

KILLER WHALES *ORCINUS ORCA* AND SEABIRDS:

"PLAY", PREDATION AND ASSOCIATION

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Received 10 May 1990, Accepted 10 August 1990

SUMMARY

WILLIAMS, A.J., DYER, B.M., RANDALL, R.M. & KOMEN, J. 1990. Killer Whales *Orcinus orca* and seabirds: "play", predation and association. *Marine Ornithology* 18: 37-41.

Killer Whales *Orcinus orca* interactions with seabirds are poorly known. We observed Killer Whales off southwestern Africa kill seabirds but seldom consume them. To put our observations in context we review global Killer Whale/seabird interactions under three headings: "play", predation and association.

INTRODUCTION

The Killer Whale *Orcinus orca* is widely distributed in oceans of the world (Martinez & Klinghammer 1970, Heyning & Dalheim 1989). Killer Whales must frequently encounter a wide variety of birds at sea yet there are few documented observations detailing interactions between Killer Whales and birds (e.g. Evans 1982, Rice & Saayman 1987, Bloch & Lockyer 1988, Guinet 1990, Stacey *et al.* 1990). Here we document observations of Killer Whales "playing" with, and preying upon, seabirds off the coast of southwestern Africa and review other records of Killer Whales and seabird interactions under three headings: "play", predation and association.

RESULTS

Killer Whales were observed attacking seabirds off

the southwestern coast of Africa on numerous occasions during 1986. Most observations concerned two Killer Whales immediately adjacent to Mercury Island (25 43S, 14 50E), a proclaimed nature reserve of the Cape Province of South Africa, off the coast of Namibia. The "play" involved a whale approaching from behind a seabird swimming on the surface, taking the bird in its mouth, diving with it, and then leaving the dead or dying bird floating on the surface. Because few if any of the birds killed in this way were consumed by the whales we consider that the Killer Whales were "playing" with the birds. Bird species treated in this way were the Jackass Penguin *Spheniscus demersus*, Cape Cormorant *Phalacrocorax capensis* and Bank Cormorant *P. neglectus*, (pers. obs., see also Rice & Saayman 1987).

Killer Whales were observed "playing" with seabirds between 9 and 13 April and 4 and 14 December

1986. One large (c. 6 m long) and another smaller whale, believed on the basis of size difference and of fin shape to be a male and a female respectively, repeatedly patrolled the shoreline of the island in April and December.

In April the island supported more than a thousand Cape Fur Seals *Arctocephalus pusillus* and several thousand Cape and Bank Cormorants. The cormorants included many juveniles distinguishable by the retention of down on the neck and the dull colouration of their gular patches and eye-rings. Both whales were repeatedly seen approaching juvenile cormorants which were swimming on the sea surface within 5-30 m of the island. Most cormorants were taken in the whales' mouths at the surface. Some cormorants which dived when a whale was almost upon them did not return to the surface after the whale had dived nearby and were assumed to have been taken by the whale underwater. Many of the cormorants were subsequently freed by a whale and were left at, or came to, the surface. Some of these birds were apparently dead. Others exhibited extreme distress before dying. Birds left floating had no lacerations and appeared superficially undamaged (Rice & Saayman 1987) but one, examined in the hand, had a broken neck (E. Myer pers. comm.).

Usually the whale/bird interaction was brief, a matter of seconds, but occasionally the interaction was extended. On one occasion in April 1986 the smaller whale caught and released an individual cormorant six times. At one time this whale surfaced with just the cormorant's head in its mouth and the body dangling free. Finally, it left the cormorant carcass in front of the larger whale which then, in turn, took it. On another occasion, the two whales played "cat and mouse" with a young cormorant for some ten minutes. Initially both made several passes close to the cormorant, approaching it from underwater and then surfacing right beside it as though to seize it but instead swimming by leaving the cormorant floundering in the bow wave. The larger whale then dived vertically and with its tail flukes flicked the

cormorant 1-3 m out of the water at least three times. Then both whales once more made passes close to the cormorant before the smaller whale took it below the surface.

All the cormorants taken in April were young, recently fledged, and probably still dependent upon parental feeding, and were bathing or making exploratory dives just off the breeding areas. Many victims probably saw the whales approach underwater. A few took off and escaped by flight though they often settled again on the water 5-10 m away. If the cormorant settled in line with the whale's direction of movement the bird was invariably attacked again. Some cormorants began to swim rapidly away from detected whales and a few escaped in this way, but the whale capture rate was probably over 60% of all birds which the whales were seen to pursue.

In April the Killer Whales captured cormorants at a rate of one to two every ten minutes throughout the period of daylight of about 12 hours per day. This represented a mortality of at least 72 birds per day. In December between seven and 24 adult cormorants were taken per day and in that month the whales preyed upon Cape Fur Seals in the early morning and late afternoon and "played" with seabirds through the day.

DISCUSSION

We have been able to find only four previous references to Killer Whales "playing" with birds in the way we describe: a report of whales using their flippers to strike Eiders Ducks *Somateria molissima* (Bloch & Lockyer 1988); young Killer Whales "stroking" King Penguins with their tail flukes before catching the penguins, which has been suggested as a form of hunting "apprenticeship" (C. Guinet pers. comm.); Killer Whales "tail lobbing, chasing and jumping on.. birds" near Vancouver Island, Canada (Stacey *et al.* 1990); and an earlier, short, comment on play by the two Killer Whales we report on here (Rice & Saayman 1987).

In addition there are several reports of Killer Whales "playing" with other large, actual or potential, prey items. Killer Whales have been reported "playing" with a porpoise (species unstated) for up to 30 minutes before finally eating it (text to Fig. 146 in Leatherwood *et al.* 1982). The repeated flicking of prey/play animals out of the water by a Killer Whale, as we have reported with cormorants, has been seen on several occasions in whale/sea lion interactions off the coast of Patagonia (figure text in Bartlett & Bartlett 1976). Similarly, a group of Killer Whales "playing" with a portion of a baleen whale's tongue passed it from one whale to another and shot it high into the air (Lillie 1955).

Killer Whales preying upon birds

Although Killer Whales are generally said to consume birds (e.g. Tomilin 1957, Martinez & Klinghammer 1970, Smithers 1983) published records of birds being eaten are few (see below). Most records concern penguins. A whole Emperor Penguin *Aptenodytes forsteri* was found in the stomach of a Killer Whale in Antarctica (Prevost 1961). At sub-Antarctic Marion Island (46 50S, 37 45E) Killer Whales kill and consume King Penguins *Aptenodytes patagonicus*, Macaroni Penguins *Eudyptes chrysolophus* and Rockhopper Penguins *E. chrysocome* (Condy *et al.* 1978, AJW pers. obs.). Killer Whales also kill and eat King Penguins at sub-Antarctic île de la Possession, îles Crozet (46S, 51E) (Ridoux 1987, Guinet 1990, C. Guinet pers. comm.). In southern African waters Killer Whales, including the two individuals which "played" with cormorants, take and consume individual Jackass Penguins, Whitechinned Petrels *Procellaria aequinoctialis*, and Cape Gannets *Morus capensis* (Rice & Saayman 1987, B.M. Dyer & R. Swart pers. obs.).

We have found only four published reports of Killer Whale predation of birds in the northern hemisphere. Near or at the Faroe Islands Killer Whales have killed and eaten Eider Ducks,

Blacklegged Kittiwakes *Rissa tridactyla*, Common Guillemots *Uria aalge* and Atlantic Puffins *Fratercula arctica* (Bloch & Lockyer 1988). In northern America Killer Whales have been reported chasing, and presumably catch and eat, waterfowl including Black Brent Geese *Branta nigricans* and Goosanders *Mergus merganser* (Scheffer & Slipp 1948, Tomilin 1957), Whitewinged Scoter *Melanitta fusca* (Odlum 1948) and unspecified seabirds near Vancouver Island (Stacey *et al.* 1990).

Penguins recognize the threat to them posed by approaching Killer Whales and "porpoise" away (their fastest mode of locomotion, Hui 1978), and if possible reach shore and move away from the water's edge (Randall & Randall 1990, AJW pers. obs.). Jackass Penguins apparently recognize Killer Whale vocalizations and can be scared off by replay of such calls (Frost *et al.* 1975). At Mercury Island on several occasions in 1986 groups of Jackass Penguins were seen approaching the island during the period when the Killer Whales were active. These penguins moved very rapidly through the immediate inshore waters. Groups of penguins on the shore would not get into the sea when the whales were swimming nearby, despite close human presence which would usually cause them to do so. Cape Fur Seals similarly showed reluctance to enter the water and usually got out again quickly when the whales were swimming close inshore.

Birds associating with Killer Whales

Birds may also deliberately associate with Killer Whales. This is probably to obtain scraps of food resulting from the Killer Whales' predatory activities, or to feed upon the whales' faeces. At Mercury Island, Kelp Gulls *Larus dominicanus* settled to feed at some floating cormorant carcasses after these had been left by the whales. At sub-Antarctic Marion and Possession Islands, Southern Giant Petrels *Macronectes giganteus*, Pintado Petrels *Daption capense*, Whitechinned Petrels, Blackbrowed Albatrosses *Diomedea melanophrys*,

Subantarctic Skuas *Catharacta antarctica* and Kelp Gulls have all been recorded following hunting pods of Killer Whales in inshore waters (Condy *et al.* 1978, Ridoux 1987, AJW pers. obs.). Over oceanic waters Greyheaded Albatrosses *D. chysostome*, giant petrels *Macronectes* spp., Pintado Petrels, Kerguelen Petrels *Pterodroma brevirostris*, prions *Pachyptila* spp., and especially Blackbellied Stormpetrels *Fregetta tropica* have been reported following Killer Whales (Griffiths 1982, Enticott 1986). However, Evans (1982) could find no records of birds associating in this way with Killer Whales in the northern hemisphere.

Conservation implications

In four days in April 1986 the two Killer Whales at Mercury Island killed an estimated 290 young cormorants. Most of these were Bank Cormorants, a species whose global breeding population is small (less than 9 000 pairs, Cooper 1981) and decreasing (AJW unpubl. data). Were such a predation rate to be sustained through the fledging period in a series of successive years, the effect on recruitment and so on the regional population of this cormorant might have been cause for concern by conservation authorities. However, Killer Whales have not been seen about the island during visits, including one of two months, in subsequent years. The high rate of mortality in 1986 must therefore be regarded as exceptional and a natural perturbation in the local population dynamics of this species.

The prime attraction of Killer Whales to seabird breeding localities seems to be the presence there of seals which are important prey items for the whales. Currently, fur seal populations in the southern hemisphere are undergoing a massive increase following the major human depletion of stocks in the last century (e.g. Shaughnessy 1984, Bonner 1985). Where seal populations increase at major seabird breeding localities we can anticipate increases in Killer Whale predation upon seabirds. Such predation, where coupled with displacement

of seabirds from breeding areas by, and competition for food at sea with, seals may jeopardize local seabird populations (Crawford *et al.* 1989). Where jeopardized local populations form a substantial proportion of the population of an endangered species (in the sense of listing in a national or continental Red Data Book) then conservation authorities may need to take action to safeguard seabird populations.

ACKNOWLEDGEMENTS

We thank P. B. Best, C. Guinet and G. J. B. Ross for help in locating whale references and, with J. Cooper and V.G. Cockcroft, for critical comment on drafts of the manuscript. We are grateful to C. Guinet for permitting us to see and cite unpublished information.

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