

GIANT GREEN ANEMONES CONSUME SEABIRD NESTLINGS ON THE OREGON COAST

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It is uncommon for marine invertebrates to prey on seabirds, with octopi being the exception (e.g. Sazima & Bastos de Almeida 2008, CBC News 2013). We report here a Giant Green Anemone *Anthopleura xanthogrammica* consuming a nestling cormorant *Phalacrocorax* sp., observed in the rocky intertidal zone at the base of Haystack Rock in Cannon Beach, Oregon, on 24 July 2013 (Fig. 1), as well as less detailed observations involving gull *Larus* spp. nestlings (see below). Pelagic *P. pelagicus* and Brandt's *P.*

penicillatus cormorants nest in small numbers on this rock and other sea stacks in the immediate vicinity. The Giant Green Anemone is a widely distributed and common intertidal invertebrate in this area. Its typical prey includes small fish, crustaceans and detached mussels, which are stung and immobilized using nematocysts in the tentacles and then consumed (Dayton 1973).

It is unknown whether the chick was alive or dead when engulfed by the anemone. It is possible that a predator such as a Bald Eagle *Haliaeetus leucocephalus* dropped this chick or that it was knocked from the nest during a disturbance event. Disturbance of seabird colonies along the Oregon coast has increased in the past decade (Horton & Suryan 2012 and references therein), and aerial predators disturb the seabirds at Haystack Rock daily during the nesting season (LSG, pers. obs.).

Because it was in the early stages of feather growth, the chick was too young to have fledged or to be identified by plumage (Baicich & Harrison 1997). Cormorant chicks are featherless at hatching and usually have natal down by 10 days post-hatch (Hobson 2013, Wallace & Wallace 1998). This individual had pale grey to whitish skin with black down, which fails to accurately fit the recorded nestling descriptions for any possible species. The chick was in a state of *rigor mortis* without noticeable decay or evidence of scavenging. Controlled studies have shown that *rigor mortis* in ducks peaks at 1.0–1.5 hours *post mortem* and is largely

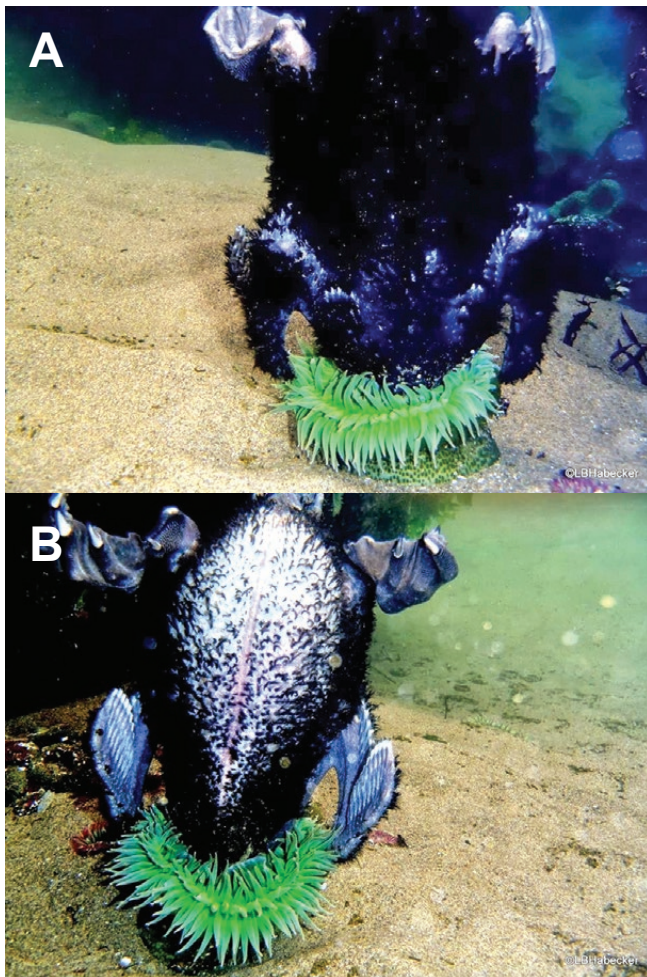


Fig. 1. Dorsal (A) and ventral (B) views of a Giant Green Anemone consuming a cormorant chick in a tide pool in Cannon Beach, Oregon, on 24 July 2013. Underwater photographs by Lisa Bullis Habecker.



Fig. 2. Giant Green Anemone consuming the leg of a gull (*Larus* sp.) at a tide pool in Cannon Beach, Oregon, on 31 August 2007. Photograph by Lisa Bullis Habecker.

absent after 32 hours (Cooper & Cooper 2013), indicating that this bird had likely died not more than two days earlier. The lack of evidence of scavenging by either marine or terrestrial animals, such as Dungeness Crabs *Metacarcinus magister* or gulls, which are commonly observed in this area, is perhaps most indicative of a short time since capture. No additional observations were made the following day because the tide pool filled with sand and the anemone was buried.

A similar observation was made in early July 2003. A nestling Glaucous-winged $\times$ Western Gull hybrid *Larus glaucescens* $\times$ *L. occidentalis* fell from Haystack Rock directly into a large *A. xanthogrammica* (L. Bullis Habecker, pers. obs.). The anemone engulfed the chick, leaving only the feet exposed. The chick did not appear to struggle, so was likely dead or moribund at the time of ingestion. Furthermore, on 31 August 2007 we observed an anemone feeding on a detached gull *Larus* sp. leg (Fig. 2.), demonstrating that discarded remains of seabirds also provide a food source for marine invertebrates. These independent observations spanning 10 years in the same location indicate that direct consumption by intertidal invertebrates of seabird nestlings knocked from nests may not be a rare occurrence.

Bottom-up influence of seabird colonies on surrounding rocky intertidal habitats is well documented. Seabird guano adds nutrients to the surrounding environment, altering primary production, which in turn affects grazers/herbivores, and ultimately, carnivores (Bosman & Hockey 1986, 1988; Wootton 1991). Discarded fish scraps, eggs and carcasses of chicks also provide seasonal input of nutrients to both marine and terrestrial areas around seabird colonies (Polis & Hurd 1996), indirectly affecting intertidal carnivores. In this case, however, we observed a secondary consumer (anemone) feeding directly on a young tertiary consumer (cormorant).

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