

RESEARCH NOTE

Octopuses have a fowl diet

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Abstract: There are several references to octopuses eating birds but few give details of the encounters. Here we document the details of seven instances (six *Enteroctopus dofleini* (Wülker, 1910) and one *Octopus* cf. *insularis* Leite and Haimovici, 2008) of octopuses attacking, capturing or eating birds, including glaucous-winged gulls (*Larus glaucescens*), a pigeon guillemot (*Cepphus columba*), a double-crested cormorant (*Phalacrocorax auritus*), a western grebe (*Aechmophorus occidentalis*) a brown noddy (*Anous stolidus*) and a bald eagle (*Haliaeetus leucocephalus*).

Key words: giant Pacific octopus, *Enteroctopus dofleini*, sea birds, octopus predation.

Several stories about octopus-bird interactions are found in the oral traditional literature of the coastal peoples of northeastern Pacific as related by Ellis and Swan (1981) and Eastman and Edwards (1991). Although clearly not in the category of documentary evidence, such information should not be dismissed out of hand. In the cultures where these stories originated, the intelligence and cleverness of the Raven, a supernatural being also called the Trickster, are an understood part of the backstory. In most encounters between the Raven with an octopus, the clever Raven generally wins the day. However, the octopus is also endowed enough intelligence to occasionally best the trickster. The raven may be the most intelligent of the Corvidae, birds known for their intelligence (Seed *et al.* 2009) and the octopus is the most intelligent invertebrate (Mather *et al.* 2010), thus showing the deep understanding of each species possessed by the storytellers.

In some stories, the details are sufficiently clear that they probably indicate a basis in actual and, possibly, quite recent events. Ellis and Swan (1981) document a story of Mr. Raven annoying Miss Octopus as she harvests clams at low tide. He doesn't realize the tide is rising until she grasps him and holds him underwater until he drowns. This rare occurrence when someone gets the upper hand on Raven, attests that octopuses are also clever and, perhaps more importantly from our perspective, that octopuses may occasionally kill (and eat) birds, such as ravens, that frequent the shores at low tide. These stories frequently "have a grain of truth" to them.

A report lists several instances of (presumably) a single octopus that killed two birds that were noted by both experienced octopus observers and birders (Sharpe *et al.* 1991). The documentation implicated a giant Pacific octopus, *Enteroctopus dofleini* (Wülker, 1910), living in a water-filled den under the

lower edge of a concrete boat launch ramp that extended down to the lower intertidal zone on Whidbey Island (Washington State). The report noted that observers saw the octopus capture and drown a glaucous-winged gull (*Larus glaucescens*) and a pigeon guillemot (*Cepphus columba*), although it does not record whether the octopus ate the birds. The report further suggests that such man-made constructions on the shore may enhance denning opportunities for *E. dofleini* on the shore and, thus, may give the predatory octopuses more opportunities to catch and eat seabirds and shorebirds.

A recent observation of an *Enteroctopus dofleini* eating a glaucous-winged gull (*Larus glaucescens*) (Fig. 1) was photographed at a breakwater in Victoria, B.C., Canada. The subsequent photographs intrigued the public (see Birdfellow.com, 28 Apr 2012 ff) and provided us with further details of octopuses eating birds.

Ken Wong (KYK Wong Enterprises, Vancouver, B.C.), a professional octopus collector, reported seeing the body of a double-crested cormorant (*Phalacrocorax auritus*) in the midden of an *Enteroctopus dofleini* (K. Wong, pers. comm.) and one of us (RCA) has seen a partially eaten western grebe (*Aechmophorus occidentalis*) in the den midden of an *Enteroctopus dofleini*. The grebe's breast and inner organs had been eaten, leaving the back, wings, neck and head from which remains identification was made. Another professional octopus collector reported seeing "diving ducks" in *E. dofleini* middens (Cliff Law, pers. comm.). In an observation also gleaned from the email list of Birdfellow.com, an encounter between a bald eagle (*Haliaeetus leucocephalus*) and an *E. dofleini* was witnessed where neither could gain the upper hand and both escaped.

An observation of a different species of octopus preying on birds on an island off Brazil was documented by Sazima



Figure 1. A giant Pacific octopus (*Enteroctopus dofleini*) eats a glaucous-winged gull (*Larus glaucescens*) at a breakwater in Victoria, British Columbia (Canada) while a photographer looks on. Photo by Ginger Morneau.

and de Almeida (2008). They observed an unidentified octopus (*Octopus cf. insularis* Leite and Haimovici, 2008) capturing and thence eating a brown noddy (*Anous stolidus*), a gull-like bird that had perched on the edge of a tide pool. The octopus in the tide pool threw two arms encircling the legs of the noddy and held it underwater until it drowned. It then ate the noddy, beginning at the base of the tail (the crissom), working its way up to its neck, holding it for seven hours, when a wave dislodged the remains from the octopus's grip.

It is obvious from these several accounts that birds may make up more than incidental, casual prey of some octopuses. There are an increasing number of these accounts in the literature of multiple species of octopuses eating multiple species of sea birds, shore birds, and diving ducks, and there is no reason not to expect more. It is likely that through further observation by increasing numbers of beach naturalists that the list of birds eaten will expand.

In Alaska, *Enteroctopus dofleini* have been observed under intertidal boulders and the pools surrounding them in south-central Alaska (RLS, pers. obs., Scheel 2002) and to a lesser extent on the west coast of British Columbia and Washington State, thereby increasing the chances of octopuses catching shore birds such as peeps and gulls. And although the observed fight between the bald eagle and the *E. dofleini* ended in a draw, such is probably not always the case. Eagles may forage on the shore at low tide and they can certainly eat small octopuses, but *E. dofleini*, which can grow to more than 40 kg (Mather *et al.* 2010), can certainly grow large enough to pull even an eagle underwater, or to hold it in place as the tide came in.

Anderson (2008) demonstrated the taste captive *Enteroctopus dofleini* have for birds by feeding them raw chicken parts for enrichment purposes (see Fig. 2). Such octopuses were well-fed

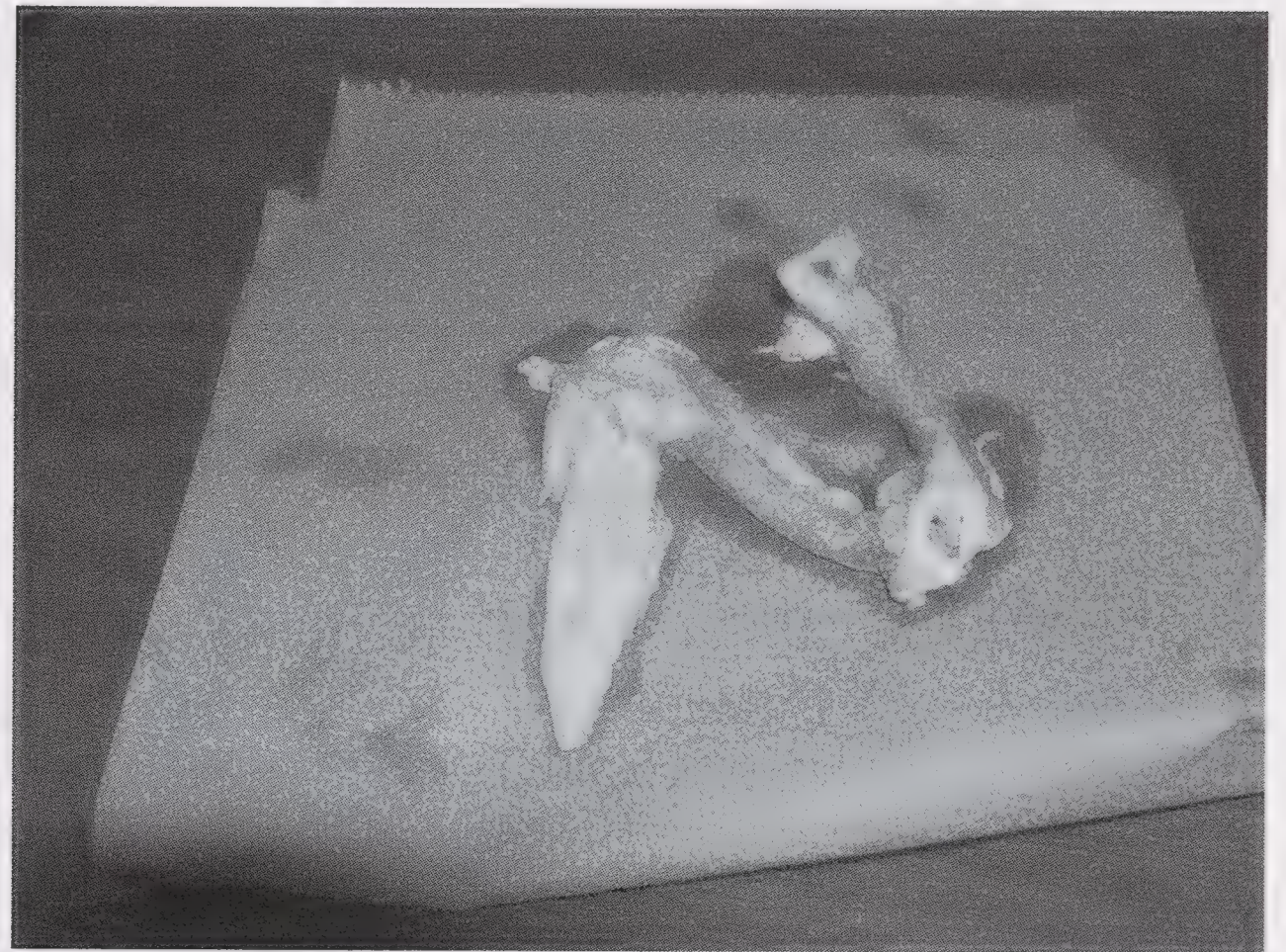


Figure 2. A raw piece of chicken eaten by a giant Pacific octopus (*Enteroctopus dofleini*) at the Seattle Aquarium (Seattle, Washington, U.S.A.). Photo by Leo Shaw, The Seattle Aquarium.

in captivity per Anderson (2001) so it is unlikely that octopuses were eating chicken because of extreme hunger. They ate the chicken meat readily and eagerly, and also ate hard-boiled chicken eggs (Anderson 2008) indicating a further taste for fowl.

An octopus's taste is catholic. Anderson *et al.* (2008) reported 75 prey species eaten by *Octopus vulgaris* Cuvier, 1797 in the Caribbean and Scheel and Anderson (2012) report 69 species eaten by *Enteroctopus dofleini*. It may be that octopuses are just well adapted for taking the opportunity to eat anything of the right size that moves although Lee *et al.* (1991) found that chicken-based pelleted food did not support octopus growth in captivity.

It may seem unexpected that octopuses could eat birds with their protective feathers but the suckers of octopuses are well-adapted for prey manipulation (Grasso 2008). Octopuses may be able to bend or wrap their suckers around an individual feather in order to pluck it and thus access birds' flesh underneath the feathers.

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