

## POTENTIAL IMPACTS OF PENDING RS-2477 LEGISLATION ON NATIONAL WILDLIFE REFUGES IN ALASKA

This paper summarizes the possible effects of proposed RS-2477 legislation on National Wildlife Refuges in Alaska by illustrating mileage and resource impacts on the system and on particular refuges. Included on the following pages are examples of potential impacts on fish, wildlife, subsistence and cultural resources. The examples chosen by no means reflect the entire range of potential impacts on wildlife refuges in Alaska.

### State of Alaska's "highway" claims

In August 1995, the State of Alaska identified 99 routes on 14 National Wildlife Refuges in Alaska as possible public "highway" right-of-ways under RS-2477. Most of the claimed "highways" are listed as foot and dogsled trails. The segments inside refuge boundaries range from one mile to 176 miles in length. A summary of "highway" lengths and land status is provided in Table 1.

The 99 identified "highways" across refuges do not represent the extent of possible state right-of-way assertions under RS-2477. Under H.R. 2081, the State, political subdivision, or any individual may continue to make claims up to five years after enactment of the Act. In 1974, the State of Alaska identified at least 33 other trails, totalling 694 miles, within refuges. Additionally, the State has identified 415 "highways" which cross early federal withdrawals. A number of these may be located on refuges established prior to the Alaska National Interest Lands Conservation Act. These "highways" would need additional investigation to establish that their use pre-dates the original federal withdrawal.

### RS-2477 "highways" and Alaska Native corporation land

Forty-one percent of the length of claimed "highways" within refuge boundaries are across Native corporation conveyed and selected land. Public access to federal lands beyond these private lands is already provided by a provision of the Alaska Natives Claims Settlement Act. Section 17(b)(1) of ANCSA directed the identification of these public access routes. Most of these 17(b) easement trails follow coastlines or rivers along traditional travel routes. Approximately 529 miles of the State of Alaska's claimed "highways" overlap with existing 17(b) easements.

### Possible right-of-ways along section lines

In addition to its specific RS-2477 "highway" claims, the State of Alaska also claims section line easements are valid throughout the state. This means that every square mile of land would have a permanent highway easement along its borders. The potential impacts to wildlife refuges could be enormous if section line easements are developed. There would be approximately 300,000 miles of section line easements blanketing wildlife refuges. The State claims that section line easements are 66 or 100 feet in width. Terrain would often make it

difficult to develop roads in narrow, linear paths along section lines. The State could also claim that a "highway" easement could be used for utilities such as electrical transmission lines, gas pipelines or railroads. Utility lines and roads constructed on section line easements would compound seriously the impacts of RS-2477 "highways."

Alaska's refuges encompass a wide variety of terrain types from open coastal plains with a myriad of lakes, to dense spruce/birch forests, to rolling hills and jagged mountain peaks. The proposed access "highways" traverse all of these terrain types. Construction of roadways would have varying physical, biological and visual impacts on the land. For this paper, the U.S. Fish and Wildlife Service (Service) did not speculate on the feasibility of constructing a modern highway in these remote locations. Instead, we assumed that all identified "highways" could eventually become gravel roads similar to the Dalton or Denali highways.

### The example of two refuges

The Service chose the Togiak and Yukon Flats Refuges for this discussion to represent the types of impacts that could be expected if roads are developed. These examples by no means reflect the entire range of potential impacts on wildlife refuges in Alaska. Proposed RS-2477 "highways" within the twelve other refuges may impact unique natural resource values. For example, several of the proposed "highways" on the Yukon Delta National Wildlife Refuge cross nesting habitat of spectacled eiders, a federally-listed threatened species. In addition, three of the "highways" on the Yukon Delta pass through bristle-thighed curlew habitat. The bristle-thighed curlew is a Category 2 candidate species. These endangered species candidates are but a few examples of fish and wildlife resources at risk.

The following discussion outlines some of the easily identified fish, wildlife and cultural resources along the proposed "highways" on the Togiak and Yukon Flats Refuges. The extent of known subsistence use of these areas is also discussed. No specific studies were conducted on the environmental impacts of road construction in these refuges. The information presented was gathered from published sources and interviews with resource agency personnel. Each proposed "highway" is unique and the extent of future road or trail development and use will ultimately determine the impacts on all natural resources.

### Togiak National Wildlife Refuge: An example

The Togiak National Wildlife Refuge encompasses 4,011,000 acres of federal land and an additional 692,000 acres of selected and conveyed Native Alaskan lands in southwestern Alaska. Kuskokwim and Bristol Bays form the western and southern boundaries of the refuge. The Ahklun and Wood River Mountains dominate the northern half. Within the boundaries mountains, glacial valleys, lakes, tundra and coastal cliffs form a varied landscape. The Kanektok, Arolik, Goodnews and Togiak Rivers all cross the refuge and are vitally important for the Bristol Bay commercial salmon fisheries. Vegetation consists of

both arctic and subarctic species. A total of 33 fish, 169 bird, 31 terrestrial mammals and 17 marine mammal species occur on and near the refuge. These wildlife resources include a large and diverse subsistence, commercial and sport fishery, the largest rookery of cliff nesting seabirds in the eastern Bering Sea and the highest density of nesting sandhill cranes in Alaska. Coastal estuaries provide staging and feeding areas for 250,000 waterfowl.

#### RS-2477 claims on the Togiak Refuge

Five proposed RS-2477 "highways" totalling 140 miles occur within the boundaries of the Togiak National Wildlife Refuge. The "highways" generally connect villages on and near the refuge with each other and to the regional population center at Dillingham. Approximately 30% (44 miles) of the proposed "highways" are on federal lands while the rest are on private patented and Native selected and conveyed lands (Table 2). Portions of two "highways", approximately 4.25 miles, duplicate existing 17 (b) public access easements. In addition, 16,160 miles of section line easements are claimed within Togiak Refuge.

Table 2. Miles of proposed RS2477 "highways" on the Togiak Refuge by land status, not including section line claims.

FWS land	Native Allotments (Patented)	Native Allotments (Selected)	Native Corporation (Conveyed)	Native Corporation (Selected)	Other Federal	Total
44	2	< 1	56	43	0	145

#### Impacts on fish, wildlife, subsistence and cultural resources

**Fishery Resources:** Togiak Refuge fishery resources are world-renowned and vitally important to the regional subsistence and commercial economies (USFWS 1990a). Road construction and maintenance can accelerate erosion processes and modify natural drainage networks (Furniss et al. 1991). These changes can have important biological consequences that may affect all components of a stream ecosystem.

- At least 33 species of fish occur within the refuge. Five species of salmon (chinook, sockeye, chum, coho and pink) are found in every major drainage. Rainbow trout, anadromous and resident char, lake trout, Arctic grayling, northern pike, burbot, whitefish, smelt, and Alaska blackfish are also common throughout the refuge (USFWS 1990a).
- The proposed "highways" pass over 12 drainages identified as key habitat for refuge fishes (USFWS 1986).
- Sockeye salmon are the most important fish species in terms of commercial and subsistence values. An average of nearly 1.2 million fish are harvested annually and

escapements are estimated at approximately 500,000 fish (Lisac, pers. comm. 1995). More than 90% of the adult sockeye population spawns above Togiak Lake and in Ualik and Amanka Lakes (USFWS 1990a). Proposed "highway" 215 would pass directly south of Ualik and Amanka Lakes and would cross over the outflow of Togiak Lake.

- Coho, chinook and chum salmon also support important commercial fisheries in waters off the refuge. The combined annual catch averages approximately 475,000 fish. In addition, coho and chinook are important subsistence species with more than 14,000 fish taken annually (USFWS 1990a). Proposed "highways" cross all three of the rivers (Togiak, Kanektok and Goodnews) that contain the major spawning areas for these species.
- The sport fishery on the Togiak Refuge is valued at \$6-10 million annually (Lisac, pers. comm. 1995). This fishery is based on wilderness quality and variety of fishing opportunities.
- Wild rainbow trout stocks support a multimillion dollar sport fishery in southwest Alaska. The quality and quantity of rainbow trout on the Togiak Refuge attracts anglers from around the world. Because rainbow trout are resident species with a limited annual migration, all waters where they occur should be considered important for spawning and overwintering (Faustini, pers. comm. 1995). All six of the rivers that support rainbow trout (Negukthlik, Ungalithluk, Togiak, Goodnews, Arolik, and Kanektok) are crossed by the claimed "highways."
- Current research indicates that the rainbow trout population probably could not withstand a large increase in fishing pressure without suffering a decrease in the size composition (Faustini, Unpubl.).

**Brown bears:** The effects of roads and road-based developments on brown bear populations has been studied extensively in the lower 48 and Canada. Experience has shown that brown bears can be displaced from prime feeding and denning areas by road construction and use. Bear/human conflicts, such as Defense of Life and Property shootings, generally increase when new areas are opened with roads.

- An estimated 300-400 brown bears use the Togiak Refuge. The south coastal region of the refuge has the highest density of bears (USFWS 1986).
- Brown bears converge on most of the drainages crossed by "highways" 215 and 86 to feed on spawning salmon.
- Brown bears concentrate in July and August to feed on spawning sockeye salmon at a site near Ualik Lake within one mile of "highway" 215 (Aduman, pers. comm. 1995).

- Aerial surveys have revealed that at least five brown bears are known to den within a few miles of "highway" 215 (Aduman, pers. comm. 1995).

**Caribou:** Numerous studies have been conducted in Alaska and Canada on the effects of road intrusion on caribou behavior and populations. Disturbance of calving grounds and increased harvest seem to comprise the most substantial impacts.

- In 1988, a new caribou herd was established with the introduction of 146 animals onto the Nushagak Peninsula.
- The Nushagak Caribou Herd (NCH) is one of the fastest growing caribou herds in the world and now numbers over 1500 animals (Aduman, pers. comm 1995).
- A first-ever subsistence hunt was conducted in January-March 1995 with 100 permits issued.
- "Highway" 215 would provide year-round access to the northern portion of the NCH range. Increased access and harvest could slow the phenomenal growth of the NCH.

**Bald Eagles:** Disturbance of nesting bald eagles by road construction and related developments have been documented in the literature. Increased fishing pressure off a road system could lead to abandonment of some nests.

- Approximately 120 adult bald eagles use the Togiak refuge at some time during the year (USFWS 1986).
- Thirty-six active bald eagle nests are located along Togiak Refuge streams and coastlines (Aduman, pers. comm. 1995).
- Five of these nests are within a few miles of proposed "highways" 86 and 215.

**Subsistence:** The ANILCA purposes of the Togiak Refuge include the provision of "... the opportunity for continued subsistence use by local residents" (Sections 303(6)(B)(iii) and 302(9)(B)(iii). Additional roads may increase access to subsistence resources in the short term. However, experience in Arctic environments indicates that the availability of subsistence resources declines over time with expanding road systems.

- Road construction and use may cause loss of habitat and/or reductions or displacements of species used for subsistence by local residents.
- Road construction and use could cause increased competition for local resources currently used for subsistence purposes. If unchecked, this competition might create an adverse effect on local subsistence use.

- Local opinions and feelings about increased road access on subsistence activities and resources need to be taken into consideration. Cultural and social changes may result even from essentially free choices concerning use of subsistence resources.

**Cultural Resources:** Cultural resources located within a "highway" right-of-way will be destroyed if road construction occurs. Increased access can lead to vandalism and looting of cultural resources. Over 400 historic and prehistoric sites are known on the Togiak Refuge.

### Yukon Flats National Wildlife Refuge: An Example

The Yukon Flats National Wildlife Refuge encompasses approximately 8,480,000 acres of federal lands and an additional 2,696,000 acres of Native selected and conveyed lands in east central Alaska. Extending east-west along the Arctic Circle, the refuge lies between the Brooks Range to the north and the White and Crazy Mountains to the south. The Trans Alaskan pipeline corridor runs along the refuge's western boundary while the eastern boundary extends to within 30 miles of the Canadian border. The Yukon River bisects the refuge and is the dominant feature of the refuge landscape.

A total of 147 bird, 39 mammal and 18 fish species occur or potentially occur on the refuge. The estimated 40,000 lakes and 25,000 miles of streams that occur on the refuge provide the basis for abundant and diverse fishery resources. These resources support subsistence as well as commercial operations. The refuge is also one of the most productive waterfowl breeding areas in North America (USFWS 1987).

### **RS-2477 claims on the Yukon Flats Refuge**

Twenty-one proposed "highways" totalling 700 miles occur within the boundary of the refuge. Approximately 50% of the proposed "highways" are on federal lands while the remainder occur on private and native corporation conveyed and selected lands (Table 3). There are 37 documented 17(b) easements totalling 255 miles of trails providing access to public lands across public and private lands within the refuge. Some of the 17(b) easements are duplicated by portions of eight of the proposed "highways." The proposed "highways" would connect the villages on the refuge with each other as well as with the existing Alaska road system (Steese and Dalton Highways) and major population centers. In addition, 35,896 miles of section line easements are claimed within Yukon Flats Refuge.

Table 3. Miles of proposed RS-2477 "highways" on the Yukon Flats Refuge by land status, not including section line claims.

FWS land	Native Allotments (Patented)	Native Allotments (Selected)	Native Corporation (Conveyed)	Native Corporation (Selected)	Other Federal	Total
349	21	4	225	101	< 1	700

## Impacts on fish, wildlife, subsistence and cultural resources

**Fishery Resources:** Road construction and maintenance can accelerate erosion processes and modify natural drainage networks (Furniss et al. 1991). These changes can have important biological consequences that may affect all components of a stream ecosystem. In addition, road development could significantly increase public access and lead to escalating conflicts between subsistence and sport fishermen (Millard, pers. comm. 1995).

- Approximately 300 miles of the upper Yukon River, as well as 12 major tributaries, and an estimated 40,000 lakes provide habitat for at least 18 fish species (USFWS 1990b).
- The Yukon River chinook and chum salmon runs are among the largest of any river system in North America. Coho salmon are present in smaller numbers. All three species use refuge waters for spawning, feeding, rearing or migration. Other common species include sheefish, northern pike, Alaska blackfish, Arctic grayling and three species of whitefish (USFWS 1990b).
- Residents of villages within the refuge depend heavily on salmon, whitefish and sheefish for subsistence.
- Proposed "highways" cross eight rivers that are important in the spawning migrations of salmon.
- "Highways" 450, 189, 270, and 67 cross the Yukon River. The Yukon is an extremely important transportation corridor for fish migrating to upstream spawning grounds in both Alaska and Canada.
- Salmon escapement on the Yukon River is subject to an international treaty between the U.S. and Canada.
- "Highway" 67 crosses the Porcupine River and two of its tributaries. The Porcupine River system accounts for a significant portion of the Alaskan fall chum salmon harvest (Millard, pers. comm. 1995). The mainstem provides an important migration route to tributary spawning streams. Four other drainages that support smaller populations of salmon will be crossed by the proposed "highways."

**Caribou:** Numerous studies have been conducted in Alaska and Canada on the effects of road intrusion on caribou behavior and populations. Disturbance of calving grounds and increased harvest seem to comprise the most substantial impacts (Dau and Cameron 1986, Bergerud et al. 1989, Cameron et al. 1992).

- The refuge contains seasonal habitat for a portion of the Porcupine caribou herd. The

herds winter range encompasses the northwestern portion of the refuge. Proposed "highways" 257 and 27 cross winter range and the migration corridor of a portion of the Porcupine caribou herd (Bertram and Vivion, pers. comm. 1995).

- Disturbance on the winter range from development or increased public access could displace caribou from key wintering habitat to less suitable areas. The additional physiological stress from disturbance could adversely affect reproduction and survival (Murphy and Curatolo 1986).

**Peregrine Falcon:** Peregrine falcons are sensitive to noise and visual disturbance during nesting and rearing periods. These disturbances could result from construction activities and increased public access in the vicinity of a nest (USFWS 1982).

- There are at least eight peregrine falcon nests on the Yukon Flats Refuge. The American peregrine falcon is a federally-listed endangered species. Refuge surveys have identified nesting sites on the Porcupine and Yukon Rivers within the refuge boundary.
- Portions of "highways" 450 and 476 cross through three peregrine falcon nesting territories along the Yukon River.

**Waterfowl:** Waterfowl are sensitive to noise and visual disturbance during nesting, molting, and staging. These are periods of great physiological stress and additional stress can displace waterfowl from optimal habitats and adversely affect their reproduction and survival (Henson and Grant 1991, Bangs et al. 1982, Owen and Reinecke 1979).

- An estimated 1.1 million ducks and 6,000 Canada and white-fronted geese commonly nest on the refuge each year. Thousands of snow geese migrate through the Yukon Flats to and from breeding grounds north of the refuge.
- Portions of all of the proposed "highways" within the refuge cross high and moderate density waterfowl nesting habitat. Specifically, "highways" 27, 257, 446, 450, 476, 477, 478, 879 cross high density nesting habitat of mallards, northern pintails or canvasback ducks and would provide public access to these critical areas.

**Subsistence:** The ANILCA purposes of the Yukon Flats Refuge includes the provision of "... the opportunity for continued subsistence use by local residents" (Sections 303(6)(B)(iii) and 302(9)(B)(iii)).

- Road construction and use may cause loss of habitat and/or reductions or displacements of species used for subsistence by local residents.
- Road construction and use could cause increased competition for local resources currently used for subsistence purposes, especially on the Yukon Flats, where



RS-2477 right-of-way claims may provide direct access to the area from urban centers such as Fairbanks.

- Local opinions and feelings concerning the impacts of increased road access on subsistence activities and resources need to be taken into consideration. Cultural and social changes may result even from essentially free choices concerning use of subsistence resources.

**Cultural Resources:** Road construction activity can damage or destroy cultural resources located within a right-of-way. Access created by the road can lead to vandalism and looting of cultural resource sites. Fifty-three sites known to Service archaeologists are located on or near the proposed "highways."

### Conclusion

We have presented a sample of the range of potential impacts on wildlife refuges in Alaska. Togiak and Yukon Flats Refuges are but two of the 14 Alaskan refuges that would be changed forever by the proposed legislation. Claimed RS-2477 "highways" within the 12 other refuges would impact unique natural resource values not reflected in this discussion.

The State of Alaska asserts that all section lines within the state are RS-2477 right-of-ways. Section line easements would blanket all 16 Alaska refuges if this position is validated. Every square mile of land would be encased by a permanent highway easement. The potential impacts to wildlife refuges could be enormous if section line easements are developed. There would be approximately 300,000 miles of section line easements within Alaskan wildlife refuges.

A goal of ANILCA was to create refuges that included entire ecosystems. A tenet of modern conservation biology is that fragmentation by roads and development of the unprotected portion of an ecosystem surrounding a park or refuge will degrade or destroy the very resources supposedly protected by that park or refuge. A myriad of roads across these refuges may ultimately result in this same resource degradation by fragmentation ANILCA sought to avoid. The proposed legislation does not make it clear whether the Service will be allowed to analyze or mitigate the impacts of these proposed "highways" around particularly sensitive resource areas. Each proposed route is unique and the extent of future "highway" development and use will ultimately determine the impacts on all natural resources. We do, however, know the general results of ecosystem fragmentation on parks and refuges around the world. We also know that the proposed legislation will not allow the systematic environmental analysis necessary to prevent resource degradation.

Table 1: Summary of 1995 claimed RS-2477 "highway" mileages, by land status, within National Wildlife Refuge boundaries.

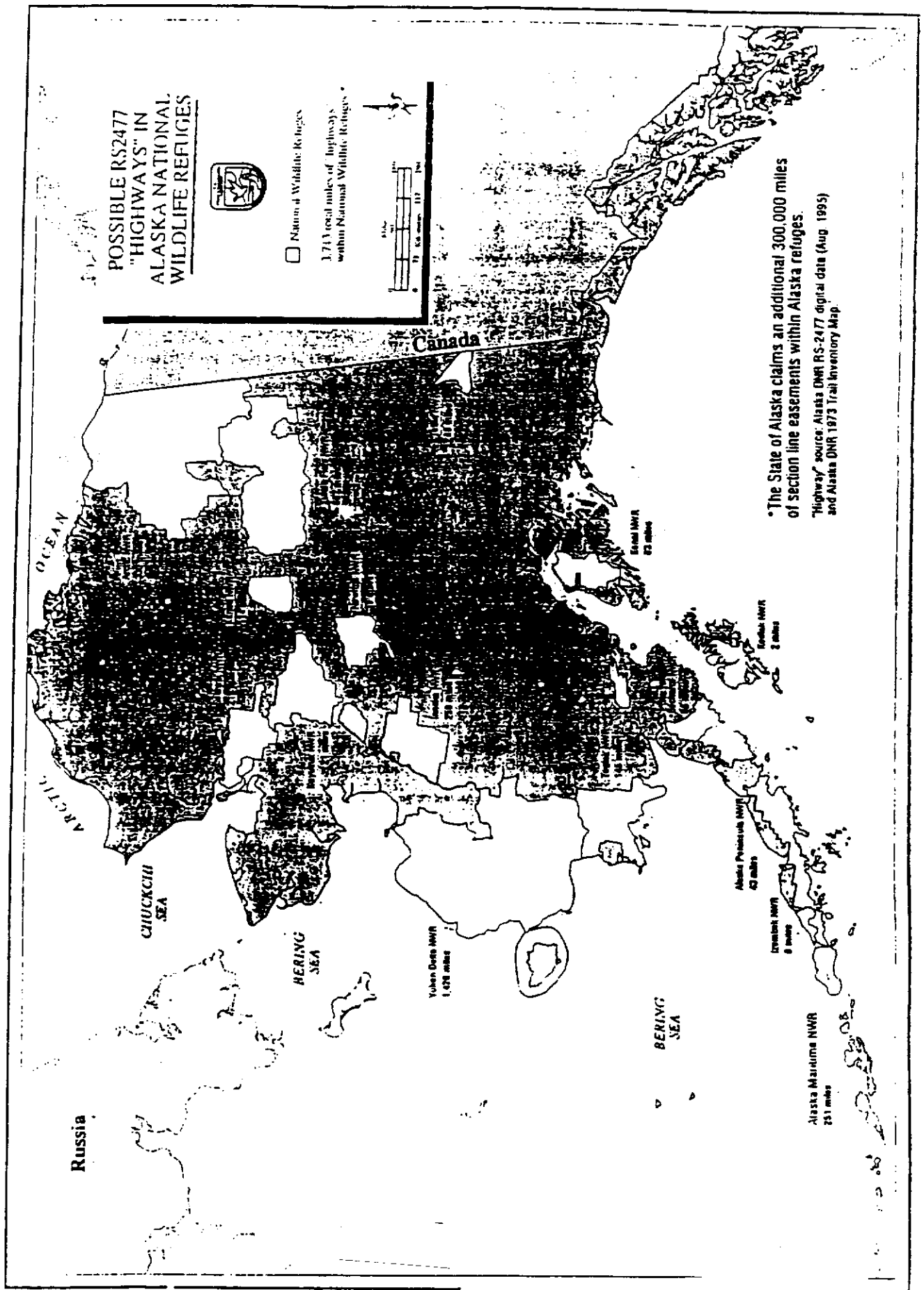
Refuge	FWS Miles*	Wilderness	Net. Allotment Patented	Net. Allotment Selected	Net. Corp. Conveyed	Net. Corp. Selected	State Conveyed	State Selected	Other Federal	Conflicting Sections	Total "Highways"	TOTAL MILES	Section Line Miles
Alaska Maritime	4.50	0	4.48	5.75	34.55	17.65	0	2.15	0	-5.15	12	63.93	15,819
Alaska Peninsula	20.00	0	2.00	1.25	10.75	8.50	0	0	0	0	2	42.50	16,860
Arctic	234.56	72.82	0.27	1.64	3.62	0	0	0	0	0	11	312.91	63,379
Becharof	71.10	0	0	0	0	5.35	0	0	0	-8.32	4	68.13	4,942
Innoko	164.00	74.00	0.50	0	18.50	2.00	0	0	0	0	10	259.00	14,959
Izembek	0	0	0	0	0	0	0	0	0	0	0	0	1,603
Kanuti	28.25	0	0	0	21.00	6.00	0	0	0	0	2	55.25	5,231
Kenai	5.20	9.50	0	0	0	0.30	0	0	0	0	2	15.00	6,697
Kodiak	0	0	0.25	0	1.50	0	0	0	0	0	1	1.75	6,738
Koryukuk	0	0	0	0	0	0	3	0	0	0	0	0	14,508
Nowitna	12.00	0	0	6.50	0	0	0	0	0	0	1	18.50	6,828
Selawik	81.00	0	9.25	3.75	63.00	32.50	0	0	0	0	5	189.50	10,562
Tedlin	72.20	0	0.40	0	15.10	0	0.40	0	0	0	5	88.10	3,205
Topik	42.00	0	1.50	0	53.25	43.25	0	0	0	0	5	140.00	15,998
Yukon Delta	431.00	0	54.00	52.75	511.75	147.50	0	0	0	0	27	1,197.00	77,133
Yukon Flats	305.13	0	11.20	2.09	157.34	91.34	0	0	0.63	-1.12	12	566.61	35,337
TOTAL MILES	1,470.94	156.32	83.85	73.73	890.36	354.39	0.40	2.15	0.63	-14.59	99	3,018.18	299,969
Total Private = 1,402.33													

This figure does not include the total mileage under federal jurisdiction. Mileage within wilderness areas and selected native corporation lands are also under federal jurisdiction but were itemized elsewhere in this table.

Summary of 1973 proposed RS-2477 "highway" mileages, by land status, within National Wildlife Refuge boundaries.

Refuge	FWS Miles*	Wilderness	Nat. Allotment Patented	Nat. Allotment Selected	Nat. Corp. Conveyed	Nat. Corp. Selected	State Conveyed	State Selected	Other Federal	Conflicting Selections	Total "Highways"	TOTAL MILES
Jacks Maritime	74.00	0	39.00	20.00	53.00	1.00	0	0	0	0	1	187.00
Jacks Peninsula	0	0	0	0	0	0	0	0	0	0	0	0
rdic	0	0	0.25	0.50	16.00	0	0	0	0	0	1	16.75
echarof	0	0	0	0	0	0	0	0	0	0	0	0
unoko	0	0	0	0	0	0	0	0	0	0	0	0
embek	0	0	0	0	0	0	0	0	0	0	0	0
anuti	16.00	0	5.50	3.50	33.00	1.00	0	0	0	0	0	0
enai	12.00	0	0	0	4.00	5.00	27.00	0	0	0	2	59.00
odiak	0	0	0	0	0	0	0	0	0	0	5	48.00
oyukuk	6.00	4.00	0	1.50	9.00	0	0	0	0	0	0	0
wina	0	0	0	0	0	0	0	0	0	0	2	20.50
lawik	0	0	2.00	0	27.00	0	0	0	0	0	0	0
tilin	0	0	0	0	0	0	0	0	0	0	1	29.00
giak	2.00	0	0.50	0.25	2.50	0	0	0	0	0	0	0
kon Delta	63.00	0	5.50	13.50	80.00	67.00	0	0	0	0	2	5.25
kon Flau	44.00	0	9.50	2.00	67.50	9.50	0	0	0	0	10	229.00
TOTAL MILES	217.00	4.00	62.25	41.25	291.00	83.50	27.00	0	0	0	33	727.00
Total Private = 479.00												

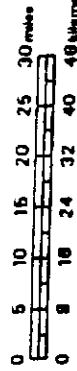
This figure does not include the total mileage under federal jurisdiction. Mileage within wilderness areas and selected native corporation lands are also under federal jurisdiction but were itemized elsewhere in this table.



\*The State of Alaska claims an additional 300,000 miles of section line easements within Alaska refuges.

\*"Highway" source: Alaska DNR RS-2477 digital data (Aug 1995) and Alaska DNR 1973 Trail Inventory Map.

# Togiak National Wildlife Refuge Proposed RS-2477 "Highways"



1 inch represents approx. 19 miles  
Universal Transverse Mercator Projection, Zone 4

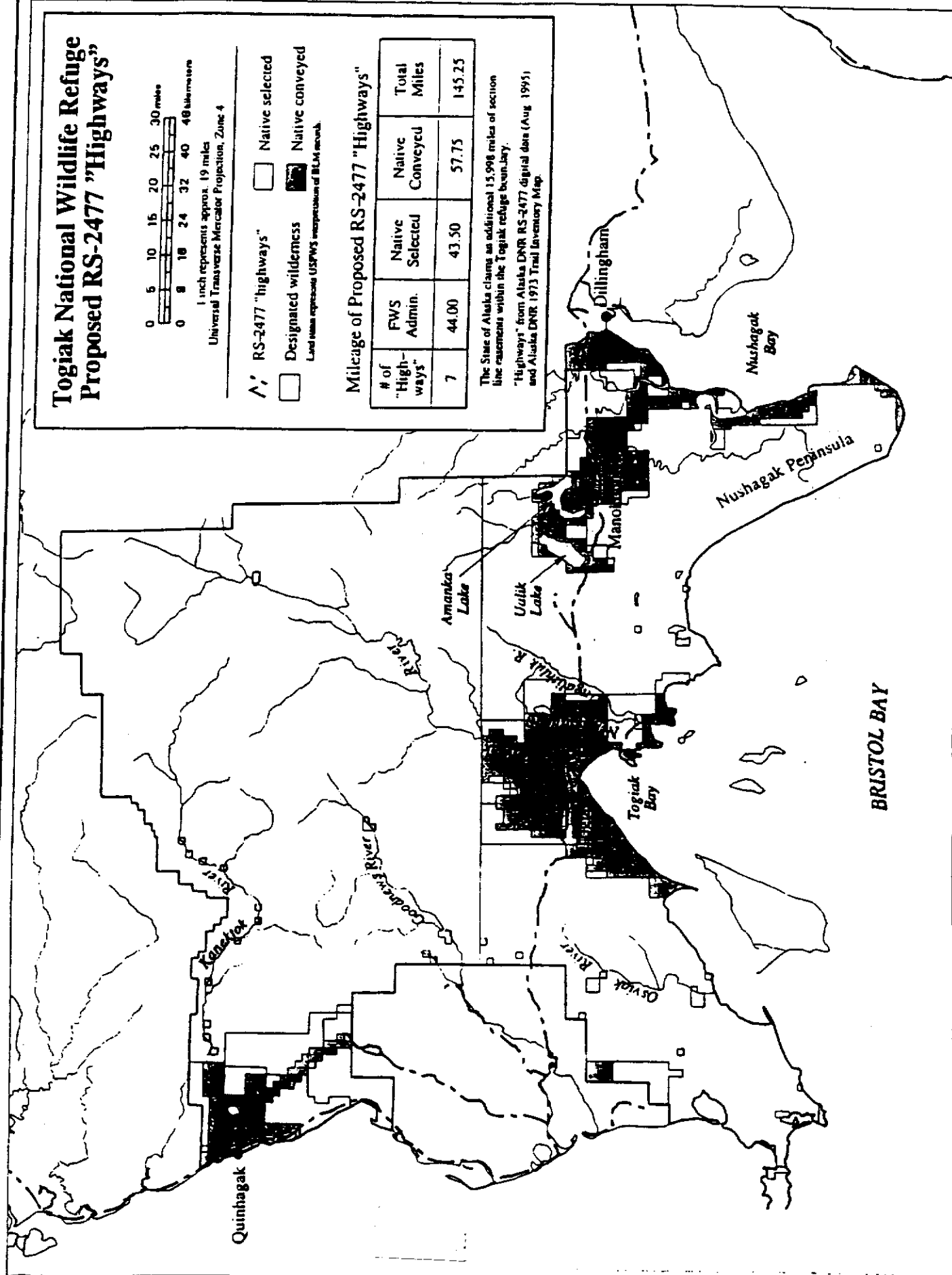
- ▲ RS-2477 "highways"    □ Native selected  
□ Designated wilderness    ■ Native conveyed  
Land areas represent USFWS interpretation of BLM records

## Mileage of Proposed RS-2477 "Highways"

# of "Highways"	FWS Admin.	Native Selected	Native Conveyed	Total Miles
7	44.00	43.50	57.75	145.25

The State of Alaska claims an additional 15,998 miles of section line easements within the Togiak refuge boundary.

"Highways" from Alaska DNR RS-2477 digital data (Aug. 1995) and Alaska DNR 1973 Trail Inventory Map



# Yukon Flats National Wildlife Refuge

## Proposed RS-2477 "Highways"

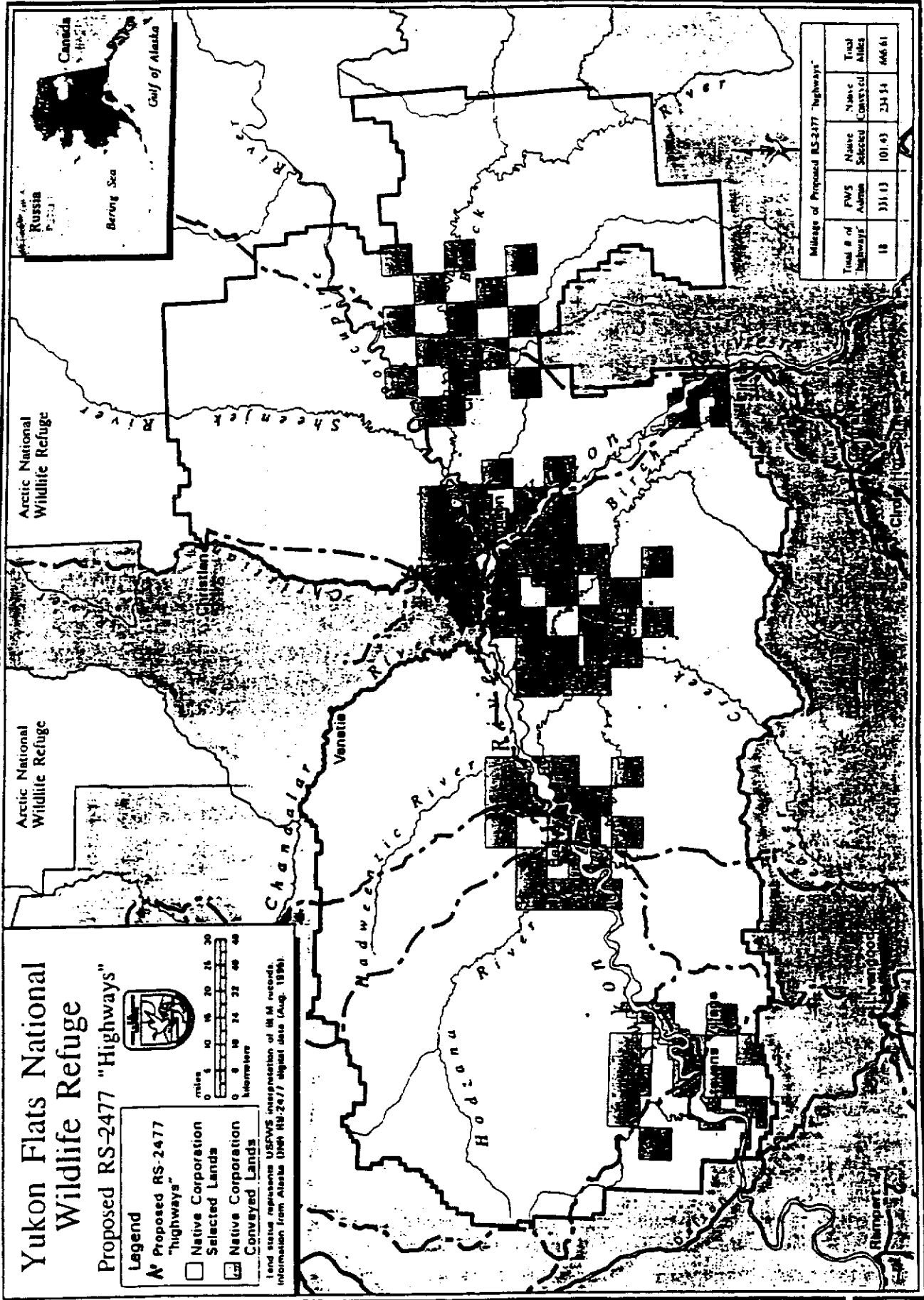
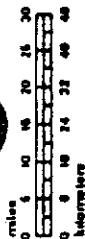
### Legend

▲ Proposed RS-2477 "Highways"

□ Native Corporation Selected Lands

▨ Native Corporation Conveyed Lands

Land status reversion USFWS interpretation of 18th M records, information from Alaska (1964 RS-2477 digital data (Aug. 1994))



Mileage of Proposed RS-2477 "Highways"				
Total # of Highways	FWS Admin	Name Selected	Name Conveyed	Total Miles
18	331.13	101.43	234.54	666.61