Exotic Pigeons

by Michael Mace, Curator of Birds
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Pigeons are unique in the avian world. The late French ornithologist Dr. Jean Delacour described the pigeon as "one of the most intriguing and beautiful groups of birds in the world. For years, Delacour himself kept a large private collection in Cleres, Normandy, France.

The many shapes and forms of pigeons and their various colors, from soft tans and grays to a spectrum of blues, reds, and yellows, are breathtaking. Pigeons and doves belong to the order Columbiformes, which includes the now extinct dodo.

There are approximately 300 species divided into two main groups, the seed-eating pigeons and the fruit-eating pigeons. They are a fairly hardy and diverse family of birds, and their ability to adapt has been used to measure how a taxon of animals acclimatizes to different environments. Pigeons are more widespread than parrots ranging throughout the major continents.

They also reside on the smaller isolated islands, particularly in the tropical regions. The only places on the planet that do not host at least one species of pigeon are the frozen polar caps. The most familiar to us, of course, are the ordinary feral pigeons found in our city parks, also commonly called Rock Doves *Columba livia.*

In addition to species diversity, variation can exist within a pigeon species, according to geographical location. For example, the Rock Dove of peninsular India is darker in color than the same species in Europe. The unique differences between species of doves and pigeons are determined by the environments they inhabit. Typically, both the seed-eating and fruit-eating groups are arboreal, roosting, feeding, and nesting in the canopies of the world's forests. Some may never spend more than short periods of time on the ground. This applies to species such as the multi-colored, Black-naped Fruit Dove *Ptilinopus melanospila* of southeastern Asia. Such arboreal forms must adapt in order to coexist with potentially harmful species. Monkeys, for example, would certainly be a threat to the adult birds and catastrophic to squabs and eggs.

Some birds that live in regions with primates have developed different strategies for propagation. The adaptive strategy was to become more terrestrial; feeding habits were influenced and the birds eat fallen fruits and seeds. The terrestrial pigeons even began to nest on the ground or in low, inconspicuous shrubs and bushes. A few species such as the Wonga *Columba melanoleuca* of eastern Australia and the Victoria Crowned Pigeon *Goura victoria* of Papua New Guinea have also adapted to a more terrestrial life-style.

Photo by Michael Mace, Curator of Birds, San Diego Wild Animal Park

Wonga Pigeon with chick.

Other differences in the pigeon characteristics affected by evolution are the various plumage. Pigeons and the smaller doves display many beautiful colors and patterns. The vivid colors, as well as the duller shades of grays and browns, provide cryptic cover for the birds. Ornithologist Derek Goodwin explains that "because they are usually preyed upon by avian predators such as hawks and falcons, smaller species of pigeons tend to be more cryptic in color than the larger species." The inconspicuous grays and browns of such species as the insular Mauritius Pink Pigeon *Columba mayeri* aid in the cryptic camouflage that is important for their survival. Other adaptations evolved in species such as the extinct Passenger Pigeon *Ectopistes migratorius* of the Americas, which developed long wing and tail feathers. Goodwin theorizes that "The purpose of the elongated wing and tail feathers of pigeons is as a direct correlation to regular migrations and birds with enlarged territories that are defended. "

In contrast to the less colorful Columbiformes are the species that inhabit the deep forests of the world, particularly Asia and Australia. Many ornithologists consider these pigeons the very essence of color. For each species, the colors are used as a method of recognition. Colors are also utilized in aggressive posturing among and between species and in courtship displays. Markings and colors are also a form of defense against unwelcome intruders. By flashing bright colors and patterns, pigeons can startle a predator for a split second, allowing the bird to escape. Aggressive displays can also be used to intimidate con-specific males that are pursuing the same female. With male color used for courtship and aggressive displays, the females are usually less colorful. This lack of coloration is, in itself, a defense mechanism. It would be a poor adaptation if an incubating female were too colorful and caught the attention of a hungry predator.

Additional adaptations are seen in pigeon eggs. All species of pigeons lay from one to two eggs in a clutch. Egg color is typically white or cream. The conspicuous white eggs are a liability

Photos by Michael Mace, Curator of Birds, San Diego Wild Animal Park

Green-naped Pigeon.

Compare the large Green-naped Pigeon egg to a quarter.

Photo by Michael Mace, Curator of Birds, San Diego Wild Animal Park

Western Beautiful Fruit Dove.

if spotted by a predator, however, the hen will not easily flush from an attended nest to reveal the eggs. Incubation periods vary from species to species, but usually the eggs hatch in 14 to 18 days. Altricial chicks are fed a diet of "crop milk" by the parents. While the parents are incubating the egg(s), prolactin is released. Lipid-engorged epithelial cells lining the crop slough off and are used as nourishment for the chicks' first few days of life. After that, the rapidly growing chicks are fed a diet of seeds and/or fruits, depending on the species.

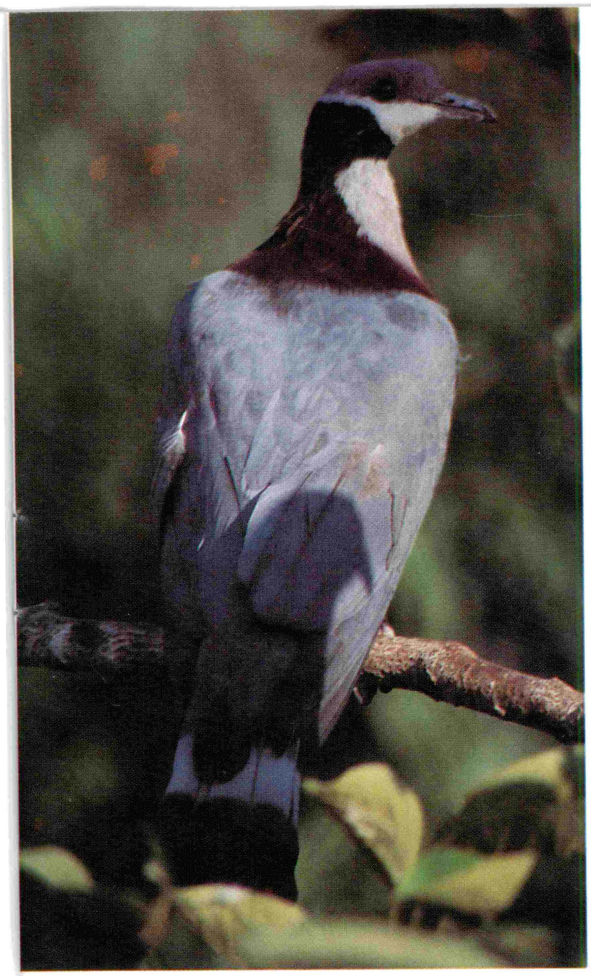
The number of clutches produced yearly by a pair in the wild is normally one if they are successful in raising a brood. However, double clutching from a pair is often accomplished if some other factor has taken place: an infertile clutch, predation of eggs or squabs, or inexperienced birds that do not lay eggs in the nest. By double clutching, a pair still has the opportunity to raise chicks after the first clutch has failed.

The way the pigeon family has adapted to a wide range of climates, habitats, and disturbances, including mankind, shows their resilience. In fact, throughout history pigeons and doves have often occupied a position of cultural significance. One of the earliest known archaeological records concerning pigeons was their domestication by the first Egyptian dynasty in 3,000 B.C. Biblical references have noted in the 600th year of Noah's life, a dove was used to determine the level of the flood waters covering the earth (Genesis 8:8).

Today, however, pigeons and doves are only recognized as a plague, particularly in this country. They are considered pests, which deposit guano on the famous buildings and landmarks of cultural Meccas the world over and contribute to the spread of such diseases as ornithosis which can be transmitted to humans. Even the dove, depicted as a symbol of peace and love, is presently hunted for sport during a designated season in the western United States. Yet these marvelously adaptive birds have made many contributions to human history.

Neolithic people were the first recorded to domesticate and use pigeons as a food source in the form of eggs and squabs. Early cultures soon discovered the prolific nature and homing instincts characteristic of pigeons. The homing instinct was used as a means of keeping a constant, reliable food source, upon release, the pigeons would continue to return to the crudely constructed pigeon lofts.

The abilities of the homing pigeon have been studied extensively by ethologists for centuries. Two main theories seem to prevail: that the birds navigate by the positioning of the sun and that they utilize the earth's magnetic fields. Research has proven the sun to be the primary factor in navigation, which is similar to the method employed by the honeybee. Researcher Charles Walcott proved his navigational theory by altering the magnetic field of some pigeons, either by strapping magnets to the birds or by outfitting them with helmets that consisted of a battery-powered Helmholtz coil. Dr. Walcott reported that upon release the birds were disoriented but only on overcast or cloudy days. Additional research involving the Rock Dove indicates that pigeons may also be sensitive to infrasonic waves, slight changes in baro-



Black-collared Imperial Pigeon.

metric pressure, polarized light, and even, perhaps, area-specific odors.

Owning pigeons was once considered a sign of wealth by European noblemen. Emperors would issue orders to the effect that "only the lords of the manors can build and maintain dovecotes." Meat was scarce, but the birds were an effective source of protein. The flocks, easy to care for, were released into the fields to forage on the weed seeds of the grounds owned by royalty. Non breeding stock was slaughtered, and the meat was smoked and salted and stored for the long, cold winters. The monasteries of the British were famous for their ability to raise domesticated pigeons. The orders were especially ambitious in the number of birds they housed, sometimes in excess of 2,000 breeding pairs. Alternative sources of protein were eventually developed in Europe, and domestic pigeon was gradually replaced. The birds then became an agricultural pest because of the feeding habits.

By the 18th century, the dovecote system was obsolete. However, a renewed interest in the pigeon developed because of Messenger or Carrier Pigeons. The Messenger Pigeon had been used by Genghis Khan as a reliable and swift means of communication. The birds were used to exchange information between his mighty armies, particularly when the borders of this empire began to expand into other regions of the continent. Carrier Pigeons were used by Napoleon Bonaparte's armies in the late 18th century during the French Revolution. Even as recently as World War II, the Carrier Pigeon has been employed for the transport of U. S. military documents.

Competitions evolved to determine the fastest birds in the lands. These competitions led to other types of showings: pigeons with elaborate plumes, tumblers, and various sizes of birds. Charles Darwin, a local resident of London, kept a pigeon house that he used for research and amusement. Francis Darwin stated about his father, "In the course of my father's pigeon-fancying enterprise he necessarily became acquainted with breeders, and was fond of relating his experiences as a member of the Columbarian and Philoperistera Clubs and learnt much of the mystery of their art."

Before writing his classic book, *The Origin of Species* (1859), Charles Darwin raised pigeons as supporting evidence for his extensive works. The Zoological Society of San Diego itself has had a long history with Columbids, dating back to 1926 with the acquisition of a Galapagos Dove *Zenaida galapagoensis*. From 1926 to 1998, more than 145 species of pigeons have been kept in the collection. Our experience has revealed that pigeons and doves are easily integrated with other species. If utilized correctly they can fill niches that may have been underutilized in aviaries and exhibits. Many of the species are in peril and researchers and aviculturists alike need to continue working with the family – in particular the insular species where changes in habitat are at an ever increasing rate. Presently, the Society is working with more than 80 species, and many of them are on exhibit at the Zoo and the Wild Animal Park.

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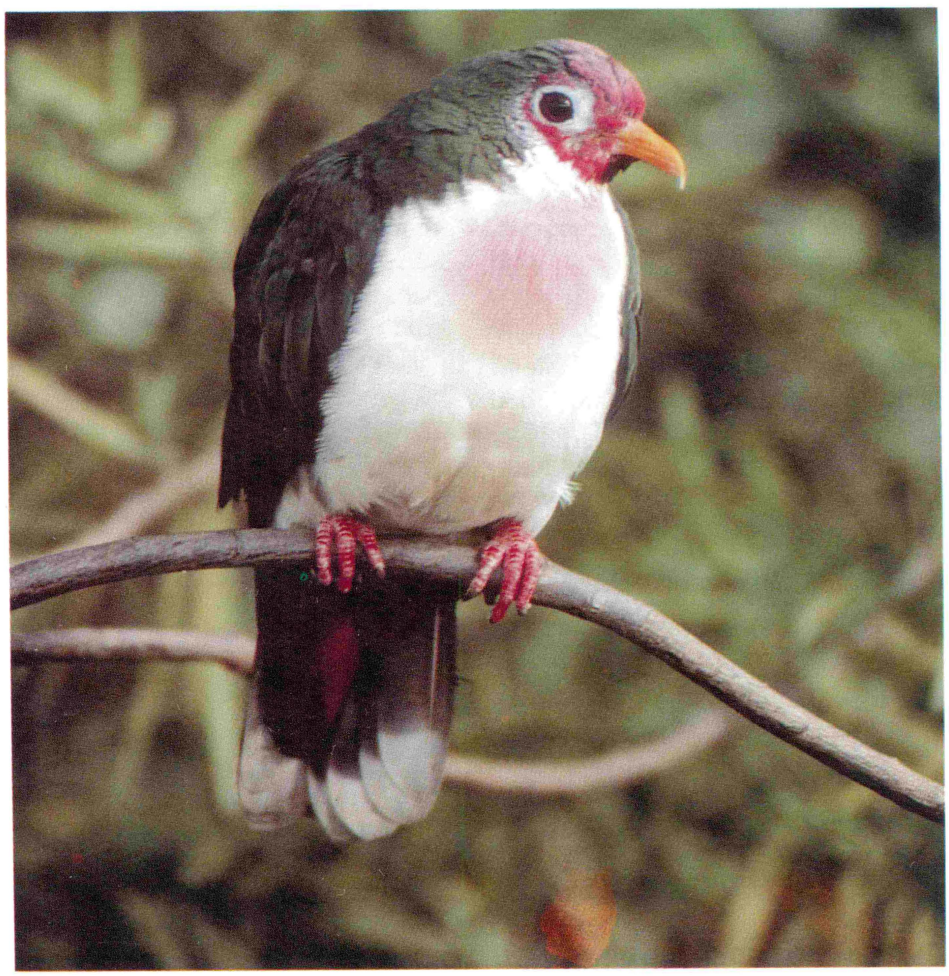

Jambu Fruit Dove.