

Big, social, Island-dwelling birds live longest

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Flamingos are among long-lived bird species with average life spans of more than 30 years.

(PhysOrg.com) -- Research may help explain underlying evolutionary principles that shape life spans for many organisms, including humans.

Large, social, vegetarian, island-dwelling birds live longer than other birds, reports a new Cornell study that examined the relationships between evolution and life spans in birds.

Some of the longest-living birds include flamingos, parrots, petrels and shearwaters, all of which can live 30 years and more, while many perching birds, grebes and woodpeckers have the shortest life spans of under 10 years, the researchers found.

The study, published in the Jan. 12 issue of the [Journal of Zoology](#), used

data on more than 900 bird species to understand avian aging factors; it may help explain underlying evolutionary principles that shape life spans for many organisms, including humans.

"We wanted to understand how long do birds live and whether we could relate longevity with factors that lower mortality," said Paul Sherman, professor of neurobiology and behavior, and the paper's senior author. Lead author Daniel Wasser '08, a medical student at Tel Aviv University's Sackler School of Medicine in Israel, researched this topic for three years as a Cornell undergraduate.

Some deadly forces -- such as predators, parasites, food shortages and bad weather -- are beyond an individual's control, but such external causes of death -- known as extrinsic mortality -- can limit a species' ability to pass on traits that allow individuals to live longer lives. If extrinsic mortality is high and animals die young, then genes that protect an animal and maintain bodily functions late in life are not strongly selected.

On the other hand, "when rates of extrinsic mortality are low, so that many individuals in a population can live to old age, [physiological mechanisms](#) of damage control and repair among the aged frequently will be selected and senescence (biological aging) will be postponed, allowing for a greater production of offspring," said Wasser.



Eastern bluebirds (male and female shown here) are short lived species with average life spans under 10 years. Image: Mary Sandman/Great Backyard Bird Count

By computerizing maximum life spans and body masses for 936 bird species -- 470 of which included data for nine ecological, behavioral and physiological variables that have been hypothesized to affect the evolution of avian life spans -- Wasser and Sherman found that body mass, diet, sociality and whether they nested on the mainland or an island significantly affect maximum life spans.

For example, bigger birds have fewer predators; herbivorous birds avoid risks that carnivorous birds may face, such as getting hurt or picking up parasites and pathogens when attacking prey, and compared to carnivores, may find food more readily available; social species can mob and warn of predators, and may find safety or may hide in numbers; and island breeders face fewer predators, pathogens and parasites.

"All of those things are associated with lower extrinsic mortality," Sherman said.

Such variables as breeding latitude, breeding habitat, nest-site location

and migratory behavior do not have significant effects on longevity, the researchers reported.

They also explored why birds, relative to mammals, have long life spans despite their high "rates of living" -- i.e., their high metabolic rates, high oxygen consumption for their size, higher body temperatures and higher blood sugar levels, all indicators of living hard and fast, which should shorten life spans. But the ability to fly, among other qualities, allows [birds](#) to escape predators, allowing some of them to develop longer life spans.

Provided by Cornell University

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