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An Assessment of  
Peregrine Falcon Habitat Suitability  
in the Brazeau Valley, Jasper National Park

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by

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## EXECUTIVE SUMMARY

Recent releases of Peregrine Falcons into Alberta have increased the potential for Peregrine Falcons to nest in the mountain national parks. Sightings of Peregrine Falcons during the past 20 years in Jasper National Park indicate that a few peregrines occur in the park after the breeding season, but are unlikely to nest there. An assessment of the potential foraging habitat for Peregrine Falcons in the Brazeau valley identified the open valley bottom meadows to be better habitat than alpine meadows but the alpine meadows were more extensive. The valley bottom habitats were larger in the lower Brazeau valley than in the upstream portion.

We recommend that wardens, other park staff, and visitors be encouraged to report large falcon sightings to allow future assessments of the status of Peregrine Falcons in Jasper National Park and the other mountain national parks. The reports should be recorded on the wildlife observation forms and computerized as are other wildlife records.

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## INTRODUCTION

The recovery of the Peregrine Falcon in southern Canada is well underway. After the banning of DDT almost 25 years ago and the release of large numbers of captive-raised young falcons, over thirty pairs of peregrines occupy territories in Canada south of the boreal forest. From 1992 to 1996, up to 50 captive bred young per year are being released in southern Alberta increasing the number of Peregrine Falcons that could return to Alberta to breed. In 1993, seven pairs of peregrines occupied territories in Alberta from Edmonton south. However, available evidence indicates that other pairs are breeding in the southern half of the province and some of these may be in the foothills and mountains.

Recently Parks Canada stressed the need for ecosystem-based management to protect the ecological integrity of areas much larger than national parks themselves (Dolan et al. 1992). In addition, it would be valuable to know the location of any threatened or endangered species within park boundaries. Thus in 1994, we investigated the sightings of Peregrine Falcons in the Brazeau Valley of south Jasper National Park to locate breeding pairs or areas used for hunting by post-breeding falcons.

This report presents information on the status of the Peregrine Falcon in Jasper National Park, on the results of a brief field survey of the upper Brazeau valley in July 1994, and on the application of the biophysical inventory to identify potential suitable foraging habitat for peregrines in the Brazeau watershed in Jasper National Park (Figure 1).

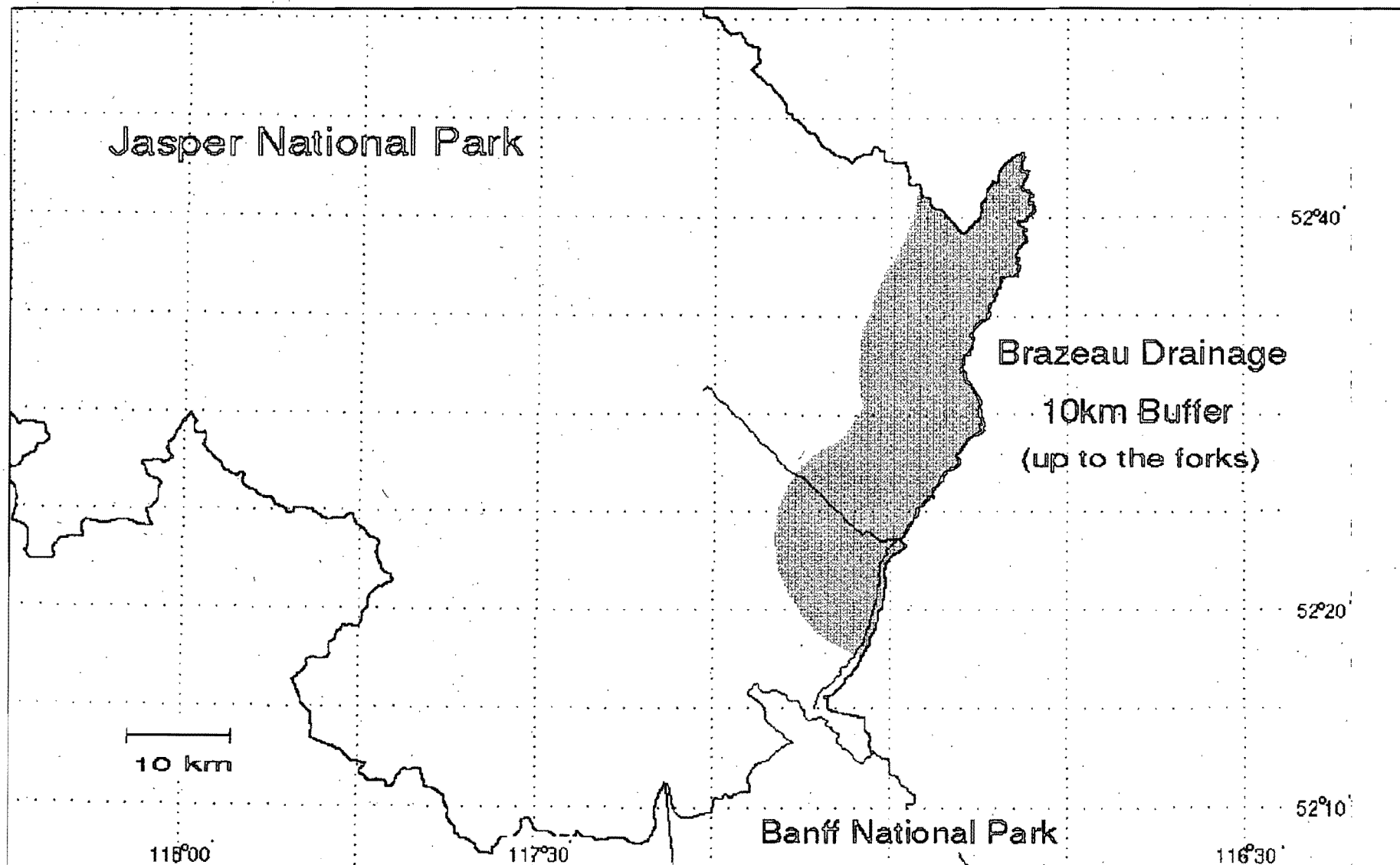


Figure 1. The location and area of the Brazeau Watershed where habitat was assessed for potential prey of Peregrine Falcons.

## Brief History of Peregrine Falcons in south-central Alberta

The last known productive Peregrine Falcon pair in southern Alberta (south of 56°N), prior to the release of captive raised young, nested in 1972 near Brooks (Fyfe et al. 1976). In the 1960's and earlier, peregrines nested on cliffs in the prairies of Alberta south from Edmonton to the Montana border (Court 1993). There are no known historic sites in the mountains of Alberta (Holroyd and Van Tighem 1983), although there is an unconfirmed historic record of Peregrine Falcons nesting on the Palisades of Jasper (R. Fyfe pers. comm.).

Beginning in 1976, captive raised young Peregrine Falcons were released from city buildings and prairie river cliffs in southern Alberta (Dekker and Erickson 1986). A total of 136 young were released in southern Alberta between 1976 and 1987 (Holroyd and Banasch 1990). From 1980 to 1982, 49 young were released from hack boxes on cliffs in Kananaskis Country. More recently, captive-raised young peregrines were released at three sites in central Alberta (Stubbs 1993, Rowell 1994). In 1992, 40 young were released, in 1993 another 50 young were released, and in 1994, 42 young were released. This release program will continue until 1996.

In 1981 peregrines reappeared as a breeding species in southern Alberta (Murphy 1990). The first nest was in Edmonton where they nested every year to present. In 1991, a second pair nested in Edmonton and a third pair was unsuccessful in their first attempt in 1993. A pair has nested in Calgary every year since 1983.

There were three known peregrine nest sites in prairie Alberta during 1993. A pair nested near Drumheller from 1992 to present. A second pair south of Edson was first reported in 1991 but may have nested for 5 years previously. This site was active in 1993 but only a single adult appeared in 1994. The third site, near Red Deer, was occupied by a one year old female and a 10 year old male in 1993 but they did not nest. In 1994 they returned

and successfully raised young. A fourth site, near Exshaw, was active in 1989 but not since.

All captive-raised peregrine young that are released in Canada are banded with an aluminium US Fish and Wildlife Service band and a red anodized aluminium band with 2 or 3 alpha-numeric symbols. Young at wild nests are banded with the aluminium band and a black instead of red anodized aluminium band. In 1993, three of six adults in Edmonton unbanded as well as the pairs near Edson and near Drumheller. The pair in Calgary were banded. Thus in 1993, 7 of 12 breeding adults fledged from nests at unknown locations. A current challenge is to locate these other nests.

The release of large numbers of young peregrines in the mountains of Kananaskis Country could have resulted in breeding pairs that are undetected in the Alberta Rockies. Dekker and Erickson (1986) argued that peregrines are likely breeding in the Rockies and more search effort should be made to find them. The presence of a pair near Exshaw in 1989 supports their contention. In addition, peregrines were reported during the summer by wardens in Banff and Jasper National Parks throughout the last decade.

In summary, many young peregrine falcons have been banded in Alberta and some have returned to breed. However, about half of the peregrines nesting in southern Alberta during the past decade are unbanded. These falcons are likely from nests in the prairies, foothills, or the Rockies of Alberta. The possibility of peregrines breeding in the Rockies is supported by several facts: 49 young were released in Kananaskis in the early 1980s; peregrines have nested in the foothills near Exshaw and Edson; and peregrines were reported in Jasper and Banff National Parks during the past decade.



## History of Jasper National Park's Peregrine Falcon Records

The first historical record of a peregrine in Jasper National Park was by A.W.F. Banfield who made four sightings between 17 and 25 August 1953 on the south boundary of Jasper National Park (Jasper Park warden files). During the Banff-Jasper Biophysical Inventory 1975 - 1980), six Peregrine Falcons were sighted in the two parks (Holroyd and Van Tighem 1983, Holroyd 1984). There were more sightings in the Front Ranges (Spray, Panther, and lower Athabasca valleys) than the Main Ranges (Parker's Ridge). There was no peak month of the sightings (two in July and one each of the months from May to September). There was one sighting in 1976, three in 1977 and two in 1979.

From 1983 to 1986, there were five sightings of single Peregrine Falcons in Jasper National Park (Jasper warden computer file). Three were seen between 5 and 11 August 1983 and 1986 in the Sunwapta watershed, one was on 27 June 1983 in Willow watershed and one was on 30 July 1984 in the upper Maligne watershed.

On August 27, 1992, two Peregrine Falcons were observed at Valley Head Pass by warden Bruce MacKinnen and V. Sahavatren from Western Regional Office, Calgary (Warden Log entry at Arete Cabin). Warden Peter Clarkson and CWS biologist Andre Breault, Delta, B.C. saw single peregrines in Poboktan Pass and above the ridges behind the Brazeau cabin on 14 August 1993.

The late July and August sightings would be after the breeding season. At this time, successfully breeding peregrines can be expected to be together as a family group. Non-breeders and failed breeders are more likely to be travelling singly and may be away from their nest site. Thus, these sightings of single peregrines probably represent post-breeding or non-breeding falcons foraging in the mountains prior to migration and not local breeders.

## POTENTIAL PREY AT BRAZEAU LAKE

Peregrine Falcons hunt over unforested areas (Ratcliffe 1993). They feed on prey that live mostly on lakes, wetlands and meadows.

From 4-8 July 1993, we surveyed the upper Brazeau valley on foot and horseback and recorded all bird species that were encountered adjacent to the hiking trails (Table 1). Since this trip was short and our efforts focused on the search for raptors and their nest sites, it was not possible to quantitatively sample bird abundance in every habitat. Five-minute point counts with 100m radius were used to determine the abundance of birds on the shore of Brazeau Lake, the largest waterbody in the watershed. The points began at the south-east corner of the lake and were 300m apart along the east shore. The centres of the points were on the shoreline of the lake, with half of the count on land and half in the water. Birds on the shoreline were associated with the water in the analysis.

Twelve point counts were conducted along the southeast shore of Brazeau Lake on 5 July 1994. Seven counts were on ecosite PP3 and five on ecosite PP6 (Figure 5a). Both of these ecosites are subalpine, alluvial aprons (continuous alluvial fans) covered with spruce forest. PP3 is dominated by a closed forest while PP6 typically is covered with an open forest (Holland and Coen 1983). A total of 100 birds of 16 species were recorded on the 12 point counts (Table 2). Of these 16 species, only 3 were potential peregrine prey (Spotted Sandpiper, Gray Jay, and American Robin, Erickson et al. 1988, see below) and none of these were abundant.

Holroyd and Van Tighem (1983) presented a preliminary classification of aquatic habitats. For each of these habitats they give a subjective assessment of wildlife abundance. Brazeau Lake is a lower subalpine lake (AQ04) which is moderately important to waterfowl including Mallard, Green-winged Teal, Barrow's Goldeneye, and Harlequin

Table 1. Number of birds and mammals recorded from the hiking trail in the Brazeau valley and Brazeau Lake (\*) from 4-8 July 1994.

Bird species	Number	Notes
Harlequin Duck	1	female
White-winged Scoter*	42	
Barrow's Goldeneye *	5	3 males 2 females
Bald Eagle *	1	adult
Sharp-shinned Hawk *	1	
Cooper's Hawk	1	
Golden Eagle	1	adult
American Kestrel	1	adult male
Solitary Sandpiper	1	
Spotted Sandpiper	4	1 nest with 4 eggs
Great Gray Owl*	2	
Belted Kingfisher	1	
Northern Flicker	1	
Olive-sided Flycatcher	2	
Hammond's Flycatcher	2	
Barn Swallow	4	2 nests (1 with 4 eggs)
Gray Jay	3	
Clark's Nutcracker	2	
Common Raven	4	
American Dipper	2	
Golden-crowned Kinglet	20	
Ruby-crowned Kinglet	4	
Townsend's Solitaire	4	
Hermit Thrush	2	
American Robin	2	Pine Grosbeak 2
Water Pipit	1	Red Crossbill 6
Bohemian Waxwing	5	White-winged Crossbill 3
Cedar Waxwing	1	Pine Siskin 100
Orange-crowned Warbler	1	
Yellow-rumped Warbler	7	
Chipping Sparrow	5	Mammals
Savannah Sparrow	1	
Fox Sparrow	1	Least Chipmunk 1
Lincoln's Sparrow	2	Columbian Ground Squirrel 5
White-crowned Sparrow	3	Pika 4
Dark-eyed Junco	3	Red Squirrel 1

Table 2. Number of birds recorded on point counts at Brazeau Lake, Jasper National Park on 5 July 1994.

Bird Species	Shoreline & Lake	Ecosites	
		PP3	PP6
Barrow's Goldeneye	1		
Spotted Sandpiper	3		
Gray Jay		2	5
Golden-crowned Kinglet		2	
Ruby-crowned Kinglet		1	2
Townsend's Solitaire		1	1
Hermit Thrush			2
American Robin		2	1
Bohemian Waxwing		2	
Tennessee Warbler		1	
Yellow-rumped Warbler		8	11
Chipping Sparrow		20	12
Dark-eyed Junco		2	1
Pine Grosbeak		1	
White-winged Crossbill		7	2
Pine Siskin		7	3
<b>Total Birds</b>	<b>4</b>	<b>56</b>	<b>40</b>
<b>Total Species</b>	<b>2</b>	<b>13</b>	<b>10</b>
<b>No. ½ point counts</b>	<b>12</b>	<b>7</b>	<b>5</b>
<b>Birds/point count</b>	<b>0.7</b>	<b>16.0</b>	<b>16.0</b>

Duck. These waterfowl would be potential prey in spring and autumn but not during the breeding season since they are rarely brought to nests by peregrines elsewhere.

#### FORAGING HABITAT SUITABILITY

Peregrine Falcons have never been found nesting in the Canadian Rockies. Consequently we do not know what prey they would eat nor what habitats peregrines would use for foraging. However, several documents are available to aid in an initial estimation of the suitability of the Rockies as peregrine foraging habitat.

The National anatum Peregrine Falcon Recovery Plan lists prey that were found in various diet studies of peregrines (Erickson et al. 1988). A list of potential prey species was compiled from this plan (Table 4) by including species that formed a major portion of the peregrine's diet in one or more studies, and if they are summer residents in Jasper National Park according to the Breeding Bird Communities of Jasper and Banff National Parks (Holroyd and Van Tighem 1983). To this list of potential prey were added species that were identified commonly in the diet of pairs nesting in Edmonton and Wood Buffalo National Park (J. Folinsbee and G.L. Holroyd unpub.). Finally, other species were added because they often perch on tree tops (crossbills, Olive-sided Flycatcher, Townsend's Solitaire) or are similar to other species on the list (ptarmigan, Solitary Sandpiper).

The Banff-Jasper biophysical wildlife inventory (Holroyd and Van Tighem 1983) describes Breeding Bird Communities that are associated with each vegetation and ecosite type. These descriptions were used to assess the possible importance of each habitat in the Brazeau valley as peregrine hunting habitat.

Three suitability ratings were then developed for each Breeding Bird Community as follows. The initial rating was based on the overall density index for all bird species, since

peregrines have shown themselves to be an adaptable predator and they may take prey other than those identified from earlier studies. Secondly, for each community, the density indices for each species on the prey list were summed to provide an overall rating. Thirdly, since non-passerines dominate in most peregrine diet studies and these species tend to be larger (i.e. contribute more biomass), a rating based on the density index for non-passerines was calculated.

Ecosite suitability was determined for the habitats in the national park by using the ranking of the breeding bird communities and their distribution in vegetation types in the Rockies. Each breeding bird community is found in typical vegetation types that were classified in the Banff-Jasper Biophysical Inventory (Holland and Coen 1983). Each vegetation type occurs in one or more ecosite type and was used to define ecosites. This association is shown on the master legend in the map supplement to Holland and Coen (1983). Using the suitability ratings for the breeding bird communities, each ecosite was assigned the same rating. The ecosites were mapped at a scale of 1:50,000. Thus the rating of each Breeding Bird Community as potential Peregrine Falcon habitat can be mapped at the same scale.

## Results

The overall density indices for breeding birds that can be expected in the Brazeau valley, range from 37 to 436 birds per sq km (Table 3, Figure 2). The indices are high in deciduous forests (communities 1 and 2), mostly medium for coniferous forests (communities 3 to 8), medium and high for shrub communities (9 to 14), and mostly low for herb and grass dominated communities (13 to 18).

Table 3. Breeding bird communities in Jasper and Banff National Park (from Holroyd and Van Tighem 1983). Rankings: H=high, M=medium, and L=low.

Bird Community No. Title	Density Index	Ranking
1. Poplar forest	297	H
2. Stunted aspen	421	H
3. Douglas fir forest	241	H
4. Open spruce-pine forest	186	M
5. Closed spruce-pine forest	169	M
6. Spruce bog forest	203	M
7. Open upper subalpine coniferous forest	141	M
8. Closed subalpine coniferous forest	140	M
9. Montane shrub wetland	436	H
10. Subalpine willow-birch meadows	156	M
11. Alder thicket	350	H
12. Avalanche slopes	210	M
13. Montane grassland	228	M
14. Sedge or cottongrass fen	322	H
15. Dryas mat	37	L
16. Upper subalpine grassland	99	L
17. Moist upper subalpine and alpine meadow	97	L
18. Dry alpine tundra	104	L

## Jasper Bird Density Indices

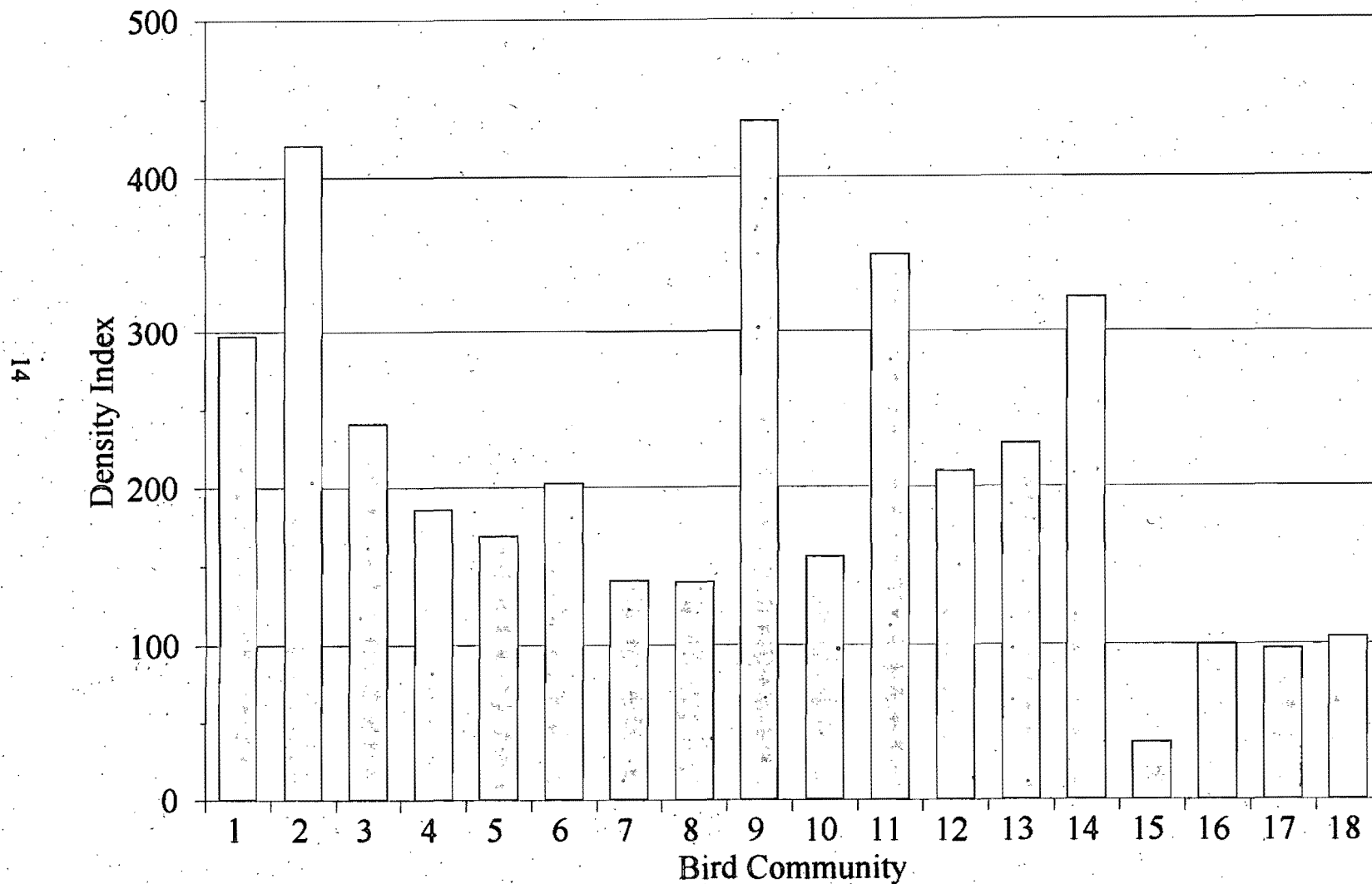


Figure 2. Density indices for the 18 breeding bird communities in Jasper and Banff National Parks.



Twenty-six species of birds were identified as potential prey of Peregrine Falcons from the literature and unpublished studies and that also occur in breeding bird communities in Jasper National Park (Table 4). The most common in breeding bird community lists were American Robin, Gray Jay, Red-winged Blackbird, and Spotted Sandpiper. The American Robin is the only species that occurs in all communities. Waterfowl, shorebirds and Sora have low density indices (i.e. are relatively uncommon) in the communities. Gulls and terns, common prey of breeding falcons elsewhere in Alberta (unpub. data) are uncommon to very rare during summer in the Rockies and are absent from the breeding bird communities (Holroyd and Van Tighem 1983).

The total density indices for potential prey exceeded 100 for two breeding bird communities (9 and 14, Figure 2) and about half of the prey are non-passerines (Figure 4). The characteristics of these communities is described in detail in Holroyd and Van Tighem (1983, page 517 to 522) and is summarized below.

Bird Community 9 occurs in shrub wetlands which occur mostly in the montane but also in the lower subalpine between 900 and 2050m. Three vegetation type correlates, dwarf birch-shrubby cinquefoil-willow/brown moss (S1), dwarf birch-shrubby cinquefoil-needlerush (S3), and willow /horsetail (S7), include a well-developed shrub and herb layer on alluvial parent material and receive periodic flooding. The soils are wet (hydric to hygric). Bird species that occur at their maximum densities in this community and are potential prey are Mallard, Blue-winged Teal, Sora, Greater Yellowlegs, Red-winged Blackbird, and Evening Grosbeak. This bird community had the highest density index for all bird species in the national parks (436).

Bird Community	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Species	Average
Total Density Index																				
Green-winged Teal									4	1				18						23
Mallard									13	1										14
Blue-winged Teal									10					5						15
Willow Ptarmigan																	3			3
White-tailed Ptarmigan																	1	7		8
Sora									2					1						3
Killdeer									1	1				11						13
Greater Yellowlegs						0.5			3					3						6.5
Solitary Sandpiper												1		7						8
Spotted Sandpiper						1	1		4	8	17			12	8			2		53
Common Snipe	1					4			9					4						18
Mourning Dove	1					1														2
Common Nighthawk	1			2																3
Northern Flicker	2		2	2					2				3	1		1				13
Olive-sided Flycatcher									1			3								4
Gray Jay	5		3	6	8	10	5	7	5	4		4	4	9		3				73
Townsend's Solitaire	1	17	3	2			3	1		1		5				7	2	1		43
American Robin	20		21	9	10	10	8	1	11	8	9	8	9	13	2	8	8	5		160
Varied Thrush		1			1	1	2	2				2	1	2						12
European Starling	2								2											4
Fox Sparrow							3			1		3						1		8
Redwinged Blackbird						2			38					16						56
Brewer's Blackbird										4										4
Red Crossbill					1		2	1												4
White-winged Crossbill	1		7	6	4	10	2	3				1								34
Evening Grosbeak						4		1	10											15
Sum DI:spp above	34	18	36	27	24	43.5	26	16	115	29	28	26	16	102	10	19	17	13	599.5	33.31
Total DI:non-passerine	5	0	2	4	0	6.5	1	0	48	11	17	1	3	62	8	1	6	7	182.5	10.14
Total DI:all spp.	297	421	241	186	169	203	141	140	436	156	350	210	228	322	37	99	97	104	3837	213.17

Table 4. Density indices of potential peregrine prey in each breeding bird community in Jasper National Park (from Holroyd and Van Tighem (1983))

### Jasper Bird Density Indices for potential Peregrine Falcon prey

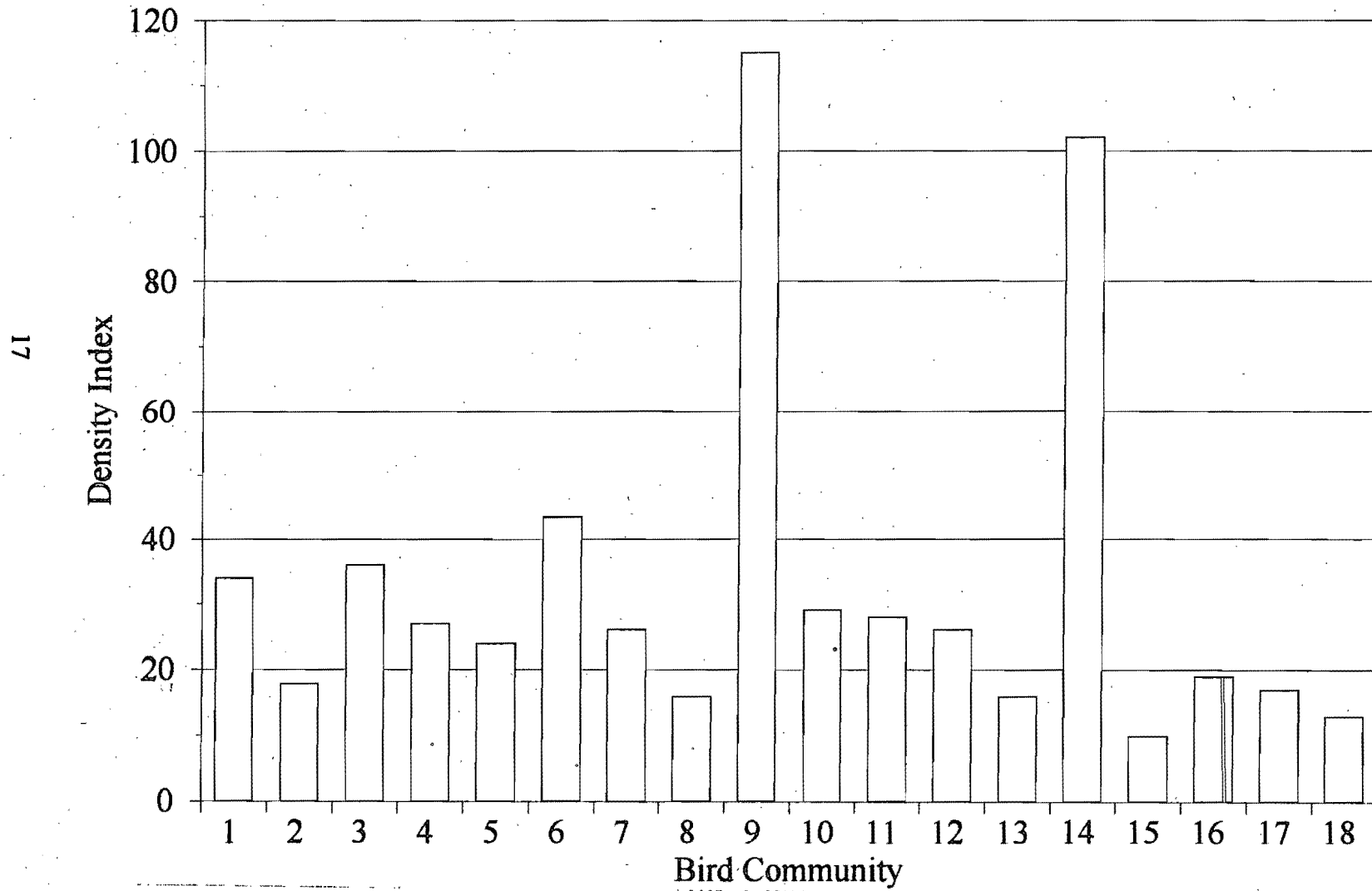


Figure 3. Density indices for potential peregrine prey in the 18 breeding bird communities in Jasper and Banff National Parks.

### Jasper Bird Density Indices for non-passerine potential prey

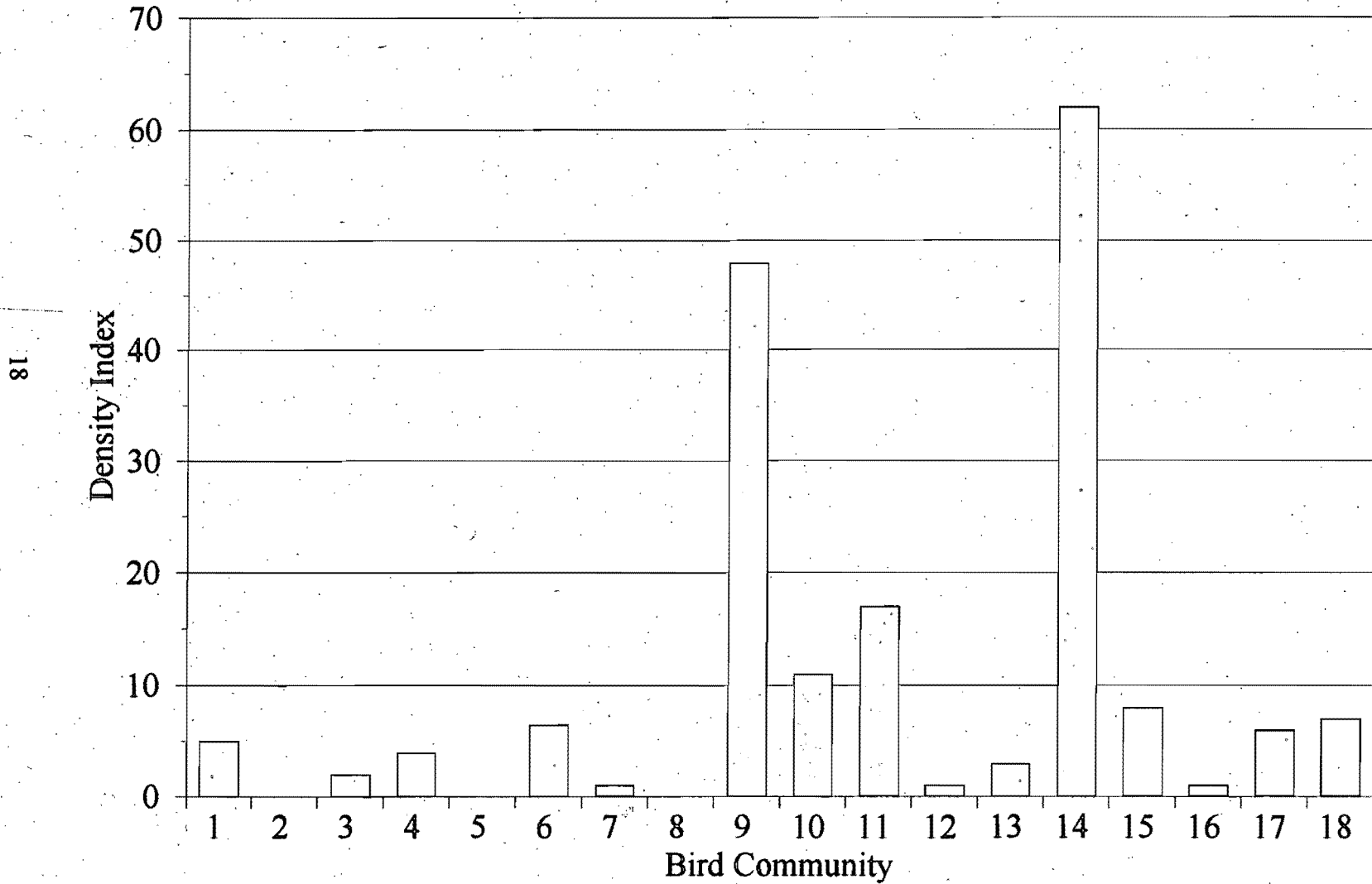


Figure 4. Density indices for the non-passerine, potential peregrine prey in the 18 breeding bird communities in Jasper and Banff National Parks.

Bird Community 14 occurs in sedge or cottongrass fens in the montane to upper subalpine between 1100 and 2300m. Two vegetation type correlates, cottongrass/moss (H10) and water sedge-beaked sedge (H11), occur as a mosaic on poorly drained alluvial areas in a mosaic with small ponds and water courses. Bird species that occur at their maximum densities in this community and are potential prey are Green-winged Teal, Killdeer, Solitary Sandpiper, and Greater Yellowlegs. The overall density index of this community for all bird species is high (322).

Both of these bird communities occur in unforested habitats that suit the peregrine's hunting style (Ratcliffe 1993). The peregrine typically attacks prey in flight in the open as they cross a meadow.

Nine other breeding bird communities had density indices for potential prey that exceeded 20 (1, 3, 4, 5, 6, 7, 10, 11, and 12; Figure 3) an arbitrary limit for intermediate peregrine hunting habitat. The vegetation associated with these communities are forests (1,3,4,5,6, and 7) and shrub meadows (10,11,12). Community 1 is found in poplar forest in the montane zone below 1500m and occasionally up to 1600m on avalanche slopes.

Community 3 is found in Douglas Fir forest in the montane zone and lower subalpine zone between 1200 and 1750m. Communities 4, 5, 6, and 7 are found in coniferous forests throughout the park. Communities 10, 11, and 12 are found in shrub habitats (willow-birch, alder, avalanche willow-subalpine fir respectively).

None of these community types include many primary peregrine prey. All of them are dominated by passerines which are unlikely primary prey, except communities 10 and 11 which include American Robins and Gray Jays, which are suitable prey. However, only rarely have medium size passerines formed the bulk of a peregrines diet in the breeding season (unpub. data). Communities 10 and 11 include Spotted Sandpipers, a potentially important prey. One pair of Peregrine Falcons near Wood Buffalo National Park feeds primarily on yellowlegs, a similar size shorebird. The forested habitat of communities 1, 3,

4, 5, 6, and 7 are not likely prime feeding areas of peregrines, an open country predator. The shrubby habitats of 10, 11, and 12, where species frequently fly over the vegetation rather than in it, may be more conducive to peregrine hunting methods.

Bird communities 2, 8, 13, 15, 16, 17, and 18 all have density indices below 20 for potential prey and have relatively few non-passerines (Table 4, Figures 3 and 4). Community 2 is associated with stunted aspen and community 8 is associated with coniferous forest and both are not likely prime peregrine hunting habitat. Communities 13, 15 to 18 occur in grasslands from the montane to the alpine. As open habitats, they would favour the hunting techniques of the Peregrine Falcon. However, their low density indices would detract from their use. Community 15 includes Spotted Sandpiper and communities 17 and 18 include Willow and White-tailed Ptarmigan, all of which are potential prey. Consequently these communities may be of secondary importance to hunting peregrines.

In review, bird communities 9 and 14 are likely the most important as potential sources of prey for breeding Peregrine Falcons. Communities 10, 11, 15, 17 and 18 include non-passerine prey that were found frequently in the diet of breeding peregrines elsewhere, but have medium to low density indices. Thus these five communities are of medium importance to foraging peregrines. All of these communities occur in unforested habitats that are suited to the peregrine's hunting style.

Each bird community can be related to the ecosites, that were mapped during the ecological inventory, through the associated vegetation types. Thus using the ecosites, the area and distribution of potential foraging habitat can be determined.

Bird Community 9 occurs on 11 ecosites and community 14 occurs on four ecosites (Table 5). Briefly, all these ecosites occur in the montane to upper subalpine valley bottoms. The parent materials are fluvial, except ecosite MC1 which is on lacustrine

materials, and the soils are wet and mostly calcareous. The soil types are mostly Gleysols and Organics. For more detailed descriptions refer to Holland and Coen (1983). The ecosites that support these bird communities occur along the main Brazeau valley bottom on either side of the water course (Figure 5). Consequently the ecosites tend to be long and narrow and are discontinuous, bisected by forest, especially where the Brazeau River passes through a canyon or over rapids (Figure 5a).

Breeding bird communities 10, 11, 15, 17, and 18 occur in a wider variety of ecosites (Table 5). Communities 11 and 15 occur in the lower subalpine on dry slopes including avalanche tracks on colluvial and morainal parent material (respectively). Community 10 is more common in the upper subalpine on dry shrubby slopes on morainal and colluvial parent material. Community 17 occurs in the upper subalpine and alpine on dry soils on morainal parent material. Finally community 18 occurs in the alpine on dry soils on colluvial parent material. Thus these ecosites are widely varied and support unforested vegetation especially on slopes in the subalpine and varied terrain in the alpine. Some of these ecosites are found on the slopes above the Brazeau River and in the alpine (Figure 5).

To assess the availability of ecosites a study area was arbitrarily defined within 10 km of the Brazeau River in Jasper National Park. This area, there is 480 km<sup>2</sup> of land. Most of this 480 km<sup>2</sup> area is bare rock (22%) or vegetation of little use to peregrines (42%). Ecosites with communities 9 and 14 cover 57.4 km<sup>2</sup> (12%) while the secondary communities cover 112.3 km<sup>2</sup> (23%). The areal extent of ecosites, with communities 9 and 14, is rather restricted in the upper Brazeau (19.4 km<sup>2</sup>, Figure 5a). Downstream of the Arete Cabin to the junction of the Brazeau and Southesk Rivers at the park boundary,

Table 5. Ecosites that support selected breeding bird communities in Jasper National Park and their combined area within 10km of Brazeau River.

Breeding Bird Community	Ecosite Initials	Area (km <sup>2</sup> )
9	BK1,BK4,BK6,CA1,CV1,HC1,HC4,MC1, VL1,VL3,VL5.	49.7
10	AZ1,EN2,FV1,HC4,KA1,NT2,PL5,PP7, SB1,SX1,SX2,SX3,TR1,WF2,WF7,WH3.	43.0
11	FV1,SB1.	2.2
14	HC2,HC4,NT3,VL1.	7.7
15	PP4,WW1,M,P,SC.	2.4
17	AZ1,EF1,EG3,EG4,JN1,LV2,MP1,NT3, PL4,RD1,SX1,SX2,TK1,TR1.	37.2
18	BS1,HE1,HE2,JN1,KA1,MP1,RD1,TK1,TR2.	27.5



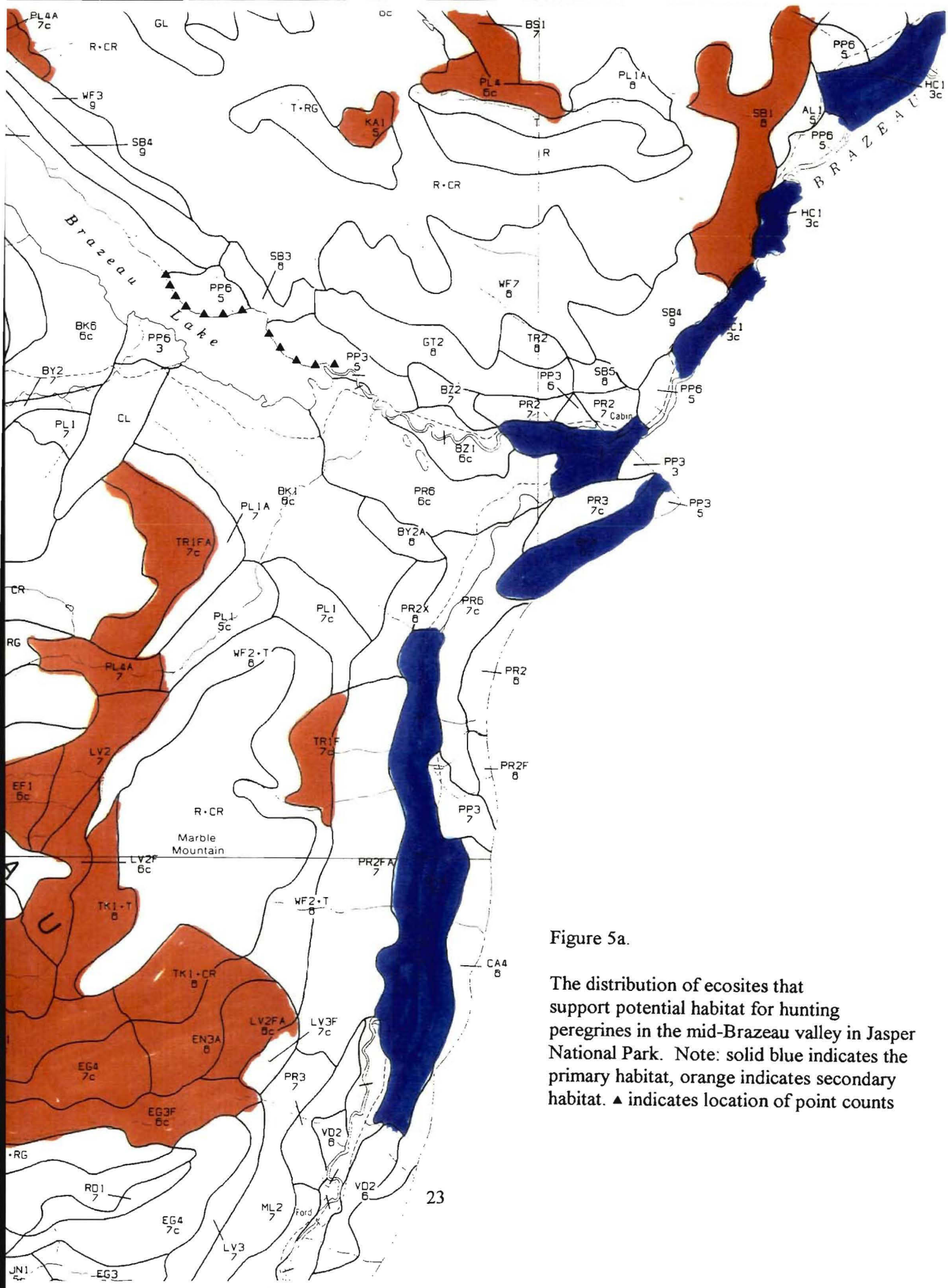
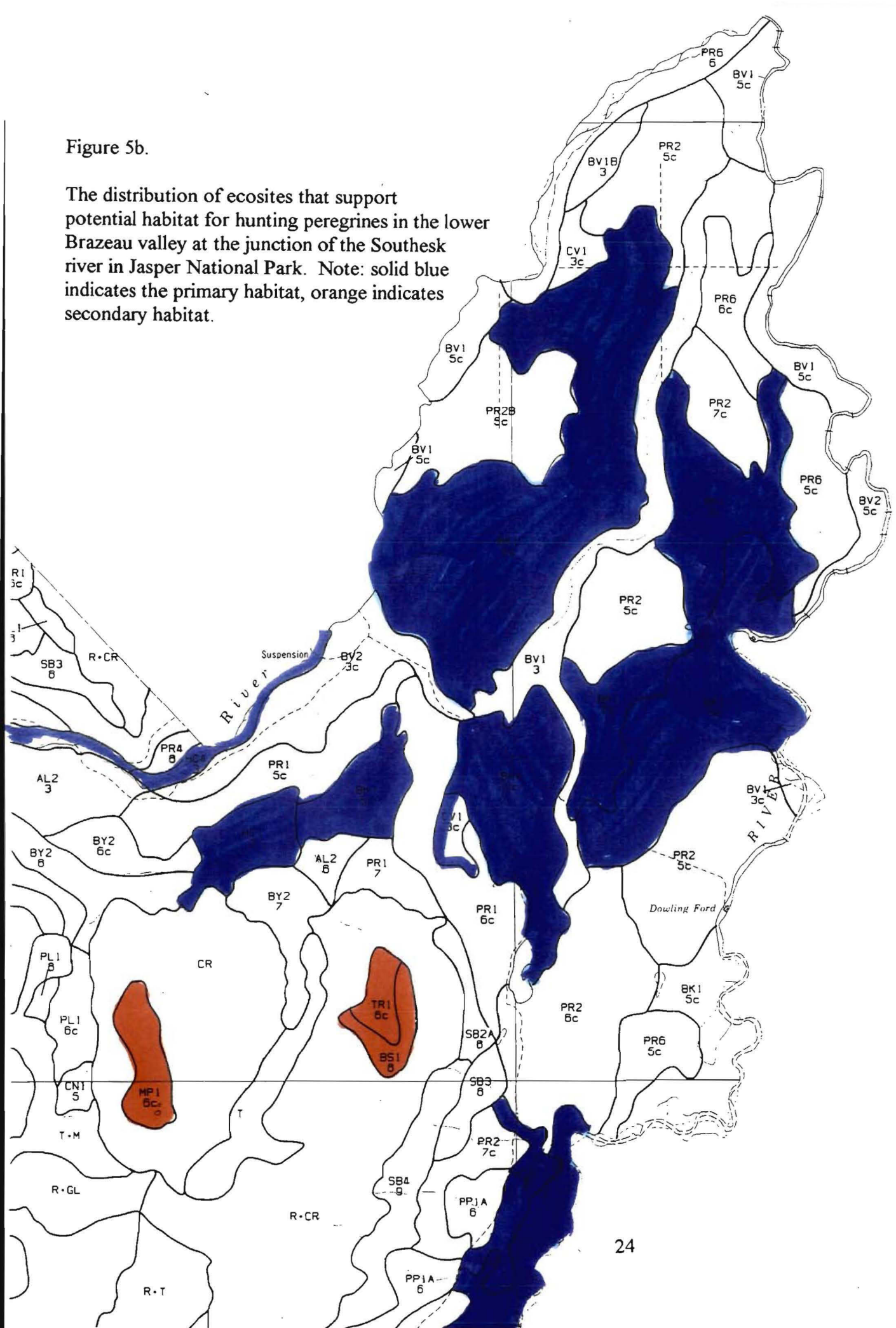


Figure 5a.

The distribution of ecosites that support potential habitat for hunting peregrines in the mid-Brazeau valley in Jasper National Park. Note: solid blue indicates the primary habitat, orange indicates secondary habitat. ▲ indicates location of point counts

Figure 5b.

The distribution of ecosites that support potential habitat for hunting peregrines in the lower Brazeau valley at the junction of the Southesk river in Jasper National Park. Note: solid blue indicates the primary habitat, orange indicates secondary habitat.



the above ecosites are more extensive (38 km<sup>2</sup>, Figure 5b). The secondary set of ecosites are more common above the upper Brazeau valley (104.7 km<sup>2</sup>) and less common above the lower Brazeau valley (7.6 km<sup>2</sup>, Figure 5).

#### SUITABLE NESTING SITES

From 4-8 July 1994, from the hiking trail in the valley bottom, we searched the cliffs in the Brazeau River valley from Nigel Pass to Arete Cabin for stick nests, white wash that might indicate the recent presence of young raptors, and the raptors themselves. We found two cliffs with stick nests. Three stick nests were located on a rock band on Marble Mountain at UTM MH975988. Four stick nests were seen on the lower slopes of unnamed peak (2779m) at UTM NJ013057 to 017062. At both locations we saw whitewash marks on the cliffs. Golden Eagles were observed nesting at this second location in 1993 and one eagle was seen in the area during 1994.

White wash could be from defecations at perch points of falcons, eagles, and ravens or from calcium leaching from the rock. A cluster of perch points can be expected near nest sites, the result of the male perching while the female incubates the eggs and from young perching during and after fledging.

At Marble Mountain, Greg and Alex climbed to a nest and checked patches of whitewash nearby. The whitewash appeared to be a mineral deposit seeping out of the rock face rather than derived from young raptors or ravens. It may be associated with rock bands that result in suitable ledges for stick nests. In one nest there were no feathers, egg shells or other sign of recent occupancy by birds.

During the remainder of the 1994 summer, Greg and Alex scanned potential nesting areas further downstream of Arete while on patrol but no nests were found.

## CONCLUSION

The releases of Peregrine Falcons in Alberta has increased the chances that Peregrine Falcons may nest in Jasper National Park. However there are no historical nesting records and only one summer (June) record of a peregrine in Jasper National Park in the past 20 years in known.

However, several sightings occurred from late July to September in the park indicating that peregrines hunt in the park after the breeding season. The sighting of two peregrines in Valley Head Pass in August 1992 may indicate that a pair or part of a family were hunting in this alpine area. Prairie Falcons were suspected of hunting in the mountains after their breeding season (Holroyd and Van Tighem 1983, Dekker 1984).

An analysis of the predicted distribution of potential peregrine prey in the Brazeau watershed shows that the lower Brazeau Valley (downstream of Brazeau Lake) has more high quality habitat than upstream. However, a larger area of secondary habitat exists in the upper portion of the watershed.

Wardens on patrol should be alert to the potential for Peregrine Falcons in the park. The mountains may be an important post breeding area for peregrines that bred in the foothills or prairies of Alberta. They are encouraged to complete wildlife sighting cards for large falcons so that the likelihood of nesting falcons can be assessed in the future. Both Prairie and Peregrine Falcons may be observed and need to be accurately identified to avoid confusion.

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