the solution to their problem. Nakatsu noticed that Kingfishers dive head first into the water, undergoing a tremendous change in pressure, similar to the change in pressure that occurs when a train leaves a tunnel. However, the Kingfisher hardly makes a splash when it hits the water. In fact, Wind tunnel experiments proved the shape of the Kingfisher's bill to be ideal for the transition from air to water. So they redesigned the Bullet Train to be shaped just like the Kingfisher's head, and as a result their trains became much more energy efficient, and a lot less noisy; ending the complaints from nearby residents and saving the company millions of dollars in the process ([www.greenbiz.com](http://www.greenbiz.com)).

The new design of the bullet train was also greatly influenced by owls. Owls' curved wing-feathers allow them to fly at slow, quiet speeds, and snatch prey by complete surprise, without even making a sound! And Nakatsu modeled the pantograph, the mechanism that connects the train to the electric wires above, after this design, reducing noise by 30% ([www.gigazine.net](http://www.gigazine.net)).

There is a name for this imitation of things found in creation- It's called Biomimicry, and it's used by engineers all the time when they want to improve technology. The Wright Brothers' success is another example of biomimicry. Their first attempts at flight were not a success. But then they observed Turkey Vultures in flight and noticed that they angled their wings for balance and control, and they emulated this concept to give us the first successful airplane ([History.com](http://History.com)).

As you can see, birds are much more than just pretty. The handiwork of birds is living proof of an intelligent Creator. We see it in their beauty; we see it in the ecosystem; and we see it in their complex design, when engineers looked to them to improve their own designs. Their beauty and order are a testimony of God. As it says in Romans 1:20: **“For since the creation of the world His invisible attributes, His eternal power and divine nature, have been clearly seen, being understood through what has been made, so that they are without excuse.”** (NASB, Romans 1:20)

## Source Citation Page

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