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PREY OF PEREGRINE FALCONS BREEDING IN WEST GREENLAND[1]

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Abstract. Previous studies on the diet of Peregrine Falcons (*Falco peregrinus*) in Greenland were based primarily on prey remains, an indirect technique that may produce biased results. Earlier estimates of prey biomass are too general and speculative to be conclusive. No other study provided data on the age of prey species or showed that Rock Ptarmigan (*Lagopus mutus*) can be an important component in the diet of Greenland peregrines. We used direct observations of prey deliveries and collection of prey remains to assess prey (in terms of frequency of occurrence and biomass) of breeding Peregrine Falcons in West Greenland. We also determined prey selection in relation to local prey availability. During 492 hr of observation at two eyries we found that four small passerines—Lapland Longspur (*Calcarius lapponicus*), Northern Wheatear (*Oenanthe oenanthe*), Common Redpoll (*Carduelis flammea*), and Snow Bunting (*Plectrophenax nivalis*)—contributed over 80% of the prey items delivered, with the longspur being *the* principal prey species in terms of frequency of occurrence and biomass. However, ptarmigan contributed almost as much biomass as longspurs at one eyrie. Fledglings of all these bird species provided the majority of items and biomass at both eyries. Analysis of 676 prey items from prey remains at 159 eyries showed similar frequencies and rankings for the prey species comprising the majority of the diet of Peregrine Falcons as determined by prey deliveries. Lapland Longspur was taken in proportion to its availability near two eyries; ptarmigan and Snow Buntings were taken more frequently than expected. Local differences in prey use (especially ptarmigan) were found.

Key words: Falco peregrinus; Calcarius lapponicus; Lagopus mutus; *Peregrine Falcon; Lapland longspur; Rock Ptarmigan; nestling diet; fledglings; small passerines; prey biomass; prey selection; West Greenland.*

INTRODUCTION

In West Greenland, four species of passerine birds—Lapland Longspur (*Calcarius lapponicus*), Northern Wheatear (*Oenanthe oenanthe*), Common Redpoll (*Carduelis flammea*), and Snow Bunting (*Plectrophenax nivalis*)—were reported as being the primary prey or the "bulk" of prey of Peregrine Falcons (*Falco peregrinus*) during the breeding season (Harris and Clement 1975, Burnham and Mattox 1984, Falk et al. 1986, Meese and Fuller 1989). However, this conclusion was based mainly on collation of prey remains in pellets and/or nests; these indirect techniques may yield biased results (Errington 1932, Marti 1987, Rosenberg and Cooper 1990, Bielefeldt et al. 1992) and previous studies did not address this problem.

Falk et al. (1986) coupled such indirect methods with direct observations of prey deliveries by adult males to mates, nestlings or fledged young, and stated without quantification that "most attention" was paid to direct observations because of potential methodological biases. Previous studies of the peregrine's diet in Greenland have also focused primarily on numbers and composition of prey items; estimates of prey biomass have been too general and speculative (Burnham and Mattox 1984) or too reliant on a

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large share of "unidentified passerines" (Falk et al. 1986) to be conclusive. Earlier studies have also shown that Rock Ptarmigan (*Lagopus mutus*) are a minor proportion of prey items at some nests (Burnham and Mattox 1984, Harris and Clement 1975), but may contribute a substantial share of biomass in some instances (Falk et al. 1986). However, ptarmigan numbers appear to vary across years and locally in the study area (W. Mattox and RNR, pers. observ.), and the ages and masses of ptarmigan taken as prey are undocumented.

Here we use direct observation of prey deliveries and collection of prey remains in nests as methods of assessing the prey of breeding Peregrine Falcons in West Greenland. We also report prey selection in relation to local prey availability. We show that young-of-the-year passerines and ptarmigan are important components of the diet of nestling Peregrine Falcons, and that local differences in prey use (especially ptarmigan) probably exist in West Greenland. Our work was part of a long-term effort, since 1972, to investigate the nesting ecology of Peregrine Falcons in West Greenland (Burnham and Mattox 1984, Mattox and Seegar 1988).

STUDY AREA

The 6,050 km^2 study area lies in the widest part of the ice-free land in West Greenland (66°45′N, 49°55′W). This area is semi-mountainous, with elevations up to 810 m above sea level. Søndre Strømfjord, 185 km in length, bisects the study area, which holds numerous lakes. The treeless vegetation includes willow (*Salix glauca*), dwarf birch (*Betula nana*), sedges (e.g., *Carex, Eriphorum*), grasses (e.g., *Calamagrostis, Festuca, Poa*), and heaths (e.g., *Empetrum, Ledum, Cassiope*). For further descriptions of the study area, see Burnham and Mattox (1984) and Feilberg et al. (1984).

METHODS

NEST DELIVERIES

During July–August we recorded prey deliveries to nestlings ages 7–29 days from blinds erected within 8 m of two cliff nests, Golden Child (three young) and Ringsø (four young), located 52 km apart. Daily blind stints averaged 16 hr, about 06:00–21:00. This observation schedule corresponds to principal prey delivery times as determined by personal observations in randomly scheduled 24-hr watches (n = 3) conducted at Ringsø; and findings in Harris and Clement (1975).

During 492 hr of observation (173 and 319 hr at Golden Child and Ringsø, respectively), we noted species, age, and condition (e.g., whole, headless, eviscerated) of prey when possible. Identifications were made with 7 × 35 binoculars and a 20–60 × spotting scope. Prior to blind observations, we studied a reference collection of skins of adult and juvenile cohorts of each gender of the four locally breeding songbird species as well as adult male and female Rock Ptarmigan. During the first week of blind observations in 1989, we also checked several prey identifications by examining items in hand before consumption by the nestlings; all of five identifications of three different species of passerines from the blind were correct.

Different leg-banded female peregrines bred at these nests, and plumage differences (Johnson 1988) suggested that adult males were also different. Biomass here refers to the mass (whole or otherwise) delivered to nestlings, as estimated from weights for all prey species (and, except for phalarope, their fledgling cohorts) captured during July and August on the study area in 1989 and 1994 (RNR; H. V. Christensen, unpubl. data) (see Table 1). When possible, age of prey was determined by feather sheathing in nestlings and recent fledglings for passerines, or by smaller size and incomplete plumage in ptarmigan. Longspur, wheatear, and bunting fledglings also had distinctly paler tarsi than conspecific adults. Remains of the smallest wild mammal on the study area, the arctic hare (*Lepus arcticus*), have been found in only two peregrine eyries there (Burnham and Mattox 1984; R. Rogers, pers. comm.).

PREY REMAINS

We tabulated remains of 676 prey items found at 159 active nests during 1972–1990. These items were mainly pluckings (≥97%), occasionally skeletal remains or uneaten prey; we did not collect pellets. All remains were identified at the University of Wisconsin–Stevens Point with the aid of the Greenland reference collection mentioned above. Because of small sample sizes of nests, remains from 1972–1987 are pooled; remains from 1988–1990 are not (Table 4). Although sometimes we include remains from the same reoccupied nesting areas (i.e., cliffs) over

TABLE 1. Numbers and biomass estimates in g, of prey among West Greenland nest deliveries.[a] Italicized numbers represent fledgling component.

	Golden Child		Ringsø	
	n (%)	Biomass (%)	n (%)	Biomass (%)
Lapland Longspur	59 (49)	1,543 (37)[b] *1,310 (85)*[c]	230 (68)	6,153 (68)[b] *4,007 (65)*[c]
Snow Bunting	23 (19)	726 (18) *245 (34)*	25 (7)	813 (9) *350 (43)*
Northern Wheatear	5 (4)	139 (3) *86 (62)*	21 (6)	602 (7) *118 (20)*
Common Redpoll	2 (2)	31 (1) *15.5 (50)*	16 (5)	249 (3) *199 (80)*
Rock Ptarmigan	15 (13)	1,338[d] (32) *1,338 (100)*	0	0
Red-necked Phalarope	1 (1)	32 (1) *0*	14 (4)	459 (5) *264 (58)*
Unidentified small passerines	15 (13)	321 (8) *154 (50)*	33 (10)	830 (9) *102 (12)*
Total	120 (100)	4,130 *3,149 (76)*	339 (100)	9,106 *5,040 (55)*

[a] Weights used for biomass estimates of whole items: adult and fledgling longspur = 28 g and 27 g, respectively; adult and fledgling bunting = 37 g; adult and fledgling wheatear = 29.5 g; adult and fledgling redpoll = 17 g and 15.5 g, respectively; adult and fledgling phalarope = 33 g; unidentified adult and fledgling passerines = 26.5 g and 25.5 g, respectively; unidentified unknown age passerine = 26.0 g; for all passerines, whole body weight was reduced 10% for headless prey.
[b] Percent of total g for all species.
[c] Percent of total g for that species.
[d] Ptarmigan weights = 30 g, 35 g (n = 3), 38 g, 40 g, 45 g, 70 g, 100 g, 115 g, 130 g, 150 g, 160 g, 170 g, 185 g.

all study years, we treat the data as independent because no one eyrie provided >14 items across 20 years of collecting remains. Because proportions of bird species among avian prey were very similar across years, we pooled annual prey remains data.

PREY SELECTION

To determine prey selection, we compared relative numbers of each prey species delivered to respective nests with their relative abundance near the two eyries. At both nests, four 1,000 m × 100 m transects were established within the presumed hunting range of the adult peregrines in a pattern radiating from the nest, with each transect bisecting a cardinal quadrant. Distance from the eyrie to the starting point of a transect was randomly determined at 0.6, 1, 2, or 3 km. Each of the eight transects were sampled from 6 to 12 times in July–August at hours corresponding to blind observations. Perpendicular distances to all birds seen or heard along the transects were estimated to be within 10-m intervals from 0–50 m from the mid-transect line (Burnham et al. 1980, Buckland et al. 1993). Prey abundance (i.e., availability) was determined through PROGRAM DISTANCE (Laake et al. 1993). A Chi-square goodness-of-fit analysis was used to test prey use in relation to resource availability (Neu et al. 1974); a Bonferroni z-statistic (Miller 1981) was used to determine which prey were used more or less frequently than expected. Significance was accepted at the 0.05 level.

RESULTS

We did not detect prey items other than birds.

NEST DELIVERIES

We identified to species 87% of 120 and 90% of 339 prey items delivered to Golden Child and Ringsø nests, respectively (Table 1). All unidentified prey were small passerines. At both eyries Lapland Longspurs markedly predominated in frequency, forming almost half (49%) of the delivered prey items at Golden Child and just over two-thirds (68%) of the prey at Ringsø. Snow Buntings were proportionately over twice as prevalent at Golden Child (19%) than at Ringsø (7%). Rock Ptarmigan made up 13% of the delivered items at Golden Child, no ptarmigan were delivered to Ringsø. Collectively, the four passerines made up the vast majority of prey items delivered to Golden Child (86%) and to Ringsø (96%) nests.

Prey items delivered to the two nests included fledgling birds of all six species (Table 2). At least four nestlings (two longspurs, two unknowns) were delivered as prey to Golden Child and Ring-

TABLE 2. Numbers and frequency (%) of age groups of prey items among West Greenland nest deliveries.

	Golden Child				Ringsø			
	Fledgling	Adult	Unknown	Total	Fledgling	Adult	Unknown	Total
Lapland Longspur	47[a] (80)	7 (12)	5 (8)	59	148 (62)	69 (30)	18 (8)	230
Snow Bunting	7 (30)	2 (9)	14 (61)	23	10 (40)	11 (44)	4 (16)	25
Northern Wheatear	3 (60)		2 (40)	5	4 (19)	12 (57)	5 (24)	21
Common Redpoll	1 (50)	1 (50)		2	13 (81)	2 (13)	1 (6)	16
Rock Ptarmigan	15 (100)			15				
Red-necked Phalarope			1 (100)	1	8 (57)	2 (14)	4 (29)	14
Unidentified small passerines	6[b] (40)	2 (13)	7 (47)	15	4[b] (12)		29 (88)	33
Total	79 (66)	12 (10)	29 (24)	120	182 (54)	96 (28)	61 (18)	339

[a] Two nestlings.
[b] One nestling.

sø. Fledglings provided 57%–100% of prey items at one or both nests for five of the six identifiable prey species (Table 2). All delivered ptarmigan were fledglings. Considering only known-age prey items, the prevalence of fledglings would be greater, amounting to 87% (79/91) and 65% (182/278) at Golden Child and Ringsø, respectively. Including items of unknown age, young-of-the-year birds comprised the majority of items at both Golden Child (≥66%) and Ringsø (≥54%) (Table 2).

Lapland Longspurs contributed the most biomass to both nests, but longspurs contributed about twice as much biomass (37% vs 68%) to the nestlings' diet at Ringsø (Table 1). Rock Ptarmigan biomass (32%) was roughly equivalent to longspur biomass (37%) to the diet of nestlings at Golden Child (Table 1). Excluding longspurs and ptarmigan, only Snow Buntings at Golden Child contributed ≥10% of the total biomass among all other bird species delivered to either nests. Excluding Rock Ptarmigan (all fledglings), young-of-the-year provided 65% (1811/2792) and 55% (5040/9106) of the prey biomass at Golden Child and Ringsø, respectively.

Excluding Rock Ptarmigan, all prey species were typically delivered whole or only decapitated (Table 3). Eighty percent of the 15 delivered ptarmigan had been more thoroughly plucked and/or were partially dismembered before delivery. This proportion is about over twice that of any other prey category. A minimum of 81% and 90% of all prey items were delivered whole or only decapitated to Golden Child and Ringsø nests, respectively (Table 3).

PREY REMAINS

As with prey deliveries, passerines accounted for the majority (86%) of prey species found in the pooled sample of prey remains (Table 4), and Lapland Longspurs contributed almost half (46%) of the total items collected. In contrast to prey deliveries, Snow Buntings were more prevalent in prey remains (26%) than at either Golden Child (17%) or Ringsø (9%). Ptarmigan were more poorly represented among remains than among

TABLE 3. Condition of prey items among West Greenland nest deliveries. Numbers in parentheses = %.

	Golden Child				Ringsø			
	Whole[a]	Only head absent	Other[b]	Total	Whole[a]	Only head absent	Other[b]	Total
Lapland Longspur	41 (69)	16 (27)	2 (3)	59	190 (83)	30 (13)	10 (4)	230
Snow Bunting	7 (30)	14 (61)	2 (9)	23	17 (68)	5 (20)	3 (12)	25
Northern Wheatear	2 (40)	3 (60)	0	5	14 (67)	6 (28)	1 (5)	21
Common Redpoll	1 (50)	1 (50)	0	2	11 (69)	2 (12)	3 (19)	16
Rock Ptarmigan	3 (20)	0	12 (80)	15				
Red-necked Phalarope	0	1 (100)	0	1	11 (79)	1 (7)	2 (14)	14
Unidentified small passerines	4 (27)	5 (33)	6 (40)	15	9 (27)	10 (30)	14 (42)	33
Total	58 (48)	40 (33)	22 (18)	120	252 (74)	54 (16)	33 (10)	339

[a] No flesh missing.
[b] Headless and partially or completely eviscerated.

TABLE 4. Number and percent (%) of prey species identified from prey remains collected at Peregrine Falcon eyries in West Greenland, 1972–1990.

Species	n (%) 1972–1987[a]	1988[b]	1989[c]	1990[d]	Total
Lapland Longspur	46 (42)	74 (45)	99 (44)	92 (51)	311 (46)
Snow Bunting	33 (30)	41 (25)	57 (25)	43 (24)	174 (26)
Northern Wheatear	14 (13)	14 (9)	25 (11)	19 (11)	72 (11)
Common Redpoll	2 (2)	2 (1)	19 (8)	4 (2)	27 (4)
Rock Ptarmigan	5 (5)	11 (7)	10 (4)	13 (7)	39 (6)
Red-necked Phalarope	3 (3)	2 (1)	5 (2)	6 (3)	16 (2)
White-fronted Goose *Anser albifrons*	0	1 (1)	1 (tr)	0	2 (tr)
Mallard *Anas platyrhynchos*	0	1 (1)	1 (tr)	0	2 (tr)
Old Squaw *Clangula hyemalis*	1 (1)	1 (1)	0	0	2 (tr)
Raven *Corvus corax*	0	1 (1)	0	0	1 (tr)
Unknown birds	6 (5)	15 (9)	7 (3)	2 (1)	30 (4)
Total	110	163	224	179	676

[a] 35 samples from 35 eyries (9 from 9 in 1972, 5 from 5 in 1980, 14 from 14 in 1981, 1 from 1 in 1985, and 6 from 6 in 1987).
[b] 39 samples from 39 eyries.
[c] 43 samples from 43 eyries.
[d] 42 samples from 42 eyries.

nest deliveries at Golden Child. We could not distinguish age groups of species found in prey remains.

RESOURCE SELECTION

Lapland Longspur, the main prey item, was taken in proportion to its availability at both nests (Table 5). Ptarmigan and Snow Buntings were taken more frequently than expected at Golden Child and Ringsø, respectively (Table 5). Redpolls at both nests, and wheatears at Golden Child were taken less frequently than expected.

DISCUSSION

Previous studies reported that the four small passerine birds were the primary or "bulk" of the prey of Peregrine Falcons in Greenland (Harris

TABLE 5. Prey selection at two Peregrine Falcon nests in West Greenland.

	Expected proportion of usage[a]	Actual proportion of usage	Bonferroni intervals
Golden Child			
1. Lapland Longspur	0.576	0.561	$0.431 \le P_1 \le 0.692$
2. Snow Bunting	0.196	0.219	$0.110 \le P_2 \le 0.328$
3. Northern Wheatear	0.115	0.048	$0 \le P_3 \le 0.104$[b]
4. Common Redpoll	0.070	0.019	$0 \le P_4 \le 0.055$[b]
5. Red-necked Phalarope	0.000	0.010	$0 \le P_5 \le 0.036$
6. Rock Ptarmigan	0.044	0.143	$0.051 \le P_6 \le 0.235$[c]
Ringsø			
1. Lapland Longspur	0.670	0.748	$0.636 \le P_1 \le 0.860$
2. Snow Bunting	0.007	0.083	$0.012 \le P_2 \le 0.154$[c]
3. Northern Wheatear	0.108	0.070	$0.004 \le P_3 \le 0.136$
4. Common Redpoll	0.213	0.053	$0 \le P_4 \le 0.111$[b]
5. Red-necked Phalarope	0.002	0.046	$0 \le P_5 \le 0.100$
6. Rock Ptarmigan	0.000	0.000	

[a] Prey were not used in proportion to their availability at Golden Child ($\chi^2 = 30.17$, df = 5, $P < 0.001$) or Ringsø ($\chi^2 = 193.58$, df = 4, $P < 0.001$) nests.
[b] Used significantly less frequently than expected ($P < 0.05$).
[c] Used significantly more frequently than expected ($P < 0.05$).

and Clement 1975, Burnham and Mattox 1984, Falk et al. 1986, Meese and Fuller 1989). Our results generally agree with these remarks. Considering both frequency of occurrence and biomass of prey from prey deliveries (Table 1), our study suggests that the Lapland Longspur is *the* principal prey species of breeding Peregrine Falcons in West Greenland, and considering biomass (Table 1), Rock Ptarmigan are probably locally important too (see below). None of the above studies demonstrated that ptarmigan can be an important component in the diet of peregrines in Greenland. Indeed, Falk et al. (1986) stated that the importance of ptarmigan in the diet of peregrines in South Greenland was "overestimated" (see below). This comment may result from their use of adult biomass (550 g); though they did not report ages of ptarmigan used as prey. In our study all ptarmigan delivered to Golden Child were young-of-the-year birds, with the largest weighing 185 g. Harris and Clement (1975) also seemed to downplay the potential significance of ptarmigan when they referred to the relatively "few ptarmigan kills" and ptarmigan constituting a "small portion" of the peregrine's diet. Relative to other prey species our study showed few numbers of ptarmigan in proximity of Golden Child, but ptarmigan were taken out of proportion to their availability (Table 5). Rock Ptarmigan also may be an important prey species to breeding peregrines in other arctic regions (White et al. 1973, Court et al. 1988, Cotter et al. 1992).

Excluding longspurs, the Red-necked Phalarope (*Phalaropus lobatus*) contributed about the same biomass (5%) as any of the passerines (3–9%) at Ringsø. Other authors have reported that phalaropes are a minor (Burnham and Mattox 1984, Harris and Clement 1975) or negligible (Falk et al. 1986) component of the diet; our results at Ringsø suggest that it is locally equivalent to several passerines in importance (Table 1).

It is unsurprising that there is local variation in prey use. Our results suggest that such variation occurs in the case of Rock Ptarmigan (and possibly the Red-necked Phalarope). To investigate this further, we searched specifically for ptarmigan remains at two other nests within 5 km of both study eyries in the course of work on nestling growth rates. We found and removed ptarmigan remains on every visit to nests near Golden Child ($n = 9$ visits over 18 days in 1989), but none at the nests adjoining Ringsø ($n = 16$ visits over 47 days in 1990) where we failed to detect ptarmigan on our transect counts (Table 5). We note that ptarmigan numbers were generally high throughout the entire 6,050 km^2 survey area in 1989 and 1990 (W. Mattox, pers. comm.), and that ptarmigan remains were found at a higher proportion of eyries in 1990 than in 1989 (Table 4).

No other study provided data on the age of prey species taken by peregrines in Greenland. We speculate that this may be due to the difficulty in determining age of prey from remains. Our observations of deliveries made by adults to both Golden Child and Ringsø showed that young-of-the-year provided the majority of items at both Golden Child (≥66%) and Ringø (≥54%), and the majority of biomass at both Golden Child (72%, including ptarmigan) and Ringsø (51%), respectively.

Meese and Fuller (1989) speculated that nesting Snow Buntings show a behavioral response to the proximity to nesting Peregrine Falcons in Greenland by adapting their flight style to ground-hugging maneuvers that make capture more difficult for avian predators. This suggestion implies that peregrines must in turn adapt their prey use to the behavioral maneuvers of adult individuals of locally available prey species. This may be so before young-of-the-year are available, but our results show that young-of-the-year comprise the majority of ageable prey and inagile fledglings presumably lack the well-developed evasive tactics of adults. Conclusions about predator responses to agility cannot necessarily be based on adult prey in all circumstances (see Bielefeldt et al. 1992).

Other studies of Falconiform diets have often shown that prey remains may not accurately document the composition of breeding season diets (e.g., Errington 1932, Collopy 1983, Marti 1987, Bielefeldt et al. 1992). But in our study, the collection of prey remains at many eyries, 1972–1990 (Table 4), show similar frequencies and rankings for the six prey species composing the overwhelming majority of the diet of Peregrine Falcons as determined by prey deliveries (Table 1). However, the collections of remains did not demonstrate that young-of-the-year birds provided the majority of prey items (Table 2) and prey biomass (Table 1), nor did they reveal the local importance of ptarmigan biomass (Table 1).

The relative paucity of ptarmigan remains in eyries as compared to nest deliveries at Golden Child may be explained by the prey handling behavior of adults; ptarmigan were more often dismembered and partially plucked before delivery to the nest (Table 3). Hunt (1993) also found that certain prey species were prepared away from the nest and were thus underrepresented as remains at the nest.

Our study, which provided an analysis of nest deliveries *and* prey remains, probably provides a more realistic appraisal of the diet of nesting Peregrine Falcons in West Greenland than previously available. Collopy (1983), Simmons et al. (1991), and Hunt (1993) reached a similar conclusion for Golden Eagles (*Aquila chrysaetos*), Northern Harriers (*Circus cyaneus*), and Prairie Falcons (*F. mexicanus*), respectively.

In most cases, adult peregrines at two nests in West Greenland did not take prey (as indicated by nest deliveries) in proportion to its availability (Table 5). Although longspurs are abundant in most habitats in West Greenland (pers. observ.) and do not appear to be taken in proportion to their availability, we hesitate to speculate about prey selection because we lack data on the relative availability of young birds, which formed the majority of prey items. It may be that young-of-the-year birds outnumber adults in West Greenland (W. Burnham, pers. comm.). Nevertheless, it seems reasonable that young-of-the-year are inagile and easily captured, compared to adults (Bielefeldt et al. 1992). For example, on at least two occasions we saw adult peregrines capture fledgling passerines by pursuing them on foot. Similarly, on five occasions Harris and Clement (1975) observed an adult peregrine using "leisurely hopping" on the ground as a means to hunt "passerine young that had not yet fledged." The pair of nesting adult peregrines at Golden Child made no attempt to take an "exposed" adult ptarmigan when pursuing her nearby chicks, which were "hidden" in vegetation (RNR, pers. observ.). Young ptarmigan are presumably inagile and, in terms of biomass, profitable prey. In another case neither of two adult peregrines made any attempt over 10 min to take an adult Snow Bunting foraging for a young bird concealed nearby, but both falcons immediately stooped at the fledgling when it emerged from concealment (RNR, pers. observ.). Ongoing telemetric studies of nesting adult peregrines in West Greenland (M. Fuller, pers. comm.; WSS) may elucidate some of the factors involved in prey selection.

Lastly, the results from our inland study area should not be considered representative of all West Greenland, which spans from about 60°N to 77°N on the coast. Indeed, environmental conditions (e.g., climate) and potential prey are much different on the coast (e.g., Lapland Longspurs are rare, scolopacids and alcids are common) and farther north and south of our study site in West Greenland (Burnham and Mattox 1984; W. Burnham, pers. comm.).

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