locations will be discouraged from engaging in a persistent, systematic search in the vicinity of an initial chance find. In fact, because the rate of density-dependent cache pilferage should be partly a function of the length of time food is left in storage (Clarkson et al. 1986), the low survivorship of caches over only 10 days in the present experiment suggests that food cached in summer to be used in winter should be placed at densities considerably lower than those I used. In any case, my results indicate that Gray Jays which make hoarding trips radiating from a central concentrated food source might be expected to balance the benefit of low cache densities (i.e., high cache survivorship) against the costs of the longer flights required to achieve those densities (Stapanian and Smith 1978; Clarkson et al. 1986, unpubl. results).

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WEDDELL SEAL PREYS ON CHINSTRAP PENGUIN[1]

FRANK S. TODD
Sea World Research Institute/Hubbs Marine Research Center, 1720 South Shores Rd., San Diego, CA 92109

Key words: Predation; Weddell seal; Chinstrap Penguin.

Some species of pinnipeds regularly prey upon penguins. In my experience, these include leopard seal (*Hydrurga leptonyx*), Kerguelen fur seal (*Arctocephalus gazella*), Hooker's sea lion (*Phocarctos hookeri*), and South American sea lion (*Otaria flavescens*). This behavior has not been previously reported in Weddell seals (*Leptonychotes weddelli*), a relatively docile species which typically inhabits the fast-ice zone of the high Antarctic, and feeds primarily on fish.

Between 5 and 8 December 1986, I was camped in Harmony Cove (62°19'S, 59°15'W), Nelson Island, South Shetland Islands. Ice and snow conditions were far more extensive than I had seen there previously.

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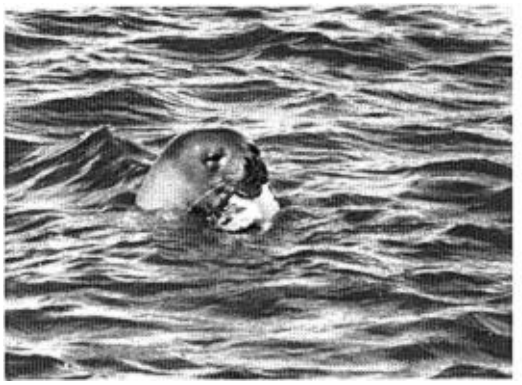

FIGURE 1. Weddell seal with Chinstrap Penguin.

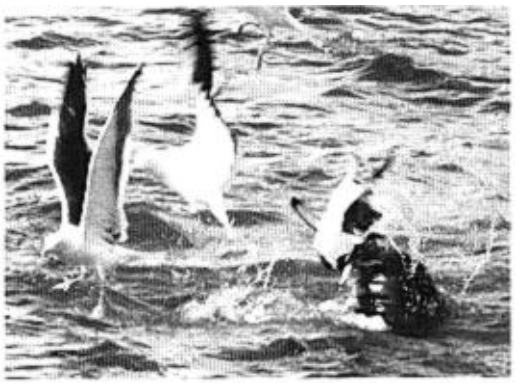

FIGURE 2. Kelp Gulls attempting to rob bits of Chinstrap Penguin from Weddell seal.

Despite the lateness of the season, solid pack ice extended 500 m offshore in most areas and the entire island was covered with 1.5 to 2.0 m of snow, with drifts to 10 m. Chinstrap Penguin (*Pygoscelis antarctica*) rookeries were also covered with snow and many penguins were nesting in snow holes up to 1.0 m deep. Numerous nests and eggs had already been abandoned. The shore was obscured by an ice barrier which, depending on the state of the tide, ranged in height from 1.5 to 4.0 m high. This vertical barrier, combined with the heavy offshore pack ice, made it difficult for penguins to get ashore.

On 7 December, a small pool of open water had formed just offshore, but the cove was closed to seaward by the extensive pack. Hundreds of penguins were using this area as a landing site. At 14:30 I heard the distinct noise of a penguin being slammed on the surface of the water by a seal. At least five leopard seals were in the vicinity, but observations within 35 m, as well as photographs, confirmed that the predator was an adult Weddell seal (Fig. 1). Several hundred Weddell seals were also in the region, most up on the ice.

When initially observed, the penguin was still alive, and whenever it feebly attempted to swim away it was easily recaptured, a situation often observed with leopard seals. The Weddell seal's feeding techniques paralleled those used by leopard seals. The penguin was repeatedly smacked on the water in an attempt to dismember it and, on several occasions, was tossed several meters into the air. I also observed the seal roll over onto its back and hold the carcass on its chest with a flipper, a behavior reminiscent of a sea otter (*Enhydra lutris*) but apparently never used by leopard seals.

Several Kelp Gulls (*Larus dominicanus*) hovered over the feeding seal and occasionally attempted to extract a piece of the penguin from the seal's mouth (Fig. 2). Within 10 min the penguin was reduced to floating scraps, pieces of skin, and a conspicuous blood and oil slick, which attracted Southern Giant-Petrels (*Macronectes giganteus*) and Wilson's Storm-Petrels (*Oceanites oceanicus*).

While I did not witness it, I am confident that a Weddell seal, and not a transient leopard seal, made the initial attack because penguins rarely escape from leopard seals; indeed, they panic and porpoise away at high speeds whenever leopard seals appear. On the other hand, they pay little attention to Weddell seals. I suggest that because of the fact that Chinstrap Penguins are not apprehensive in the presence of swimming Weddell seals, combined with the restrictions imposed by ice conditions, the seal could have been provided with the opportunity to capture an unsuspecting penguin.

I suspect this represents an unusual event, rather than a behavior that is more widespread, but unreported. Under more typical circumstances, where extensive ice conditions would not compromise the speed and agility of a swimming penguin, it is unlikely that a relatively slow-swimming Weddell seal could capture a healthy penguin.

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