

## SHORT COMMUNICATIONS

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### OVER-OCEAN HUNTING BY PEREGRINE FALCONS IN BRITISH COLUMBIA

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Peale's Peregrine Falcons (*Falco peregrinus pealei*) that nest on Langara Island on the north Pacific coast of British Columbia, Canada, are known to prey nearly exclusively on small seabirds, particularly Ancient Murrelets (*Synthliboramphus antiquus*) and other small alcids (Beebe 1960, Nelson 1990). Beebe (1960) concluded that, in spring and early summer, the falcons hunted murrelets and auklets mainly at dusk and dawn when they flew either to and from nesting colonies in island forests. He observed one capture when a murrelet, out of a large swimming flock, flew up just ahead of a falcon that approached at high speed low over the water. Nelson (1970) reported that an adult male peregrine struck an Ancient Murrelet on the ocean surface and retrieved it. Peale's Peregrine Falcons breeding on the Aleutian Islands off Alaska also prey on alcids, but little is known about their foraging behavior (White 1975, Sherrod 1988).

We visited Langara Island in 1995 and 1996 to make observations on the hunting behavior of Peregrine Falcons. This paper reports on 73 foraging flights that we observed during this period.

#### STUDY AREA AND METHODS

Langara Island is at the northwestern tip of the Queen Charlotte Islands off the northern coast of British Columbia, Canada. The island is about 10 × 6 km. It is heavily forested with low hills and some cliffs along the rocky shoreline. We made observations from 30 August–6 September 1995 and 7–22 August 1996. We spent a combined total of about 200 hr watching peregrines from a 30 m high shoreline cliff. Primarily, we observed one territorial pair that occupied a strategic point jutting out into the ocean. The falcons were typically found perched 1.3 km to the west on the bare branches of conifers that protruded above the shoreline forest, or on a 4–6 m high rocky islet just off shore. Another pair occupied a territory just to the east of our observation point but their

perches were blocked from view by trees so we could only observe them when they flew by. We also observed several first-yr immatures that had recently become independent.

We made observations using 20× spotting scopes or binoculars for as long as the falcons remained visible. Perched falcons were watched continuously through the spotting scope, often for periods of up to 4 hr until they started to hunt. To the west and north, our observation point allowed an unobstructed view across a wide bay and open ocean. Usually hundreds of alcids dotted the water and small flocks or single birds flew very low (<1 m) over the surface. They included Cassin's Auklet (*Ptychoramphus aleuticus*), Ancient Murrelet and Marbled Murrelet (*Brachyramphus marmoratus*). With mean weights of 170–225 g, these alcids are favorite prey of the peregrines (Beebe 1960, Nelson 1970).

A foraging flight consisted of one attack that a peregrine made at one target prey species. It concluded with one or more capture attempts (Dekker 1980, Buchanan 1996).

#### RESULTS

We observed a total of 73 foraging flights of which 16 (22%) were successful. During 13 of these foraging flights, we briefly lost sight of the peregrine over the ocean; eleven returned without prey to their perch. Two returning peregrines were pursued by Bald Eagles (*Haliaeetus leucocephalus*), so we assumed that they were carrying prey. Sixty foraging flights were observed from start to finish.

Fifty-eight (80%) foraging flights started from perches. The pair we concentrated our observations on usually terminated flights within 1.5 km of shore. During windy conditions, their flights started from the islet and they stayed very low over the water as they darted between waves. Some capture attempts were made just beyond a large, partly submerged rock probably to conceal their approach. When foraging flights started from high tree perches, the falcons flew out about 75 m over the ocean until they suddenly descended low over the water. At the conclusion of these flights, peregrines pulled up abruptly and headed back to land with or without prey.

Fifteen foraging flights (20%) involved long distances and reached altitudes of up to 100 m. In this case, capture attempts were initiated by steep or gradual descents at high speed that terminated low over the water. In contrast to still-hunting attacks, peregrines making these long-range flights did not immediately return to land after an unsuccessful capture attempt but disappeared from view in the distance, probably continuing to hunt. On six occasions, the peregrines soared either over shoreline hills or water. On a warm morning (0730 H), an adult male circled over the ocean for about 10 min until flying down obliquely to pursue low flying alcids that dived into the water. On another early morning, an adult female tried to soar, but could not, then resumed flapping flight and disappeared far out over the ocean. Long-distance search flight, including soaring during suitable weather, seemed more typical of immature peregrines that were often chased away from the shoreline by territorial adults.

At least 39 foraging flights, of which 10 (26%) were successful, were directed at swimming alcids. Sometimes, alcids dived under the water at the last possible moment. Subsequently, the attacking peregrine passed over the spot and returned to shore. Alcids spread their wings to dive, which results in a visible splash. During one of these pursuits, an alcid was near the crest of a rising wave. It dived to avoid capture but another alcid, in the trough of the next wave and also directly in line with the falcon's low approach, was struck. On impact, the falcon dipped slightly lower, causing a splash, then it rose and turned back to retrieve the prey from the water. In six out of nine cases, falcons seized disabled alcids after a single return pass. When they made multiple passes, it was during calm conditions when they had more difficulty slowing down to retrieve prey. In another case, the falcon failed in three tries to capture its prey while the crippled alcid dodged, thrashing about on the water. Finally, it was captured by the first of three approaching adult Bald Eagles. In one unsuccessful capture attempt, a peregrine briefly hovered over the water, possibly waiting for the reappearance of an injured alcid that dived below the surface. In one instance, an adult male in a typical low surprise flight, seized a small alcid directly from the surface and carried it away.

At least 12 foraging flights, two (17%) of which were successful, were directed at alcids flying <1 m above the water. Ten of these flights originated from perches and two from high cruising flight. To avoid approaching falcons, flying alcids dived at once into the water. During one successful attack by an adult female falcon, the alcid was seized directly out of a small flock while the others splashed down.

We observed nine attacks on small shorebirds such as phalaropes (*Phalaropus* spp.) that passed through the area on migration. Two of these attacks were successful. Swimming phalaropes that flushed were briefly pursued. One phalarope was captured, either on or just above the

water, by a peregrine darting low between choppy waves. The other phalarope was taken by an adult male in a typical still-hunting attack while it glided along the surface.

Captures were made throughout the day, but most often between 0900–1200 H. Six falcons were observed with prey between 0600–0900 H, 5 during 1200–1500 H, and 3 each during 1500–1800 and 1800–2100 H.

#### DISCUSSION

Our study indicates that maritime peregrines make contour-hugging flights over the ocean using waves to conceal their approach until they come suddenly upon surface-swimming water birds which are panicked into diving (Cade 1982). Nevertheless, we saw nothing to substantiate the reports that maritime peregrines learn to wait for diving birds to resurface and return to attack again when the birds are exhausted for oxygen.

The hunting behaviors we observed differed from those previously described (Sherrod 1988). Unlike previous reports, we saw peregrines capture low flying alcids by seizing them directly. Capture of flying prey, either over water or land, was typical of peregrines hunting shorebirds and ducks in Alberta and British Columbia (Dekker 1980, 1995). In Britain, coastal peregrines captured the vast majority of prey in midflight (Parker 1979, Treleaven 1980).

In our study, we observed peregrines to use mainly surprise attack to capture prey. They have also been observed to use this hunting behavior in Scotland (Creswell 1996) and in Alberta where shorebirds are often retrieved from the water even if they are totally submerged (Dekker 1988).

Perch hunting is the most common and successful hunting method of the Peregrine Falcon worldwide (Palmer 1988). It is observed routinely along the cliffs in Britain (Treleaven 1980) and along tree-lined fields on Vancouver Island (Dekker 1995). By contrast, in central Alberta where high perches are scarce, migrating peregrines use high searching flight and soaring (Dekker 1988). In this study, long-range hunting flights over the ocean were used especially by immature falcons that were chased away from shore by territorial adults. In areas away from occupied nesting cliffs, perch hunting might well be the preferred method of immatures as well as adults.

Our observed hunting success rate of 22% falls within the range of values from other regions of the world (Roalkvam 1985). The only data for peregrines hunting over the ocean are from Britain, where peregrines prey nearly exclusively on pigeons (*Columba* spp.) with success rates ranging from 16–52% (Parker 1979, Treleaven 1980). To our knowledge, this study is the first to give success rates for Peregrine Falcons hunting seabirds over the ocean. The crippling strikes of swimming alcids that we report here have only been previously described by Nelson (1970).

The large number of attempts at kleptoparasitism by Bald Eagles that we observed may explain why Langara peregrines do not capture the locally common Pigeon Guillemot (*Cepphus columba*), which weighs about 450 g and is twice as heavy as the smaller alcids. During 26 yr of nest-site research on Langara Island, Wayne Nelson (pers. comm.) did not find any guillemot prey remains in peregrine nests. In contrast, legs and wings of the very similar Black Guillemot (*Cepphus grylle*) are numerous in peregrine nests along the Arctic Ocean (Bradley and Oliphant 1991) where Bald Eagles are absent. Although arctic peregrines are smaller, they are apparently quite capable of carrying guillemots. However, at Langara their relatively large weight might increase the vulnerability of peregrines to piracy by Bald Eagles.

RESUMEN.—Nosotros observamos *Falco peregrinus pealei* en la isla de Queen Charlotte, British Columbia, Canada haciendo 73 cazadas arriba del océano. De estos, 16 fueron exitosos (22%) y resultaron en presa capturada. El mas comun conducta de foraje que observamos es cazando inmóvil de una percha (80% de cazados observados). Estos halcones también hicieron vuelos largos en busca de presa que incluso planeadoro. Los dos, cazando inmóvil y vuelos largos en busca de presa, terminaron cuando los halcones asaltaron pajaros volando o nadando. La mayoría (88%) de la presa pescada fueron alcids chicos. Nueve fueron pescados en el superficie de el océano y cojidos en uno o dos pasos. Un alcid nadando fue agarrado y llevado; dos alcid volando fueron cogidos cerca de la agua. Dos *Phalaropus* spp. fueron cogidos cerca de la agua. Ocho halcones cargando presa fueron seguidos por aguilas *Haliaeetus leucocephalus*, pero los aguilas recojieron solo dos de la presa.

[Traducción de Raúl De La Garza, Jr.]

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