

Quote: “Vestigial structures are inherited from ancestors, but have lost much or all of their original function **due to different selection pressures** acting on the descendant.

“Modern whales retain reduced pelvic bones and, in some cases, upper and lower limb bones. However these structures no longer play a role in locomotion.” “The hipbones of the bottlenose dolphin (P.467) **are vestigial structures**. In their ancestors, hipbones played a role in terrestrial locomotion. As the dolphin lineage adapted to life in the sea, this function was lost. “The wings of the flightless **cormorant. . . are vestigial structures.**” [Emphasis added]

Question:

(1) What is the present-day function of whale/dolphin pelvic bones?

-They have a function similar to the hyoid bone in humans, by serving as an anchor for muscles and other structures, an attachment for the penis corpora cavernosa.

-Since they perform a vital function in reproduction, they are **not vestigial hind legs**, and do not signify that cetaceans evolved from land animals.

See: <http://www.iflscience.com/plants-and-animals/why-do-dolphins-and-whales-still-have-pelvic-bones-please-ladies/>

(2) Why do the flightless cormorants have stunted wings, unable to fly?

-They have genetic mutations, which have degraded their wings; they are **not vestigial organs resulting from “selective pressure.”**

See: *Science News*, May 17, 2016

<https://www.sciencenews.org/article/how-galapagos-cormorant-got-its-tiny-wings>

(3) What happened to the healthy-winged cormorants of the Galapagos Islands, leaving only the flightless ones?

-Flightless cormorants do not have a selective advantage over flighted ones (which are excellent swimmers). To the contrary, when food supplies in their habitat dwindle, flighted birds are able to fly to other places to find food, whereas the mutated wings of the FC leave them stranded.

-Most likely, the absence of healthy birds on the islands is consistent with the hypothesis that they have all flown away during famine times (El nino).

(Note that in the nonbreeding season, California cormorant populations redistribute along the coast in concert with changing water and feeding conditions, a behavior not possible with the Galapagos variety.)

See <http://bna.birds.cornell.edu/bna/species/362>

(4) Do humans have vestigial organs? What about the appendix and tonsils?

These organs have been determined to play an important function in the immune system

See Bergman, J. and Howe, G., Vestigial Organs are Fully Functional, CRS Books, Terre Haute, IN, 1990.