

Raptor Research Foundation Conference

Historic 4-Chick Bald Eagle Nest

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In 2009 the Delaware Valley Eagle Alliance (DVEA) announced the successful fledging of four bald eagle chicks from a nest along the Delaware River in Northampton County, PA. The PA Game Commission was notified and provided with documentary film confirming the historic event.



DVEA Directors, John and Yoke DiGiorgio, had completed capturing 14 weeks of footage and photographs documenting from the time that the 4 chicks were first observed (April, 2009) through



In September 2010, the DiGiorgios collaborated with Dr Bryan Watts, Center for Conservation Biology, College of William and Mary, co-authored and presented a Poster Paper at annual Raptor Research Foundation Conference in Fort Collins, CO to the biologists attending the conference.

The Raptor Research Foundation is a non-profit scientific society whose primary goal is the accumulation and dissemination of scientific information about raptors (hawks, eagles, falcons and owls). This information is used to inform the public (both scientific and lay) about the role of raptors in nature, and to promote the conservation of raptors whose populations are threatened by human activities. Membership includes academic researchers, government agency employees, and others interested in birds of prey.

The Raptor Research Foundation achieves its goals primarily through publication of research reports in *The Journal of Raptor Research*, and through its annual meeting held in a different

North American location each year at which research results are presented.

Response and interest by all those attending the annual conference was terrific.

Brood size in bald eagles reflects a broad range of evolutionary tradeoffs, generally varies between 1 and 3, with 2 being the most common. Prey abundance is believed to be a major determinant.

Reports in the literature of 4-egg clutches are very rare, with some suggesting that they may have resulted from two females laying eggs in the same nest. In 1986 on the Chesapeake Bay, a 4-egg clutch was successful with no sign of an extra female. An account, was never published.

Bald Eagle broods hatch asynchronously and often form dominance hierarchies. Under normal circumstances, the degree of hatching asynchrony for unusually large clutches likely creates such a disadvantage for the last chick that it sets an upper bound on brood size.

We estimated that there was a one and a half to two week age difference between the oldest chick and the youngest chick. Chick #1 was visibly larger and more developed than the younger three chicks, and chick #4 was visibly smaller and less developed than the older three. This remained the case up until they fledged.



There appeared to be an abundance of prey at the Northampton County, PA nest and this may have been the reason for the observed lack of formation of strong dominance hierarchies. John recalls filming on a particular evening in May where, over a 2 ½ hour time span, the adults brought in a total of five fish and fed the chicks continuously with no sibling aggressive behavior observed. All 4 chicks fledged during the 4 days between June 19, 2009 and June 2, 2009.



Following the conference, we explored working with the community to provide information and education on bald eagles and this historic event. In addition, a documentary film and book are being developed.

CHICK DEVELOPMENT

- For the **first two weeks** chicks are covered in white down and depend on the adults for warmth.
- **By 2-3 weeks**, chicks are covered in gray down and are more able to regulate their temperature. When the chicks are young typically the male does most of the hunting. Chicks are not yet able to tear the prey and are fed regularly by both adults.
- **By 3-4 weeks**, flight feathers are just appearing. Chicks may eat as much as 2 lbs per meal. Growth is rapid.
- **By 5-6 weeks**, chicks are developing coordination and are more active and playful. They may grab at adults to get food.
- **By 7 weeks**, chicks are proficient at moving around the nest. The adults typically spend less in the nest and may perch on branches in the nest tree or neighboring trees.
- **By 8 weeks**, chicks are nearly adult size. Coordination is improving and body posture is more erect. Chicks are able to tear prey and feed themselves.
- **By 9-10 weeks**, chicks exercise flight muscles and learn to control lift in preparation for their first flights. This includes taking to the support branches of their nest tree.
- **Fledging** typically occurs between **10-12 weeks**. Chicks remain dependent on the adults for food for several weeks after fledging.
- **Now called juvenile bald eagles, it will take them 4-5 years to reach full adulthood,**