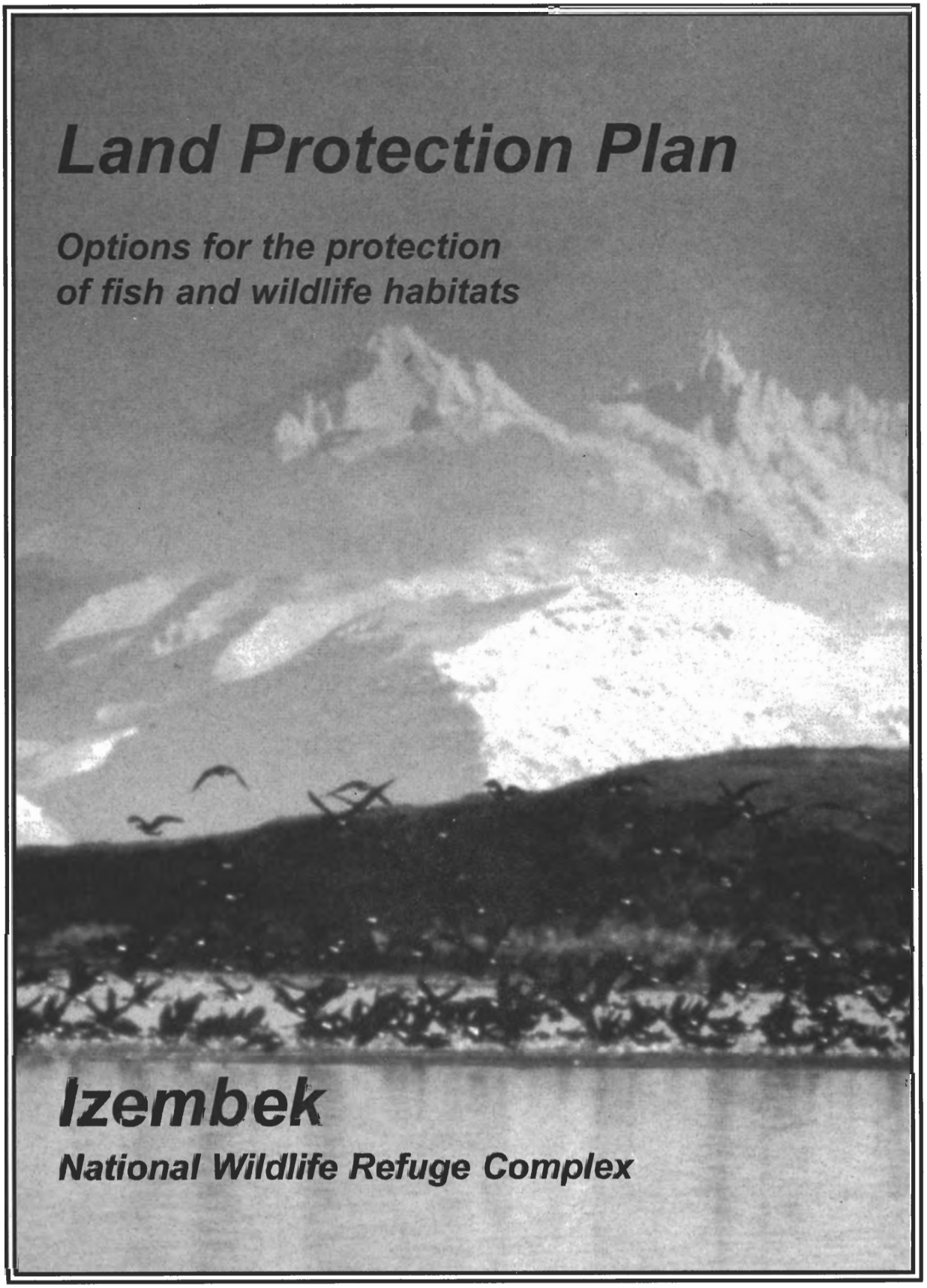
Land Protection Plan

Options for the protection of fish and wildlife habitats

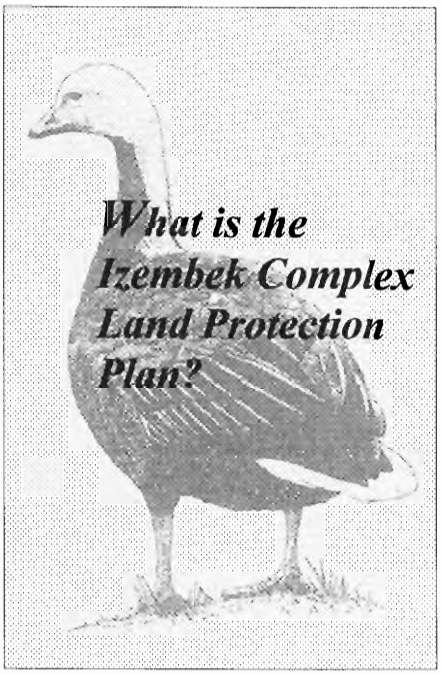


Izembek

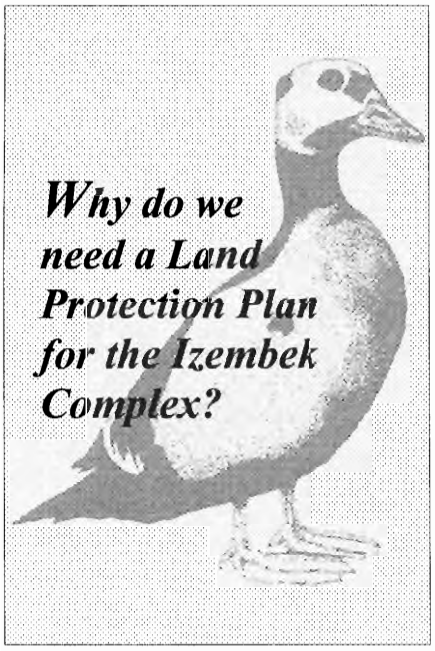
National Wildlife Refuge Complex

Summary

The Izembek Land Protection Plan (LPP) identifies which privately-owned lands within the refuge boundaries contain valuable fish and wildlife habitat. These lands are ranked as high, medium or low priority (Figure 5, page 49) depending on their relative value to fish and wildlife.



In some cases, we may want to buy some of these lands, **but only from people who wish to sell**. Some landowners may be interested in preserving the natural state of their lands even though they are not interested in selling. The LPP identifies ways that we can work together with the landowner to help conserve wildlife habitats on these privately-owned lands. For instance we may buy a conservation easement, enter into a cooperative management agreement, or propose a land trade. In many cases, privately-owned fish and wildlife habitats may already be sufficiently protected and no additional action would be recommended by the Service.



The U.S. Fish and Wildlife Service's refuge system was created to maintain and restore fish and wildlife and their habitats for the continuing use and benefit of the public. The Izembek Complex contains important habitat for waterfowl, salmon, brown bears and many other species and was set aside for the conservation of these species and their habitats. We want to maintain these wildlife populations so that people can enjoy them now and in the future.

We are also concerned that habitats be conserved on privately-owned lands within the refuge boundary. The focus of this plan is on these private or State-owned lands within the refuge. The LPP sets priorities for land acquisition based on the resource value of these lands. However, the LPP does not obligate the Service or the landowner to implement any land protection measure. Rather, it is a management tool that guides refuge land protection activities and provides the framework for refuge and private landowner cooperation.

Land Protection Plan

for

Izembek National Wildlife Refuge Complex
Cold Bay, Alaska

U.S. Department of the Interior
Fish and Wildlife Service
Region 7
Anchorage, Alaska

March 1998

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Introduction

The U.S. Fish and Wildlife Service (Service) is responsible for managing the land, fish and wildlife of Izembek National Wildlife Refuge Complex (Complex). However, this task is complicated by the fact that the Service does not own or have management authority over all of the land within the Complex boundaries. The 2.9 million acre Complex includes Izembek Refuge, the Pavlof and North Creek Units of Alaska Peninsula Refuge, and Unimak Island of Alaska Maritime Refuge. Of the 2.5 million acres of surface lands, private landowners have title or claims to approximately 989,267 acres, or about 39% (Table 1).

Table 1. Land ownership (surface lands) on the Izembek Complex[1] as of November 1997.

Current Ownership	Acres[1]
Federal[2]	1,526,549
Native Corporation (conveyed)	374,586
Native Corporation (selected[3])	533,633
Native Allotments (conveyed/selected)	1,316
State of Alaska	79,316
Other patents[4]	416
Total land acreage[5] inside administrative boundary	2,515,816

[1]Includes all lands managed as part of Izembek Refuge, including the Pavlof and North Creek Units of Alaska Peninsula Refuge and Unimak Island of Alaska Maritime Refuge. Acreage figures are approximate and subject to change. Land status acreage figures in Alaska will not be finalized until conflicting claims are adjudicated by the Bureau of Land Management and all inholdings are surveyed.
[2]Excludes Federal lands selected by Native Corporations.
[3]A total of 81,928 acres are selected by more than one Native Corporation.
[4]Other patents include ownership categories such as homesites, homesteads, trade and manufacturing sites, etc.
[5]There are an additional 366,363 acres of submerged lands within the refuge boundaries.

Refuge management is complicated when refuge lands are interspersed with private lands.

The Service protects wildlife on refuge lands but is also concerned that wildlife be conserved on non-Federal lands within refuge boundaries. Wildlife are not constrained by human-imposed boundaries, but are dependent on the health and integrity of the entire ecosystem. Activities on private lands can affect resources on adjacent refuge lands and complicate management. Therefore, we want, and need, to work with willing landowners to preserve the ecological integrity of the Izembek Complex and ease management difficulties.

We are particularly interested in working with owners of land having high fish and wildlife habitat values. In some cases, the landowner may approach the Service with an offer to sell all interests in the land (fee title). Funding for land acquisition is extremely limited, however, and Alaskan refuges face fierce competition from refuges nationwide for the funds available. Occasionally, non-profit organizations, such as The Nature Conservancy or The Conservation Fund, may provide the funding to buy ecologically significant land on behalf of the Service. However, in many cases our success depends less on purchasing valuable habitats than on forging partnerships with landowners. Through cooperative agreements or conservation easements, the land is managed to preserve the natural abundance and diversity of wildlife, yet the landowner retains title to the land.

The goal of the Izembek Land Protection Plan is to identify and conserve high quality habitat found on privately owned lands within the refuge boundary. The plan is intended to guide the refuge's land protection activities and provide a framework for refuge and private landowner cooperation. The objectives of this document are to answer the following questions:

Objectives of the Land Protection Plan

1. Where are the private lands within the Izembek Refuge Complex?
2. What resources are we trying to protect?
3. What methods do we have for resource protection?
4. How does the Service set priorities for resource protection and what are these priorities?
5. What land protection measures do we recommend?

6. How might our protection priorities affect landowners and others?

The Service desires to work together with landowners to ensure that the quality of the wildlife resources within Izembek Refuge Complex are protected. **However, any course of action requires mutual consent**. **The land protection plan does not obligate either the refuge or landowners to undertake any of the land protection measures identified.** The refuge must consider its management goals, priorities, and the availability of funds when approached with land protection proposals from private landowners.

John Sarvis

Hundreds of thousands of waterfowl stage on the Izembek Complex during spring and fall migrations.

John Sarvis

The Izembek Complex is among the most seismically dynamic regions in the world. Volcanos in the area, including Shishaldin Volcano shown here, are part of the "ring of fire"-- an arc of active volcanos that extends around the Pacific basin.

Where are the private lands in the Izembek Complex?

The Izembek National Wildlife Range was established by Public Land Order 2216 on December 6, 1960. The external refuge boundary encompasses approximately 417,533 acres, including submerged lands administered by the State of Alaska. A legislative proposal to adjust the boundaries of several Alaskan refuges, including Izembek Refuge, was first submitted to Congress in 1988, but has not yet passed into law. The boundary adjustment would increase the size of Izembek Refuge to approximately 2,881,945 acres by incorporating both Unimak Island of Alaska Maritime Refuge and the Pavlof/North Creek Units of Alaska Peninsula Refuge. The boundary adjustment would not add or remove lands from the refuge system, but would only transfer the administrative control of certain lands from one refuge to another.

There are both biological and administrative justifications for the boundary adjustment. Wildlife populations, such as caribou, range freely over Izembek Refuge and the Pavlof/North Creek Units, but the mountainous terrain around Port Moller presents a natural physiographic barrier to wildlife populations on the rest of the Alaska Peninsula (Figure 1). Survey and inventory work is facilitated by looking at the entire range of the population, rather than at fragments of the distribution. Administratively, it is difficult for the Service to effectively manage the Pavlof Unit and Unimak Island from distant headquarter sites in King Salmon and Homer. The Izembek Refuge headquarters is centrally located in Cold Bay.

Izembek Refuge Complex is an administrative unit which includes Unimak Island of Alaska Maritime Refuge and the Pavlof/North Creek Units of Alaska Peninsula Refuge.

Although the boundary adjustment has not yet been authorized by Congress, Izembek Refuge has been managed since 1982 as a administrative complex which includes the Pavlof/North Creek Units and Unimak Island. All lands within the administrative

boundary were considered in the development of this plan. The name Izembek Complex will be used to refer to all lands managed as part of Izembek Refuge, including the Pavlof/North Creek Units and Unimak Island.

Unimak Island and all other islands of the Aleutian chain, were set aside as the Aleutian Islands Reservation in 1913 by Executive Order 1733. As a result of the passage of the Alaska National Interest Lands Conservation Act (ANILCA) in 1980, these islands were merged with others to create the Alaska Maritime National Wildlife Refuge. Approximately 910,000 acres (93%) of Unimak Island were designated as wilderness. Only those lands that were withdrawn for selection by the Isanotski Corporation (village of False Pass) and two U.S. Coast Guard reservations on the west end were excluded from wilderness designation (Figure 1).

John Sarvis

Unimak Island was set aside in 1913 as a preserve for birds.

Lands that now comprise the Pavlof/North Creek Units were withdrawn for classification and study as possible additions to the refuge system as a result of the passage of the Alaska Native Claims Settlement Act (ANCSA) in 1971. At the same time, much of the Pavlof Unit was withdrawn for selection by village corporations under authority of Section 11(a)(1) and 11(a)(3) of ANCSA, and for selection by the regional Aleut Corporation under Section 14(h)(8). On November 16, 1978, the Secretary of the Interior invoked his emergency withdrawal powers to set aside approximately 110 million acres throughout Alaska, including what is now the Alaska Peninsula Refuge. These lands were withdrawn from settlement, location, entry and selection under public land laws for a period of three years. This action was intended to preserve and protect the resource values of these lands, while allowing Congress time to enact national interest lands legislation. On December 2, 1980, President Carter signed ANILCA, establishing the Alaska Peninsula National Wildlife Refuge.

The Pavlof Unit became part of the Alaska Peninsula Refuge in 1980.

John Sarvis

The Southern Alaska Peninsula Caribou Herd ranges across the Izembek Complex.

Most private lands were conveyed pursuant to ANCSA.

Without question, ANCSA had the greatest impact on non-Federal land ownership in the Izembek Complex (Figure 2). Currently 374,586 acres or 14.9% of the land within the refuge has been conveyed to eight Native village corporations. An additional 533,633 acres (21.2%) have been selected by seven village corporations and the regional Aleut Corporation. Of the selected lands, 81,928 acres have been selected by more than one entity. Many of the selections within the Complex are "overselections" that will eventually be relinquished. The Aleut Corporation alone has selected 494,487 acres of surface lands within the Complex, but is entitled to only 62,060.75 acres throughout the Aleut region (under Section 14(h)(8) of ANCSA). The land status will continue to change as selected lands are conveyed, relinquished, or rejected. Table 2 shows the amount of selected and conveyed land for each corporation as of November 1997.

Much of the Pavlof Unit was set aside as a deficiency withdrawal for village selections.

The general land entitlement framework established by ANCSA required that lands in the immediate vicinity of Native villages be made available for conveyance to the respective village corporation. However, many of the village corporations in the Aleut region were unable to select enough lands adjacent to the village to complete their entitlement (termed the "12(a)" entitlement) because they are located on small islands or within "old refuges". Old refuges, withdrawn prior to the passage of ANCSA in 1971, include both Unimak Island and Izembek Refuge proper. Village conveyances within these refuges are limited to 69,120 acres, less than the full entitlement for all but the smallest villages. In order to make additional lands available for village selections, much of the Pavlof Unit, as well as other lands in the Aleut region, were set aside as deficiency withdrawals under the authority of Section 11(a)(3) of ANCSA (PLO 5175, as amended by PLO 5394). However, when the land withdrawals expired, some villages had not yet selected sufficient land to fulfill their full entitlement under Section 12(a) of ANCSA.

Many Aleut villages are underselected in their land entitlements.

Many of the Aleut villages are also underselected in their 12(b) entitlement. Under Section 12(b) of ANCSA, the regional Aleut Corporation was authorized to reallocate 142,533 acres of land to the village corporations in the region. Originally, the Aleut Corporation intended to allocate this acreage to only 3 of the 13 village corporations in the region. Ultimately, the Aleut Corporation

allocated the acreage, based on population, among all the villages. However, eight village corporations remain underselected in their 12(b) entitlement. Five of these corporations (Nelson Lagoon, Atxam, Belkofski, King Cove, and Sanak) are likely to select additional acreage within the Complex under the authority of Section 1410 of ANILCA (Table 2).

Section 1410 of ANILCA gives underselected village corporations a renewed opportunity to fulfill their land entitlements by authorizing the Secretary of the Interior to withdraw twice the amount of unfulfilled entitlement, and to give the village corporation 90 days from receipt of notice to select from the withdrawn lands. These withdrawals are limited to lands that were previously withdrawn for the respective village corporations, including the deficiency areas.

The Isanotski Corporation has selected and prioritized its ANCSA land entitlement.

Under the authority of Section 1410, a total of 9,985 acres on Unimak Island and the tip of the Alaska Peninsula were withdrawn by the Secretary in 1994 for selection by the Isanotski Corporation of False Pass. The Corporation selected additional lands to fulfill its entitlement and prioritized the selections. To date the Isanotski Corporation is the only village corporation with interests in Izembek Complex that has selected sufficient lands to fulfill its entitlement under ANCSA 12(a) and 12(b).

Refuge land status will change as selected lands are conveyed or relinquished.

Other lands within the Complex may change status as underselected villages complete their land entitlements. In early 1995, the Secretary withdrew lands in the Dorenoi Bay area of the Pavlof Unit and elsewhere in Alaska Maritime Refuge for selection by Atxam and Sanak Native Corporations (PLOs 7110 and 7111). Sanak identified 9,669 acres of coastal lands to the north and south of Dorenoi Bay and Atxam Corporation identified 9,594 acres bordering the bay that would satisfy the total acreage entitlements for these two corporations. Unfortunately, neither corporation filed a selection application before the withdrawal terminated, so both corporations remain underselected in their 12(b) entitlements. It may be possible to withdraw these lands again at a later date, in order to complete the land entitlements of these corporations.

Additional lands within the Complex may be selected by the King Cove and Belkofski corporations. Both corporations have expressed interest in acquiring lands between Kinzarof and Izembek lagoons in

order to satisfy their 12(b) entitlements. However, this area is outside of the original 11(a)(1) withdrawal areas for these two villages. Because the area was never withdrawn for village selections, it is not available for selection under Section 1410 of ANILCA. Either corporation could select their remaining entitlement from within the Izembek Complex. However, these selections are limited to the original village withdrawal areas, Aleut Regional Corporation 14(h)(8) selections, deficiency areas, and lands that represent overselections by other village corporations. Shumagin Corporation, for example, is overselected by 315,793 acres, of which 86,468 acres are within the Izembek Complex (Figure 2). It is likely that the Shumagin Corporation would agree to relinquish over selections within the Complex.

Nine of eleven Native allotment claims have been patented.

There are eleven Native allotment land claims in the Izembek Complex, authorized pursuant to the Alaska Native Allotment Act of 1906, which allowed individual Natives to select up to 160 acres of land. So far, nine Native allotments have been conveyed (1,135.97 acres), and two more applications, totaling 180 acres, are awaiting approval (Table 3, Figure 3).

Approximately 313,038.7 acres of subsurface have been conveyed to the Aleut Corporation.

Generally, except for allowances for cemetery sites and historical places authorized by Section 14(h)(1) (Table 4), the conveyance rules of ANCSA did not allow regional corporations to select either the surface or subsurface in National Wildlife Refuges that were established prior to 1971 ("old refuges"). Regional corporations were allowed to select in-lieu subsurface lands, however, that were equivalent in acreage to the amount of village corporation surface selections within the "old refuge". These subsurface acres could be selected from the village withdrawal areas and the deficiency areas. Within Izembek Complex, a total of 61,547 acres of "old refuge" surface lands have been conveyed to Isanotski and King Cove village corporations, whereas the subsurface estate has been retained by the Service under the provisions of ANCSA. In compensation, the Aleut Corporation has selected 65,988 acres of subsurface within the Pavlof Unit to fulfill its 14(f) in-lieu entitlement. The coal, oil and gas estates under conveyed Native allotments in the Herendeen Bay/Port Moller area (794 acres) have also been selected by the Aleut Corporation. However, these 14(h)(8) selections are invalid and should be relinquished or rejected when the Bureau of Land Management completes adjudication of claims for the Aleut region.

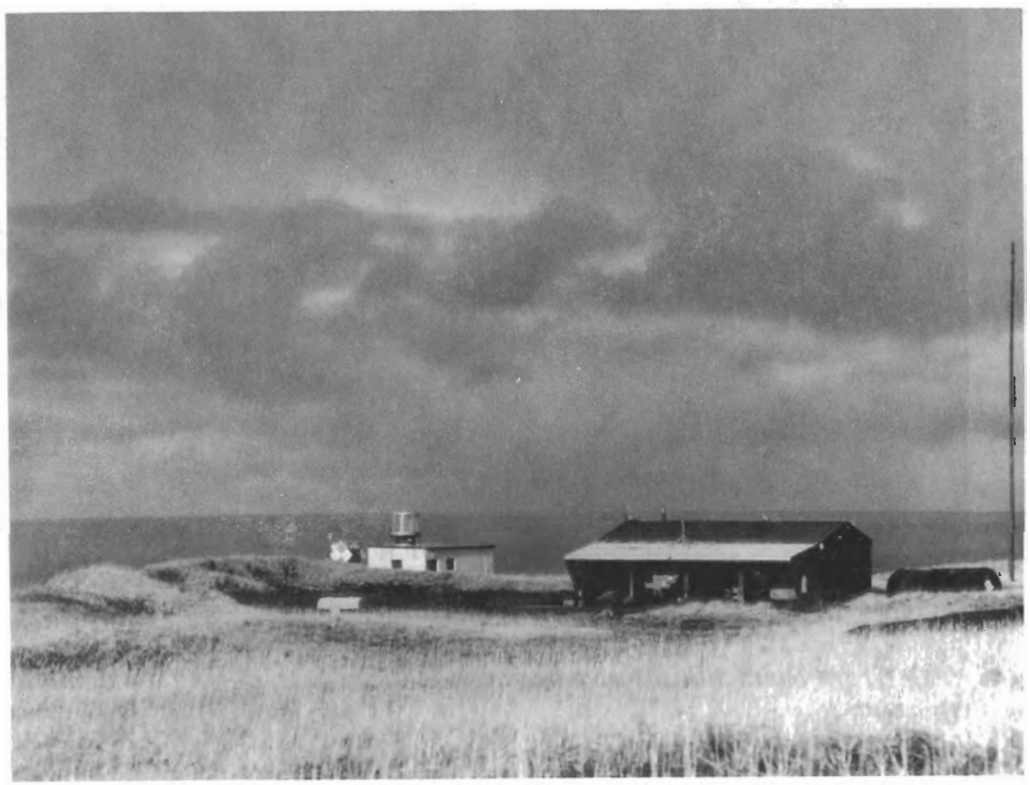
The subsurface estate beneath village corporation conveyances within the Pavlof Unit totals approximately 313,038 acres and has been conveyed to the Aleut Corporation.

Several military reservations lie within the boundaries of the Complex. Two U.S. Coast Guard reservations, set aside for lighthouse purposes in 1901, lie on the western end of Unimak Island. The Scotch Cap Reservation includes 8,852 acres of land on the southwestern tip of the island. The original station, including a concrete reinforced lighthouse, was destroyed by a tsunami in 1946. The present station has been automated and unstaffed since 1971.

Two large Coast Guard reservations are located on Unimak Island.

The Cape Sarichef Reservation is located on 1,845 acres on the northwestern tip of Unimak Island. A LORAN (Long Range Navigation) station, constructed in the early 1900's, operated until 1977 at the site. In 1959, the U.S. Air Force obtained a permit from the Coast Guard to construct a Distant Early Warning (DEW) site on the reserved lands. A cooperative agreement allowed the Air Force to construct, operate and maintain defense related facilities, including a White Alice Communications Site (WACS), on the

U.S.F.W.S. File Photo



Cape Sarichef Coast Guard Reservation

reservation. On July 27, 1979, after automation of the light station, the U.S. Coast Guard served Notice of Intent to relinquish the lands to the Service. Revocation of the reservation is pending cleanup of the site.

Three smaller U.S. Coast Guard reservations were set aside for lighthouse purposes in 1921 (E.O. 3406). Two of these, Arch Point and Moss Cape reservations, are located near Volcano Bay in the Pavlof Unit. The third, Cape Pankof, is located on the southernmost extremity of the Ikatan Peninsula on Unimak Island. Numerous other Coast Guard navigational aids are located on ANCSA conveyed lands and are protected by site easements.

Other Federal lands within the refuge boundaries include a U.S. Air Force withdrawal (PLO 2374) and two Federal Aviation Administration (FAA) withdrawals (ANS 176 as amended by PLOs

Christian Dau

The Grant Point White Alice Communications Site, during the demolition process in 1987.

Revocation of other Federal withdrawals are pending.

2451, 4575, and by Deed to the State of Alaska, May 27, 1966). The Air Force withdrawal is situated on 91.8 acres near Grant Point on the southern shore of Izembek Lagoon. In 1987 the WACS station located on the site was demolished by crushing and burying most of the buildings and associated facilities.

The Air Force has indicated its intent to revoke the withdrawal and return land management of the site to the Izembek Complex. Acceptance of these lands by the Service, however, is contingent upon cleanup of the site. The Air Force also maintains a Minimally Attended Radar Site (MARS) located on 8.3 acres of land within one (ANS 176) of the two FAA withdrawals.

U.S.F.W.S. File Photo

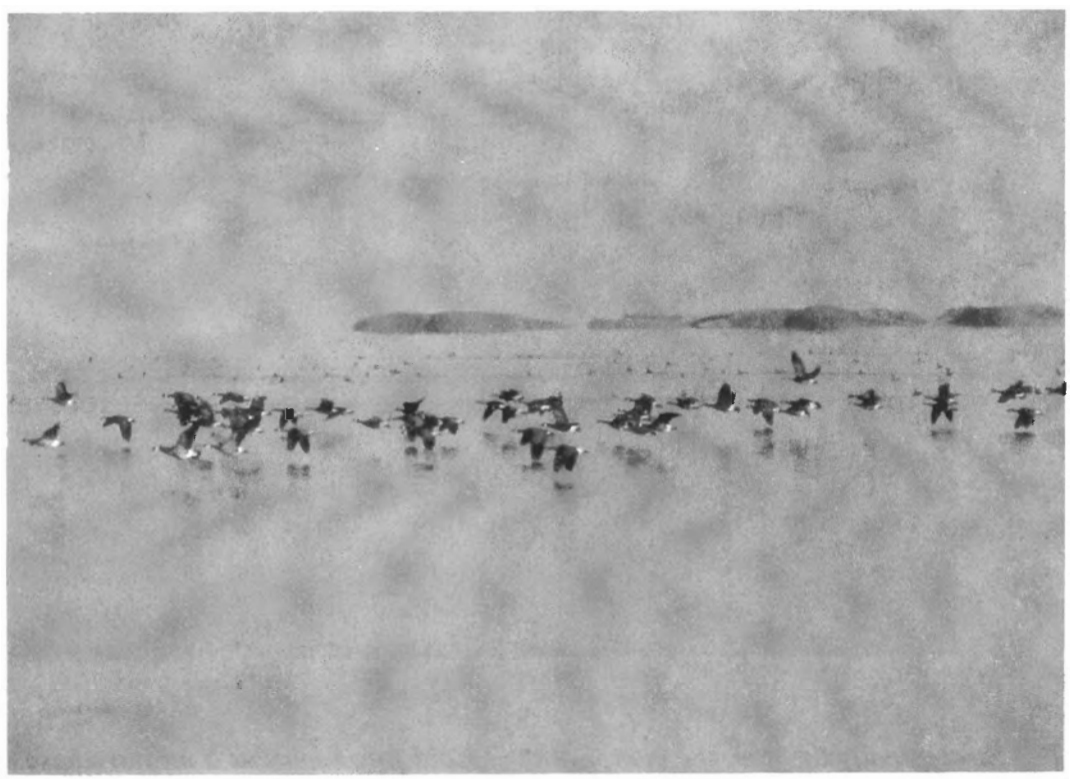
Strategically located, the community of Cold Bay began as a military base during World War II. Vestiges of the military history can be found throughout the Cold Bay area.

The FAA is a major land manager in the Cold Bay area.

The two FAA withdrawals (ANS 176 and PLO 2451) comprise nearly 1,704 acres situated north of the community of Cold Bay. Applications to revoke part of these lands were filed in 1988 and 1993. The FAA would retain approximately 457 acres, including a VORTAC (Omni-directional Very High Frequency Radio Range and Tactical Air Navigation System) facility, a borrow pit, the Air Force MARS site, an FAA ANICS (Alaskan National Interfacility Communication System) site and a right-of-way that would include the road, as well as power and control lines.

The State of Alaska was conveyed approximately 79,316 acres of land within the boundaries of the refuge. The majority is located in the Herendeen Bay/Port Moller area on the northeastern end of the refuge, although approximately 2,779 acres of State lands are in the vicinity of the community of Cold Bay

Izembek Lagoon is a State Game Refuge.



John Sarvis

The State of Alaska owns 79,316 acres of land, as well as submerged beds of navigable waters.

Following statehood in 1959, the State of Alaska asserted ownership of all submerged lands lying beneath tidal and inland navigable waters, and submerged lands extending 3 miles seaward of the coastline. The following year, Izembek Lagoon was designated a State Game Refuge (Alaska Statute 16.20.030). Ownership of other submerged lands within the Complex will be determined on the basis of navigability. All submerged beds of water determined to be navigable by a court of law belong to the State; if not navigable, the bed of the water body belongs to the adjacent landowner.

The State asserts one RS-2477 claim within the Complex.

The State of Alaska has claimed one RS-2477 "highway" within the boundaries of the Complex (Figure 4). Revised Statute 2477 granted a public right-of-way for construction of highways across unreserved Federal lands to guarantee access as lands transferred to State or private ownership. Under an RS-2477 claim, the Federal government retains ownership of the land, but the State is granted a right-of-way for a public highway. In order to qualify as a valid right-of-way under RS-2477, there had to be evidence of highway construction; i.e., the grant could not be perfected without actual construction. Rights-of-way were granted under R.S. 2477 until its repeal in 1976. The State and Federal governments disagree on the validity of some of these claims.

One point of contention between the Federal and State governments is the State's assertion that historical trails qualify as "highways" under RS-2477. Within Izembek Complex, the State is claiming recognition of an historic trail (Foster's Camp to Grass Valley) as an RS-2477 highway. This trail crosses 2.33 miles of refuge land and 6.36 miles of Native conveyed and selected lands. Currently, RS-2477 claims can only be determined in a court of competent jurisdiction.

Section 17(b) easements provide public access across private lands in the refuge.

The Alaska Federation of Natives and most Native Corporations have taken the legal stand that they do not and will not recognize a State claim under R.S. 2477, and that public access across their lands was provided under Section 17(b) of ANCSA. As lands are conveyed to Native corporations under ANCSA, easements are identified and established to allow the public access across Native lands to public lands or waters that otherwise might have been effectively blocked. These Section 17(b) easements are reserved with their specified use described in the conveyance document.

There are 63 documented Section 17(b) easements within the Complex, including site easements around navigational aids and trail easements that provide access to public lands across private lands.

U.S.F.W.S. File Photo

Now in ruins, the "Volcano Club", was once a popular gathering place overlooking Cold Bay. The building served as a military recreation center and Russian Officer's Club during World War II.

Figure 1
GENERALIZED LAND STATUS

Izembek National Wildlife Refuge Complex

0 5 10 15 20 25 30 miles

Albers Equal Area Projection
Central Meridian: 153° W
Contour Interval: 1,000 feet

- Native conveyed
- Native selected
- State conveyed
- State selected
- Other private
- Other Federal
- Conflicting selections
- FWS administered land within Izembek Complex
- Other refuge areas
- Designated wilderness
- Regional corp. in-lieu subsurface selections
- Glaciers
- Refuge boundary

The Izembek Refuge Complex includes Izembek NWR, Unimak Island, and the Pavlof and North Creek Units of Alaska Peninsula NWR.

Izembek NWR, Unimak Island, and Amak Island are subject to ANCSA 22(g).

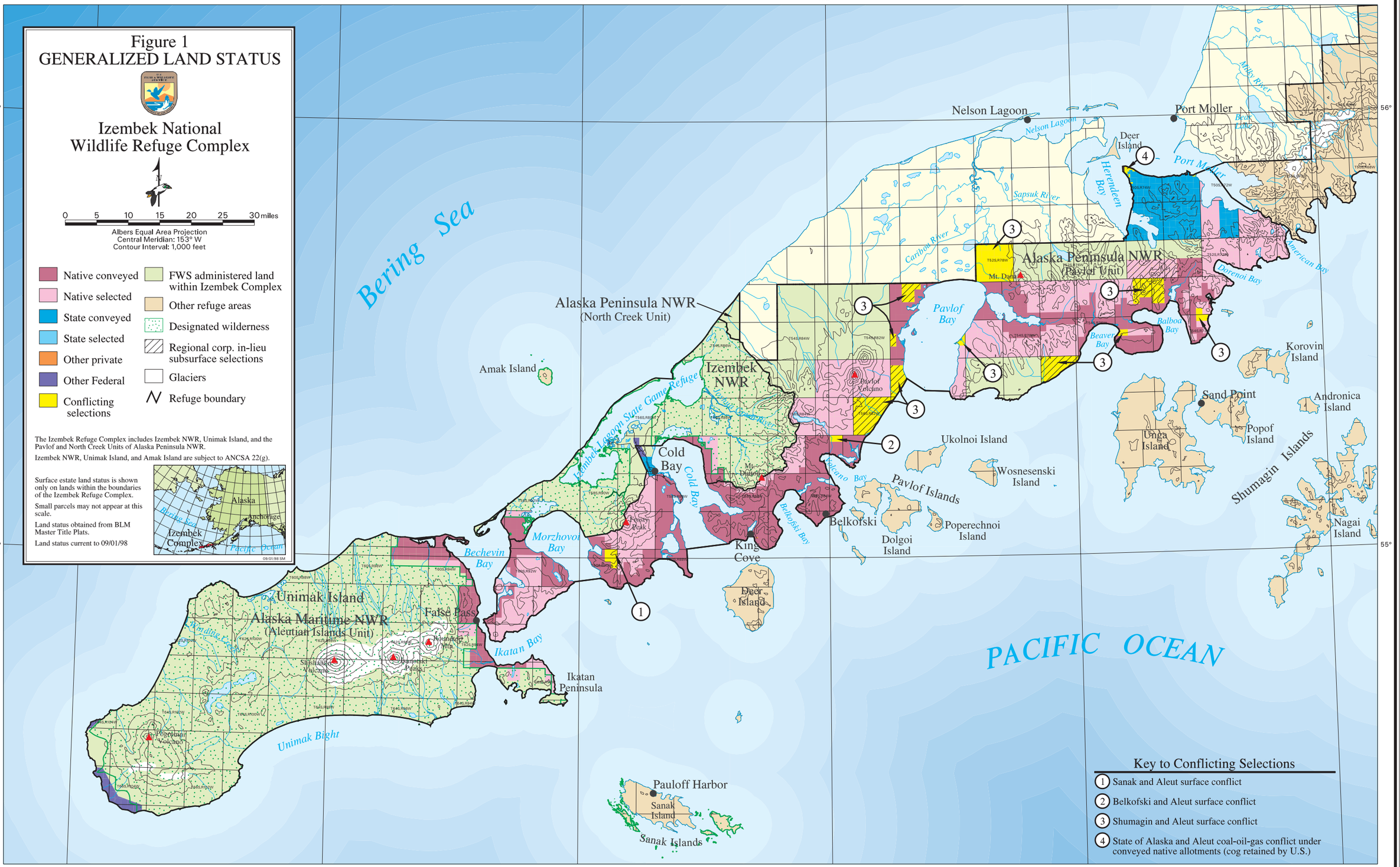
Surface estate land status is shown only on lands within the boundaries of the Izembek Refuge Complex.

Small parcels may not appear at this scale.

Land status obtained from BLM Master Title Plats.

Land status current to 09/01/98

09/01/98 SM



Key to Conflicting Selections

1. Sanak and Aleut surface conflict
2. Belkofski and Aleut surface conflict
3. Shumagin and Aleut surface conflict
4. State of Alaska and Aleut coal-oil-gas conflict under conveyed native allotments (cog retained by U.S.)

Figure 2
NATIVE CORPORATION LANDS

Izembek National Wildlife Refuge Complex

0 5 10 15 20 25 30 miles

Albers Equal Area Projection
Central Meridian: 153° W
Contour Interval: 1,000 feet

SURFACE ESTATE LAND STATUS

	Conveyed	Selected
Atxam		
Belkofski		
Isanotski		
King Cove		
St. George Tanaq		None
Tanadgusix		
Sanak		
Shumagin		
Aleut	None	

Other Status
- Aleut in-lieu subsurface selections
- Conflicting selections
- Other status
- FWS administered land within Izembek Complex
- Designated wilderness
- Other refuge areas
- Glaciers
- Refuge boundary

The Izembek Refuge Complex includes Izembek NWR, Unimak Island, and the Pavlof and North Creek Units of Alaska Peninsula NWR.

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Surface estate land status is shown only on lands within the boundaries of the Izembek Refuge Complex.

Small parcels may not appear at this scale.

Land status obtained from BLM Master Title Plats.

Land status current to 09/01/98

09/01/98 SM

Key to Conflicting Selections

1. Sanak and Aleut surface conflict
2. Belkofski and Aleut surface conflict
3. Shumagin and Aleut surface conflict
4. State of Alaska and Aleut coal-oil-gas conflict under conveyed native allotments (cog retained by U.S.)

Table 2. Land status of Izembek Refuge Complex as of November 1997.

	Acres[1] Patented or Interim Conveyed (IC)	Acres[2] Selected	Remaining Entitlement in Izembek Complex[3]
Surface			
Atxam Corporation	20,620.0	48.0	6,382.2
Belkofski Corporation	49,932 .1	1,280.1	8,997.1
Isanotski Corporation	64,154.8	17,007.0	12,126.8
King Cove Corporation	102,724.3	5,396.4	19,105.5
Sanak Corporation	34,714.8	3,200.0	9,363.0
Shumagin Corporation	77,414.6	86,468.4	23,841.0
St. George Tanaq Corporation	12,586.4	0	0
St. Paul Tanadgusix Corporation	12,439.0	7,674.5	7,674.5
Nelson Lagoon Corporation	0	0	8,908.21
Native Corp Conflicting Selections[4]	0	81,928.5	0
Aleut Regional Corporation	0	494,487.0	0-8,795[5]
Cemetery & Historic Sites		217[6]	217[6]
Native Allotments	1,135.97[7]	180[6]	180[6]
Small Parcels	416.3	0	0
State of Alaska	79,316.1	6.1	6.1
Total Surface	**455,454.4**		**105,596.4[8]**
Subsurface			
Aleut Regional Corporation			
Coal, Oil, Gas Only		794.25[7]	
Entire Subsurface Estate	313,038	67,051.7	61,548[9]
State of Alaska			
Coal, Oil, Gas Only		1,017.4	
Entire Subsurface Estate	79,316.1		
Total Subsurface	**392,354.1**		**61,548.0**

Footnotes on next page

Table 2 *Footnotes*

[1]Conveyed and selected acreage figures are approximate. Except where noted, all figures are taken from the Service's Alaska Priority System (APS) model. Acreages may differ from BLM summaries due to differences in measurement techniques.

[2]This column is not totaled because some areas are selected by more than one entity and the acreage is listed twice. Acreage figures are for selections within Izembek Complex only. Other selections may exist outside of the refuge boundaries.

[3]Represents only that portion of the remaining entitlement likely to be selected in Izembek Refuge Complex.

[4]Includes 77,448.47 acres selected by the Shumagin Corporation and the Aleut Regional Corporation; 1,280 acres selected by Belkofski Corporation and the Aleut Regional Corporation; and 3,200 acres selected by Sanak Corporation and the Aleut Regional Corporation.

[5]The remaining entitlement of the Aleut Corporation largely depends on the outcome of Adak Land Exchange negotiations. Whatever the outcome, it is likely the Aleut Corporation will eventually relinquish most of its selections within the Izembek Complex.

[6]Unsurveyed acreage from BLM records.

[7]Surveyed acreage from BLM records.

[8]This represents the maximum remaining entitlement. Actual entitlement acreage may range from 96,801.4 to 105,596.4.

[9]Remaining entitlement depends on whether King Cove or Belkofski Corporations select additional acreage within Izembek Refuge proper. Additional conveyances of land out of this "old refuge" would entitle the Aleut Regional Corporation to additional "in lieu" subsurface.

Table 3. Small parcel inholdings depicted in Figure 3.

Parcel No.	Category/ BLM Serial #	U.S. Survey	Legal Description Seward Meridian, Alaska	Acres
1	Native Allotment	7851	T. 50 S., R. 74 W., sec. 6, 7 T. 50 S., R. 75 W., sec. 1, 12	136.08
2	Native Allotment	7851	T. 50 S., R. 74 W., sec. 6	154.31
3	Native Allotment	7851	T. 50 S., R. 74 W., sec. 5, 6	150.00
4	Native Allotment Application AA8189		T. 50 S., R. 74 W., sec. 5	140[1]
5	Native Allotment Application AA6465 (Parcel D)[2]		T. 51 S., R. 74 W., sec. 14 S2NW T. 51 S., R. 74 W., sec. 15 SESENE	30[1] 10[1]
6	Native Allotment	7851	T. 50 S., R. 74 W., sec. 6	159.99
7	Native Allotment	7851	T. 50 S., R. 74 W., sec. 7	129.99
8	Native Allotment	11284	T. 50 S., R. 74 W., sec. 7	119.96
9	Native Allotment Parcel B	11284	T. 50 S., R. 74 W., sec. 17, 18	80.00
10	Native Allotment	6285	T. 59 S., R. 86 W., sec. 9, 10, 15, 16	159.97
11	Native Allotment	7389	T. 59 S., R. 86 W., sec. 15, 22	5.73
	Other patents[3]			416.3

[1]Approximate acreage for unsurveyed parcel.

[2]Only Parcel D is located within the boundaries of the refuge.

[3]There are over 50 other small parcels within the refuge. These parcels were originally patented as headquarters sites, homesteads, mission sites, trade and manufacturing sites, homesites, and scrip to soldiers and sailors. Acreage figures were obtained using the Service's APS model and may differ from BLM records due to differences in measuring techniques.

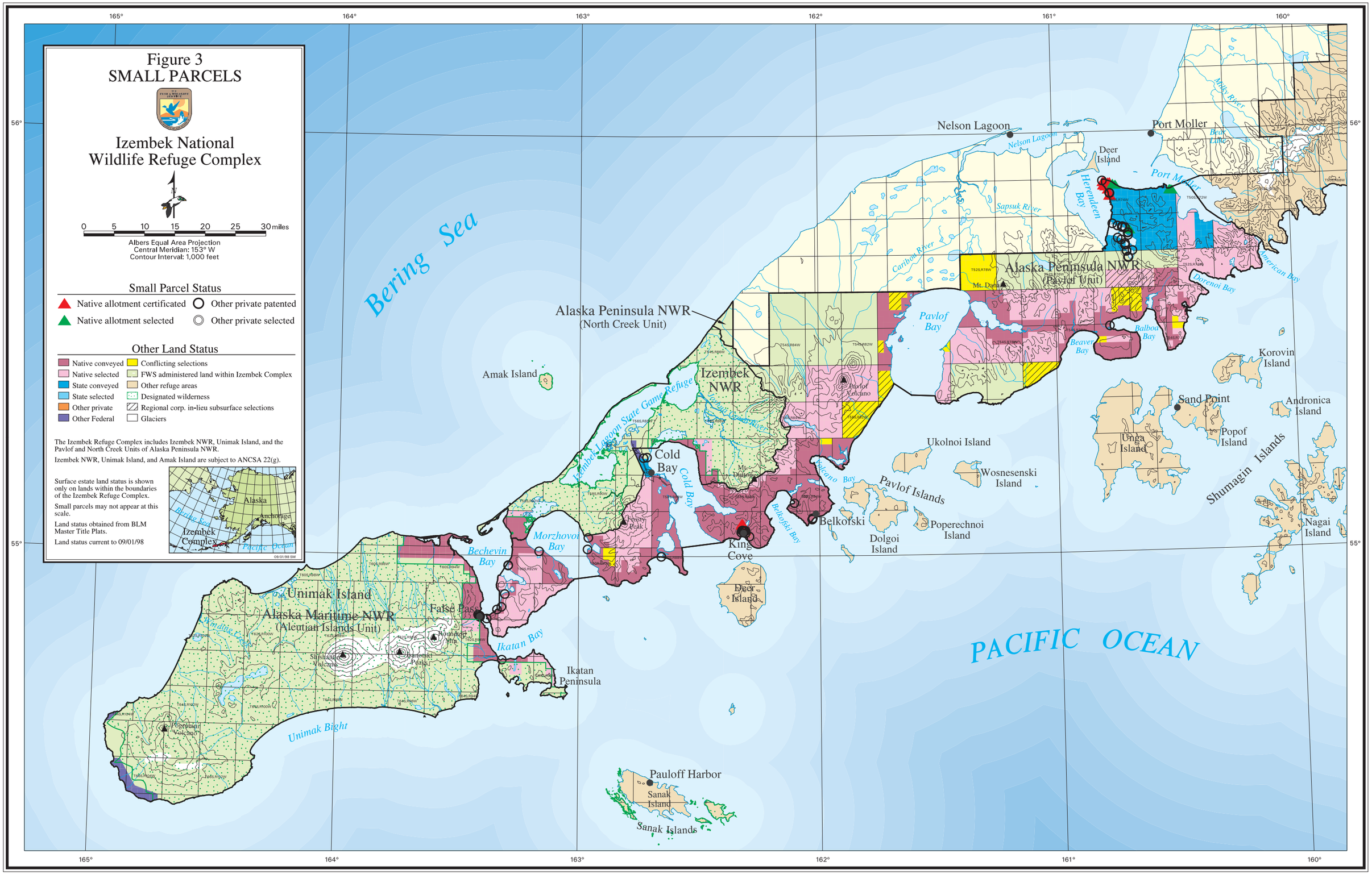


Figure 3
SMALL PARCELS
Izembek National
Wildlife Refuge Complex
0 5 10 15 20 25 30 miles
Albers Equal Area Projection
Central Meridian: 153° W
Contour Interval: 1,000 feet
Small Parcel Status
Native allotment certificated
Native allotment selected
Other private patented
Other private selected
Other Land Status
Native conveyed
Native selected
State conveyed
State selected
Other private
Other Federal
Conflicting selections
FWS administered land within Izembek Complex
Other refuge areas
Designated wilderness
Regional corp. in-lieu subsurface selections
Glaciers
The Izembek Refuge Complex includes Izembek NWR, Unimak Island, and the Pavlof and North Creek Units of Alaska Peninsula NWR.
Izembek NWR, Unimak Island, and Amak Island are subject to ANCSA 22(g).
Surface estate land status is shown only on lands within the boundaries of the Izembek Refuge Complex.
Small parcels may not appear at this scale.
Land status obtained from BLM Master Title Plats.
Land status current to 09/01/98
Alaska
Anchorage
Izembek Complex
Bering Sea
Pacific Ocean
09/01/98 SM
Bering Sea
PACIFIC OCEAN
Nelson Lagoon
Port Moller
Deer Island
Herendeen Bay
Sapsuk River
Caribou River
Alaska Peninsula NWR
(Pavlof Unit)
Mt. Dana
Dorenoi Bay
American Bay
Alaska Peninsula NWR
(North Creek Unit)
Pavlof Bay
Balboa Bay
Beaver Bay
Korovin Island
Amak Island
Izembek NWR
Izembek State Game Refuge
Izembek Lagoon
Pavlof Volcano
Sand Point
Andronica Island
Popof Island
Unga Island
Ukolnoi Island
Wosnesenski Island
Shumagin Islands
Cold Bay
Mt. Dutton
Volcano Bay
Pavlof Islands
Belkofski Bay
Belkofski
Frosty Peak
Poperechnoi Island
Dolgoi Island
Nagai Island
King Cove
Morzhovoi Bay
Bechevin Bay
Deer Island
Unimak Island
Alaska Maritime NWR
(Aleutian Islands Unit)
False Pass
Roundtop Mtn.
Shishaldin Volcano
Isanotski Peaks
Ikatan Bay
Ikatan Peninsula
Pogromni Volcano
Unimak Bight
Pauloff Harbor
Sanak Island
Sanak Islands
165°
164°
163°
162°
161°
160°
56°
55°

Table 4. Regional Aleut Corporation selections[1] under Section 14(h)(1) of ANCSA.

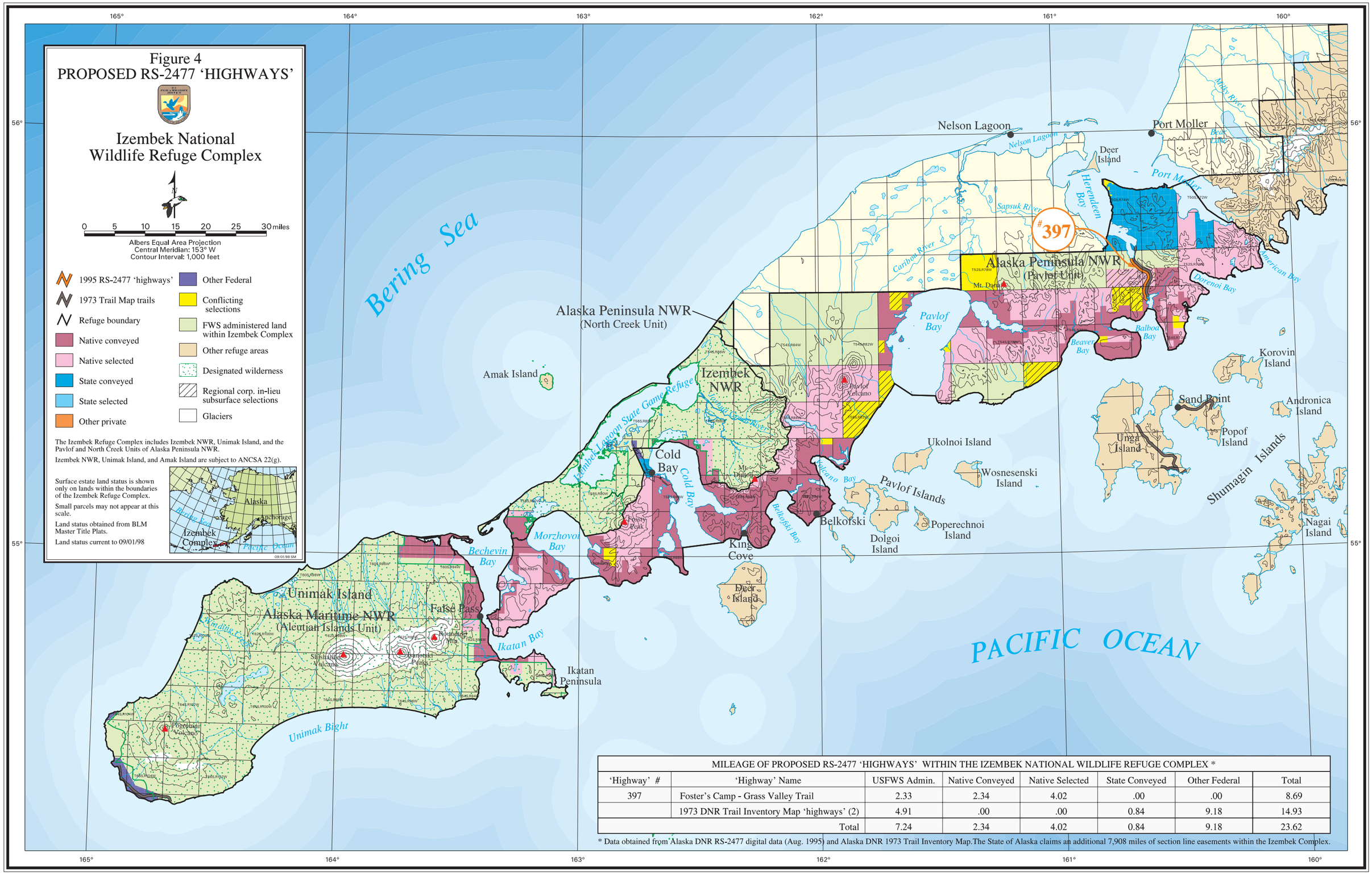
Cemetery Site/Historical Place Location (Seward Meridian, Alaska)	Acres Selected in Refuge	BLM Application Number
T. 60 S., R. 98 W., sec. 25, 26	10	AA-12244[2]
T. 61 S., R. 100 W., sec. 17	10	AA-12245
T. 61 S., R. 101 W., sec. 12	10	AA-12246
T. 63 S., R. 102 W., sec. 8	10	AA-12247[2]
T. 64 S., R. 104 W., sec. 23, 24	25	AA-12248
T. 52 S., R. 70 W., sec. 19	5.5	AA-12251
T. 50 S., R. 73 W., sec. 12	9.1	AA-12252[3]
T. 55 S., R. 87 W., sec. 29	8	AA-12255
T. 57 N., R. 90 W., sec. 18	8	AA-12256
T. 58 S., R. 91 W., sec. 4	10	AA-12257
T. 58 S., R. 91 W., sec. 4, 9	8	AA-12258
T. 58 S., R. 90 W., sec. 8, 9, 16,17	34	AA-12259/AA-12260[4]
T. 59 S., R. 92 W., sec. 4	12	AA-12261
T. 61 S., R. 93 W., sec. 25	10	AA-12262
T. 55 S., R. 86 W., sec. 33	12	AA-12268
T. 55 S., R. 86 W., sec. 18, 19, 20	10	AA-12269
T. 55 S., R. 86 W., sec. 32	10	AA-12270
T. 56 S., R. 88 W., sec. 35, 36	10	AA-12271
T. 58 S., R. 91 W., sec. 5, 8	10	AA-12272
T. 58 S., R. 92 W., sec. 20	10	AA-12273
T. 58 S., R. 92 W., sec. 25, 36	10	AA-12274
Total	**241.6**	

[1]Certified eligible for conveyance by the Bureau of Indian Affairs unless otherwise noted. Acreages are unsurveyed and approximate.

[2]Scheduled to be reinvestigated. Not currently certified eligible for conveyance.

[3]Application was rejected in 1987; rejection decision was rescinded in part in 1990; application was rejected in part in 1996. Adjudication is pending on remaining acreage.

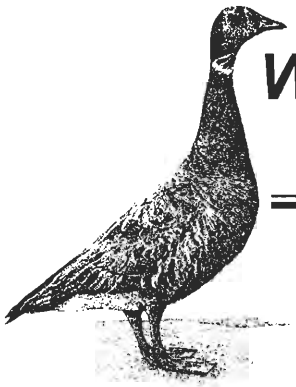
[4]Submitted as separate applications, but combined into one since they are both part of the same site.



MILEAGE OF PROPOSED RS-2477 'HIGHWAYS' WITHIN THE IZEMBEK NATIONAL WILDLIFE REFUGE COMPLEX *

'Highway' #	'Highway' Name	USFWS Admin.	Native Conveyed	Native Selected	State Conveyed	Other Federal	Total
397	Foster's Camp - Grass Valley Trail	2.33	2.34	4.02	.00	.00	8.69
	1973 DNR Trail Inventory Map 'highways' (2)	4.91	.00	.00	0.84	9.18	14.93
	Total	7.24	2.34	4.02	0.84	9.18	23.62

* Data obtained from Alaska DNR RS-2477 digital data (Aug. 1995) and Alaska DNR 1973 Trail Inventory Map.The State of Alaska claims an additional 7,908 miles of section line easements within the Izembek Complex.



What resources are we trying to protect?

Volcanism, glaciation and marine deposition have sculpted the landscape of the Izembek Refuge Complex. The refuge is treeless and generally restricted to low-growing species that can withstand cool summer temperatures, frequent strong winds, shallow acidic soils and a short growing season. Pacific coastal plants predominate, although arctic species are also common. Freshwater lakes and ponds punctuate the low tundra, while glaciers, snowfields and active volcanos present a dramatic backdrop. The most prominent landforms in the refuge include Pavlof Volcano, the heavily-glaciated Shishaldin Volcano, Frosty Peak and the jagged spires of Aghileen Pinnacles. Topography varies from sea level to rugged volcanic peaks exceeding 9,000 feet (USFWS 1985).

These diverse physiographic features and their associated plant communities provide the food and habitat necessary for the survival of an extraordinary abundance of wildlife.

Section 303(4)(B) of ANILCA states that the Izembek National Wildlife Refuge was established and shall be managed:

"...(i) to **conserve fish and wildlife populations and habitats in their natural diversity** including, but not limited to waterfowl, shorebirds, and other migratory birds, brown bears, and salmonids;

(ii) to **fulfill the international treaty obligations** of the United States with respect to fish and wildlife and their habitats;

(iii) to **provide** in a manner consistent with subparagraphs (i) and (ii), **the opportunity for continued subsistence use by local residents;**

(iv) to **ensure**, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), **water quality and necessary water quantity within the refuge."**

Items (i) through (iv) above are common purposes of all three refuges that comprise the Izembek Complex. In addition, conservation of "the habitats and populations of marine mammals, marine birds and other migratory birds, the marine resources upon which they rely, bears, caribou and other mammals" is a primary purpose of the Alaska Maritime Refuge, including Unimak Island. As part of the Alaska Peninsula Refuge, a principal purpose of the Pavlof/North Creek Units is the conservation of "brown bears, the Alaska Peninsula caribou herd, moose, sea otters and other marine mammals, shorebirds and other migratory birds, raptors, including bald eagles and peregrine falcons, and salmonids and other fish"

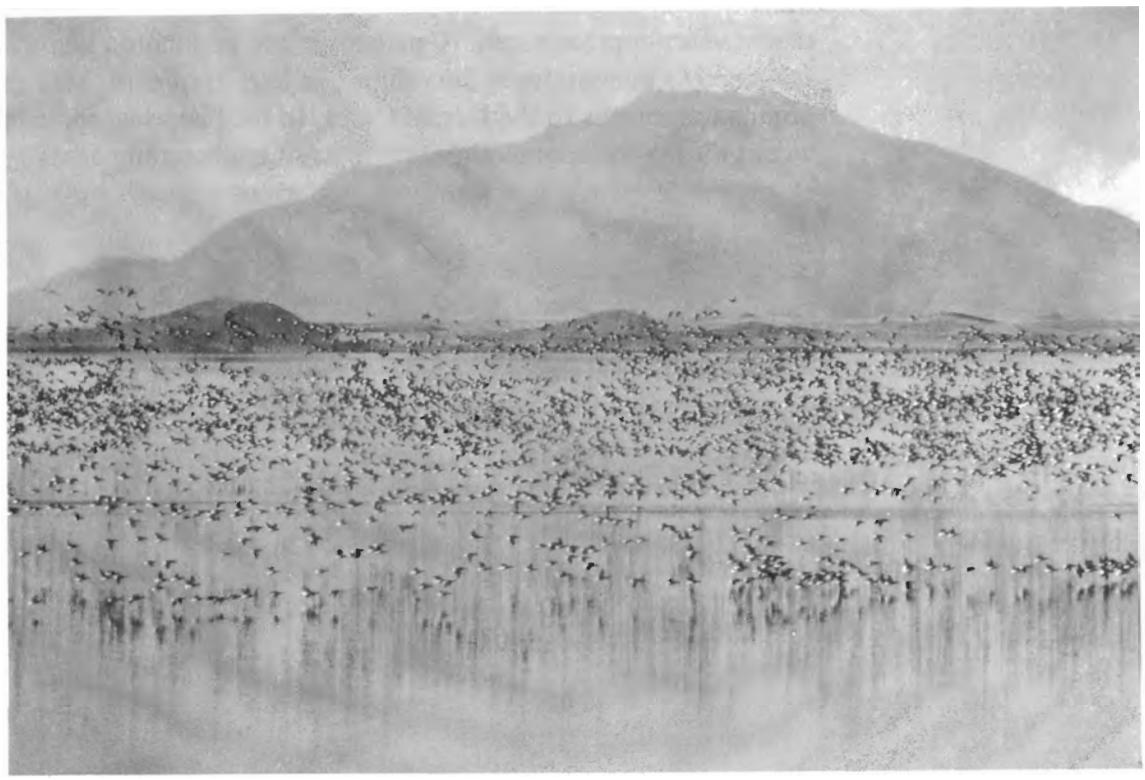
John Sarvis

The conservation of marine mammals, like these Steller sea lions on Unimak Island, is one purpose of the Izembek Complex. In response to a dramatic decline in numbers throughout its range, the Steller sea lion was afforded protection under the Endangered Species Act in 1990.

Fish and Wildlife

A striking diversity of fish, wildlife, and plants can be found within the Izembek Complex.

More than 200 species of resident and migratory wildlife and nine species of fish are found in the Izembek Refuge Complex. The refuge is best known as an international crossroad for migrating waterfowl and shorebirds. The 30-mile long Izembek Lagoon contains one of the largest eelgrass (*Zostera marina*) beds in the world and the largest in North America. The lagoons, tidelands and freshwater lakes and ponds provide food and shelter for the millions of waterfowl and shorebirds that use the area on their way to and from nesting grounds to the north. The extraordinary abundance and diversity of waterfowl has attracted international attention. In 1986, Izembek Refuge and Lagoon became the first wetland site in the United States to receive global recognition by being named to the *List of Wetlands of International Importance* (USFWS 1997b).



John Sarvis

The Pacific flyway population of brant stages in the Izembek area each spring and fall.

The Izembek Complex is perhaps best known for the large numbers of brant that use the area during spring and fall migrations. Most, or all, of the Pacific brant population can be found in the Izembek area each fall. Beginning in late August and peaking in mid to late September, approximately 150,000 brant depart from breeding grounds in Russia, Canada and Alaska to converge on the lagoons and bays of the Izembek Complex (Distribution map, Figure A-3).

Brant are highly dependent on the nutrients provided by the extensive eelgrass beds of the Izembek lagoons (Kinzarof, Izembek and Big lagoons) and protected bays (St. Catherine's Cove and Hook Bay). Brant spend from 30 - 50 days in the Izembek area, replenishing nutrient reserves depleted by nesting and molting, and preparing for the arduous migration to southern wintering grounds. In late October to early November, most brant depart on a nonstop, trans-oceanic migation to wintering areas in Mexico. However, in recent years approximately 10 percent of the population has remained to overwinter in the refuge. In late April/early May the population returns to the Izembek area, to feed and rest for several weeks during the spring migration to northern breeding areas.

Pacific Brant

David Ward

The entire world population of emperor geese passes through Izembek Complex twice each year.

The entire world population of emperor geese, estimated at 64,000 individuals in 1997 (R. King, pers. comm.), migrates through the Izembek Complex each spring and fall on the way to and from breeding grounds in Russia and southwestern Alaska (Distribution map, Figure A-4). Emperor geese forage primarily on eelgrass in the lagoons, but also feed on mussels and other invertebrates found along the shoreline at low tide, and crowberries on the tundra. Most of the emperor goose population winters from Port Moller westward along the Aleutian chain of islands. More than 20 percent of the population overwinters in Izembek and Kinzarof lagoons.

Emperor geese remain in family groups throughout the fall migration.

John Sarvis

Most (≥90 %) of the world population of Steller's eiders traverse the Bering Sea from nesting grounds in the Arctic to molt in Izembek and Kinzarof lagoons (Distribution map, Figure A-4). Approximately 50 percent of the population overwinters in the lagoons and bays of Izembek Complex, feeding on crustaceans, molluscs and other marine invertebrates.

Overwintering Steller's eiders are highly dependent on the continued health of the lagoons and bays that foster eelgrass growth. Eelgrass communites are among the most diverse and productive in the world, providing food and nursery areas for fish, crabs, and many other invertebrates. The invertebrates, in turn, provide an essential food base for the Steller's eider population.

The world population of Steller's eiders has declined from approximately 500,000 individuals in 1972 (Uspenski 1972, cited by Bellrose 1980) to about 150,000 in 1996 (USFWS 1997b). The decline prompted listing the eider as a threatened species under the Endangered Species Act in June of 1997.

U.S.F.W.S. File Photo

Steller's eiders nest primarily along the Arctic coast of Siberia and Alaska.

The Complex supports a diversity of other waterbirds, shorebirds, seabirds, raptors, neotropical migrants and resident landbirds.

Tundra swans, ducks, Canada geese and many other birds use the refuge.

Approximately 150,000 ducks and 55,000 Taverner's Canada geese stage in the Complex each fall. Many waterfowl species nest within the refuge, including approximately 9,000 mallards, 1,200 northern pintails, 4,700 greater scaup, 2,200 black scoter, and 600 tundra swans (Distribution map, Figure A-5). Over 20 species of shorebirds migrate through the area on the way to and from breeding grounds, and at least 16 species of neotropical migrants nest within the Complex. Many seabirds, including storm-petrels, cormorants, puffins, oystercatchers, guillemots, gulls, and terns, nest on the rocks and islets offshore. Raptors prey on the many species of birds and fish that occur within the refuge. Bald eagles, golden eagles, rough-legged hawks, northern harriers, gyrfalcons, Peale's peregrine falcons, merlins, short-eared owls and snowy owls can all be found within the Izembek Complex.

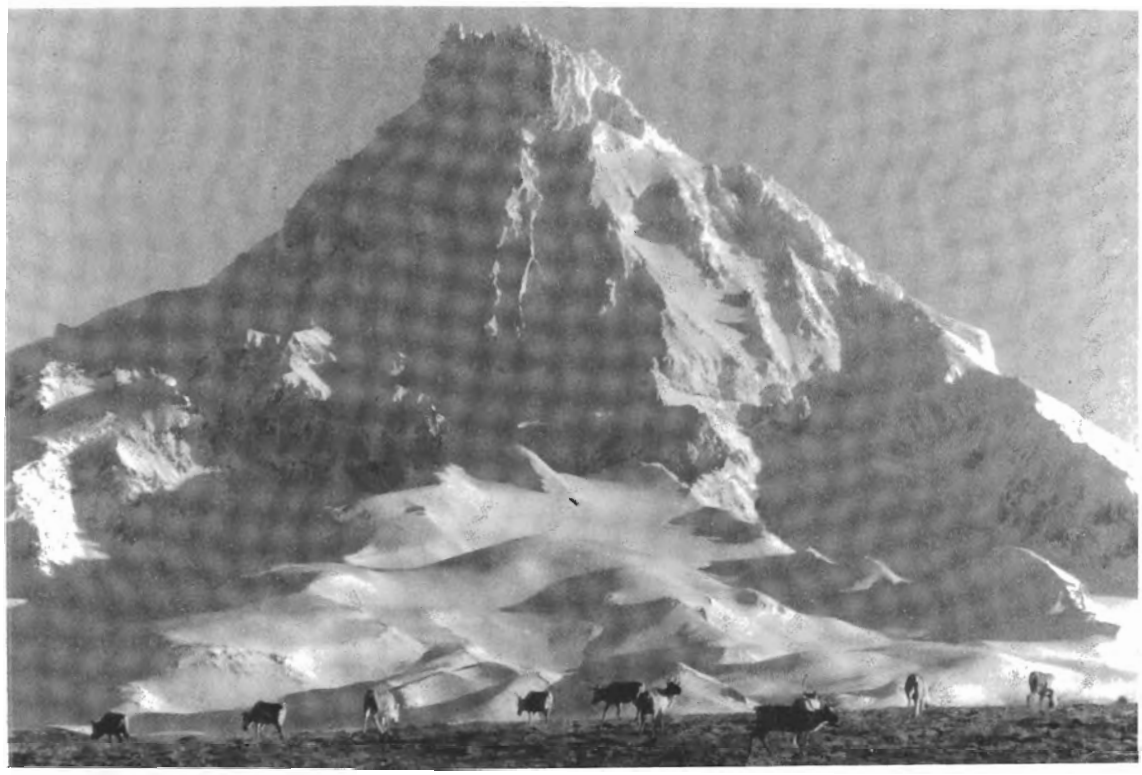
Susan Steinecher

Spectacular concentrations of migratory shorebirds visit the Complex each year. Some species, like these rock sandpipers, nest on the refuge.

Large mammals include brown bears, caribou and moose.

Brown bears occur throughout the Complex, including Unimak Island (Distribution map, Figure A-6). High-use winter denning areas are typically in mountainous terrain greater than 1,000 feet in elevation, whereas high summer-use areas are near salmon streams. Extensive fish runs in the Joshua Green watershed attract the highest density of brown bears in the lower Alaska Peninsula. This watershed is a key natal area; bears produced here disperse throughout the lower half of the Alaska Peninsula (Dau 1990)

The Southern Alaska Peninsula Caribou Herd (SAPCH) ranges from Port Moller to Unimak Island (Distribution map, Figure A-7). Each fall, nearly the entire herd passes through, and often overwinters, in the narrow isthmus between Izembek and Kinzarof lagoons. In



John Sarvis

Although population numbers may vary from year to year, aerial surveys in 1997 indicated that about 3,800 caribou inhabit the Complex, including more than 600 animals on Unimak Island.

March and April the herd returns to calving areas within and to the north of the Complex boundary, primarily in the Black Hills-Trader Mountain and Caribou River areas. A smaller portion of the caribou herd inhabits Unimak Island.

Although moose have been on the Alaska Peninsula since the early 1900's, most of the population inhabits the upper peninsula area north of Port Moller. However, small numbers can be found within the Refuge Complex around Canoe Bay and to the south of Herendeen Bay.

Wolves, wolverines, foxes, minks and many other mammals live in the Izembek Complex.

Wolves and wolverines are widespread but not abundant. Wolves prey on caribou and moose, as well as birds, Arctic ground squirrels, hares, and other small game. Wolverines prey on many of the same species, but also scavenge for carrion along beaches and streams. Other land mammals that live in the Complex include foxes, river otters, mink, weasels, lemmings, shrews, and voles.

John Sarvis

Red foxes are common residents of the Complex.

John Sarvis

Rich marine resources support a variety of marine mammals. The sand and gravel islands of Izembek and Kinzarof lagoons provide critical haul-out areas for sea otters and harbor seals.

Marine mammals are common in the productive waters surrounding the Complex. Many of these animals haul out or rest on offshore rocks and islands beyond the Complex boundary. However, sand and rock beaches along the coastlines do provide haulout areas for a variety of marine mammals including sea otters, harbor seals, fur seals, and Steller sea lions. Harbor porpoises and whales (gray, killer and minke) may be seen in the offshore waters and in the bays and lagoons of the Complex.

Dolly Varden, arctic char, steelhead trout and five species of salmon occur within the Izembek Complex. Salmon spawn in all of the major drainages on the refuge and are an integral component of the refuge foodweb. The nutrients released from the decaying carcasses

of spawned-out salmon recharge freshwater systems and boost productivity.

Salmon are an integral component of the foodchain and nutrient cycle.

Pink and chum salmon are the dominant species on the south side of the Alaska Peninsula, whereas sockeye are found in nearly every drainage on the north side of the Peninsula and Unimak Island. Large coho runs occur in drainages entering the west side of Cold Bay and in streams entering Urilia Bay and Izembek Lagoon.

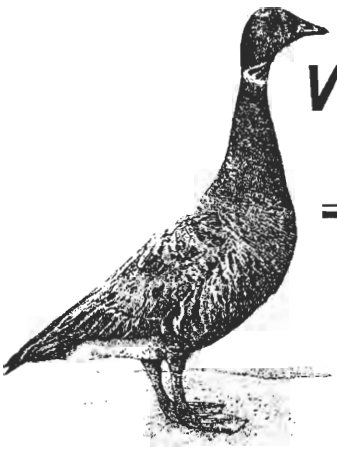
U.S.F.W.S. File Photo

Brown bears are adept at catching fish and concentrate at salmon producing streams in the summer. Large bears may gain as much as 400 pounds of body fat prior to winter denning.

The Sapsuk River is the major chinook producer. Most of the river lies outside of the refuge boundary, however, important spawning areas lie within the Pavlof Unit (USFWS 1994). All salmon species are harvested commercially in the waters surrounding the Complex, whereas sockeye and coho are the primary species taken for subsistence use.

John Sarvis

In recognition of its value to migratory shorebirds, Izembek Complex is being considered for designation as a <u>Reserve of International Importance</u> by the Western Hemispheric Shorebird Reserve Network.



What methods do we have for resource protection?

Existing provisions of law offer some degree of resource protection on private lands. In addition to existing Federal and State legislation, the Service can work with the landowner in a variety of ways to ensure that wildlife resources are conserved on their lands. This chapter will briefly review existing levels of protection and then outline additional options that are available to the Service and interested landowners.

Existing Level of Protection

Federal and State legislation has been enacted to protect target resources. For example, development in the vicinity of lakes or rivers is subject to State and local water quality laws. Federal laws regulate human activity that would impact habitat or populations of endangered or threatened species, such as the Steller's eider and Steller sea lion. In addition to these regulations the following offer some measure of protection:

ANCSA: Sections 14(h)(1) & 22(g)

Two provisions of ANCSA grant a limited level of resource protection. Section 14(h)(1) provides for the conveyance of cemetery sites and historical places to regional corporations. This provision allowed Alaska Natives to select and control areas they deem to have cultural significance. Sites must be certified by the Bureau of Indian Affairs (BIA). To date, 19 sites have been certified eligible for conveyance within the Izembek Refuge Complex boundary, and are pending adjudication (Table 4). Since these sites are known to have cultural, religious, or historical significance, corporation shareholders likely will prefer that they remain in an undeveloped state. Hence, existing wildlife values are likely to be preserved in these areas. In addition, a covenant in the conveyance documents requires that historical and cultural values of these sites

be protected. The 14(h)(1) sites within "old refuge" areas are also subject to the provisions of Section 22(g) of ANCSA as outlined within 43 CFR 2653.5.

Section 22(g) specifies two title restrictions that pertain to conveyed lands within the boundaries of pre-ANCSA wildlife refuges (See Figure 1, the Generalized Land Status Map. All conveyances within Izembek Refuge proper and Unimak Island are subject to 22(g)):

1. The United States retains a right of first refusal on the sale of former refuge lands that were conveyed to a Village Corporation.
2. Former refuge lands remain subject to the laws and regulations governing the use and development of the refuge.

The right of first refusal is a statutory right and procedures for implementation are provided for in 43 CFR 2650.4-6. The United States has 120 days to respond after being advised of a bona fide offer to purchase. If the right is not exercised, and that sale is completed, the right of first refusal terminates for that particular parcel. The right of first refusal will do little to protect refuge resources unless funds are available for acquisition prior to an offer to sell.

Regulations to implement the use and development of lands subject to 22(g) have not been issued. However, the statute provides that the laws and regulations governing the use and development of the refuge also apply to these private lands. Unlike the right of first refusal, this part of 22(g) remains with the land. Regardless of how often the land is sold, or whether its title is transferred by gift, inheritance, or by other means, this use and development covenant remains in force.

Some Isanotski and King Cove patents are subject to both 22(g) restrictions.

Because Unimak Island and Izembek Refuge were withdrawn prior to the passage of ANCSA, the conveyed Native Corporation lands in these locations are subject to Section 22(g) restrictions. Two village corporations, the Isanotski Corporation and the King Cove Corporation have conveyances which are subject to both the right of first refusal and the use and development conditions of 22(g).

Use and development on those lands with 22(g) conditions will be evaluated on a case-by-case basis. While the Service cannot advise exactly what types of use and development can take place on 22(g) lands, a high priority is placed on working with private landowners to conserve fish and wildlife resources.

Other Laws and Regulations

Private lands in the refuge are not zoned by the Borough.

The Aleutians East Borough does not currently zone private land in the Izembek Complex or elsewhere in the Borough. Whether future zoning could be beneficial to resources on the Izembek Complex would depend on the type of zoning adopted.

Development actions within the Aleutians East Borough that require a State or Federal permit are subject to the consistency review process for the Alaska Coastal Management Program. The Borough's Planning Department reviews all Coastal Zone applications for compliance with the established local Coastal Management Plan.

Wilderness areas are closed to oil and gas development.

Oil and gas exploration and development are precluded in the Izembek and Unimak wilderness areas. However, future leasing might be allowed on other areas of the refuge, subject to a national interest determination, amendment of the refuge Comprehensive Conservation Plan (CCP), including a public review process, and a determination of compatibility with refuge purposes. All seismic/geophysical exploration would require a Special Use Permit with site-specific stipulations designed to ensure compatibility with the refuge purposes and consistency with management objectives set forth in the CCP. Oil and gas development could occur on private and State lands, including continental shelf areas offshore. The BLM assessed the potential of oil and gas reserves as low to moderate for most of the Complex (USFWS 1987). Several exploratory wells have been drilled on lands to the north of the Pavlof Unit; however, no substantial reserves have been identified to date.

Additional Resource Protection Options

The Service can work with the landowner in a variety of ways to ensure that wildlife resources are protected on private lands. The options vary from written agreements on land management to outright purchase of the land. Land, or an interest in the land, may

be acquired in fee title by purchase, by an exchange, or by donation. Together the Service and a willing landowner may find that one of the following methods provides a mutually beneficial way to protect the resources.

Cooperative Agreement

A cooperative agreement is a landowner-Service working relationship.

The Service and a landowner may enter into a formal agreement in which each party agrees to manage the land in a manner beneficial to wildlife. The Service may agree to help the landowner by surveying wildlife populations and providing information to the landowner, or by developing wildlife or land management plans. These cooperative agreements are formal and written, but usually place no legally binding restrictions on the land. No money is involved and either party may cancel the agreement with adequate notice to the other party. A cooperative agreement does not affect the tax status of the land. The land remains subject to local taxation, if applicable.

Because landowners or land use plans may change over time, cooperative agreements do not ensure that fish and wildlife resources will be permanently protected. However, agreements may be useful in meeting certain refuge objectives. At the very least, they help to develop a positive, working relationship with local landowners.

Lease

A lease is a short-term rental.

A lease is a short-term agreement for full or specified use of a parcel of land. The lease generally includes occupancy rights for the Service, and a rental payment (usually annual) is made to the landowner. Upon termination of the lease, all rights revert to the owner. This method is useful when the objectives are short-term or the owners are unable to provide other forms of land transfer. Long-term leases are not desirable because, within a few years, the cost of a lease rapidly approaches the cost of outright purchase. The property, if taxable, remains on the local tax rolls during the lease.

Easement

An easement is a transfer of limited rights.

A property owner may grant an easement, which is a transfer of limited rights, to the Service. In most cases, easements are sold to the Service, although donations or exchanges are also possible. In any case, the owner keeps title to the land but agrees to certain

conditions. Easements specifically allow or preclude certain uses of the land. For instance, easements may allow additional public access or resource management on private land, or may place development and use restrictions on the land so that land uses are compatible with resource management objectives. Easements are legal agreements, become part of the title to the property, and are usually permanent. If a landowner sells the property, the easements continue as part of the title.

A conservation, or non-development, easement is one of the most common easements acquired for land protection. In general, any conservation easement must prevent destruction or degradation of wildlife habitat, often limiting or precluding development. It may also allow refuge staff to adequately manage uses of the area for the benefit of wildlife. The easement conditions or restrictions to which the landowner agrees may vary and must be worked out before the easement is acquired by the Service. Tax incentives are commonly associated with conservation easements. Properties subject to easements usually remain on the tax roll, but the tax assessment is usually lowered by the reduction in market value.

Donation

Permanent protection and a tax benefit are incentives for land donations.

The most common reasons landowners donate lands or interests in lands to the Service are (1) to benefit conservation programs (2) to receive a tax benefit, or both. A landowner can donate land with or without restrictions or reservations. For example, a donor may want to reserve life-use of the property. Title transfers, but Service ownership cannot interfere with donor's rights to continue to use all or a portion of the property during their lifetime, in accordance with the terms of the deed. Another option, donation by will, takes effect only upon the death of the donor.

Some Federal income tax benefits may be available to landowners who donate their lands. For additional information a landowner should consult with a tax advisor, local Internal Revenue Service (IRS) office, or a private conservation organization that specializes in land conservation.

Several private conservation organizations, such as The Nature Conservancy, accept donations of land to benefit wildlife conservation. These organizations may hold the donated land in trust for

future addition to the refuge system. Donation of land to a conservation organization often can be accomplished quickly and the landowner may enjoy immediate tax benefits.

Land Exchange

A land exchange involves a trade of lands having equal value.

An owner may want to trade a piece of land for land owned by the Service elsewhere. In general, (1) land exchanges must benefit both parties since each party will have different reasons for wanting to exchange land, and (2) the value of the lands or interests in lands must be approximately equal, dollar value for dollar value. However, in some cases an exchange may not involve lands of equal value. If both parties agree to an exchange, and the Secretary of the Interior determines that it is in the public interest, the exchange may be made for other than equal value, under the authority of Section 1302 of ANILCA.

The Complex offers outstanding habitat for many migratory birds, including maritime species such as emperor geese.

U.S.F.W.S. File Photo

Most exchanges will be equal value exchanges. In some cases, the value of the properties are equalized by the addition of a cash payment to make up the difference. Land values are determined by market value appraisals. Market value means the going rate or price for similar land being sold at the same time in the same general area. For purposes of exchange, oil, gas, and mineral rights are considered interests in land.

The Isanotski Corporation and the United States of America are currently involved in exchange negotiations. Approximately 3,410 acres of refuge subsurface lands in the vicinity of False Pass are offered in exchange for an equal value of Isanotski Corporation lands adjacent to Big/Middle Lagoon. The exact acreages to be exchanged will be decided after the relative value of the lands are determined by market value appraisals.

Land Acquisition by Purchase

The Service could buy land.

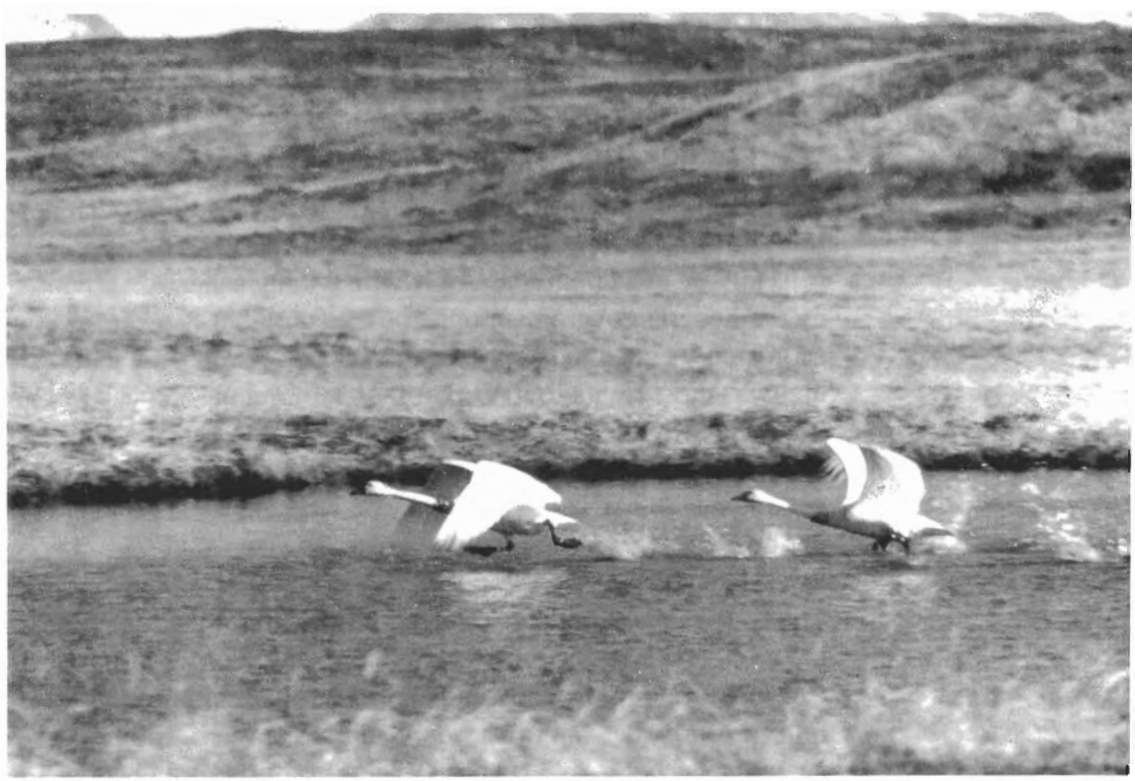
Acquisition by purchase is the most direct means of obtaining land title. It is a transfer of title in exchange for cash. The Service policy is to pursue a land purchase only with willing sellers. All purchases by the Federal government must be based on fair market value as estimated by qualified appraisers. While a fee title acquisition involves most rights to a property, certain rights (i.e., use reservation, water rights, and mineral rights) may be withheld or not purchased. As with donations, many types of use reservations can be negotiated. A use reservation may be retained by the owner for a period of time or for the remainder of the owner's life.

The two primary funding sources for purchasing land for refuges are the Land and Water Conservation Fund and the Migratory Bird Conservation Fund. The Land and Water Conservation Fund is funded primarily from offshore oil and gas leases. Additional revenue comes from surplus property sales, motorboat fuels tax and certain recreation fees. The Service uses a national Land Acquisition Planning System (LAPS) to rank parcels for funding from the Land and Water Conservation Fund. In Alaska, we are prohibited from using the Migratory Bird Conservation Fund because the State of Alaska has not ratified the use of these funds for land acquisition within the State.

In some cases, non-profit conservation organizations may secure the funds necessary to purchase lands having exceptional wildlife value. These organizations may be able to move quickly on behalf of the Service to purchase lands that are threatened by development. They may then sell or donate the lands or interests to the Service. Any lands incorporated into the refuge are managed in the same manner as the surrounding refuge land.

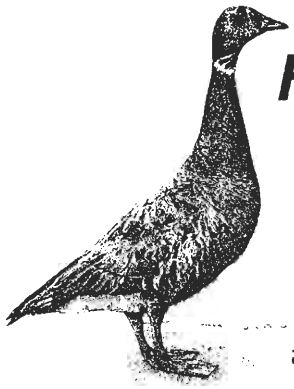
We will buy only from willing sellers.

Regardless of the source of acquisition funds, the Service policy is to buy land only from willing sellers. For all practical purposes, the Service does not condemn land in Alaska.



John Sarvis

Numerous small wetlands and secluded lakes in the Izembek Wilderness provide essential nesting and molting habitat for resident tundra swans.



How does the Service set priorities for resource protection and what are these priorities?

The procedures used to set land protection priorities consider both the resource values of a parcel of land, and the potential threat to the resource if the land is developed or land-use changes in some way.

Resource Analysis by APS Model

In Alaska we set land protection priorities for existing refuges.

Nationwide, the Service develops land protection plans for all new or proposed wildlife refuges. These plans set land protection priorities that are specific to these proposed new refuges or project areas. Land protection planning in Alaska, however, involves setting priorities for inholdings within existing refuges. In 1971, ANCSA opened public lands in Alaska (including wildlife refuges) to land selections by Native Alaskans. Almost ten years later, ANILCA created new refuges encompassing a considerable amount of conveyed private land and ANCSA land selections.

The APS computer model ranks resources on private lands.

The Alaska Submerged Lands Act of 1988 mandated that the Service determine acquisition priorities for all inholdings within the national wildlife refuges in Alaska. This was a big task, with claims on approximately 23 million of the 77 million acres of land within the boundaries of the 16 national wildlife refuges in Alaska. In order to rank all of these inholdings, the Alaska Region of the U.S. Fish and Wildlife Service developed a computer model, or geographic information system (GIS), entitled the Alaska Priority System (APS).

The selection of ranking criteria for the APS model was based on the missions of the Service and on the management concerns of each individual refuge. The Service has Federal trust responsibilities for migratory birds, certain endangered species and marine mammals,

and shared responsibility for anadromous fish. The distribution and abundance of these animals, as well as species whose conservation is listed as a purpose of the refuge in ANILCA, are considered in the model. Additional criteria considered include species diversity, public use, and management issues.

The model considers wildlife, diversity, public use, and management criteria.

The APS criteria dove-tail with the Service's national Land Acquisition Priority System (LAPS). The APS model serves as an initial ranking and sorting model for the large acreage of non-Federal lands found in Alaska refuges. Areas ranked as high priority in APS can then be submitted into LAPS to compete with acquisition projects nationwide for a Congressional appropriation from the Land and Water Conservation Fund.

For individual refuge land protection plans, the APS model, which consists of a land status database and a resource database, was adapted to prioritize the resources on a single refuge rather than comparing resources across all refuges in the State. Since land status changes frequently on most refuges as State and Native land claims are adjudicated, land status maps used in the statewide APS model run were updated. Resource maps were also updated to take advantage of new data.

Private lands are ranked as high, medium, or low priority.

An explanation of how we used the APS model to rank wildlife resources and management concerns for the Izembek Land Protection Plan can be found in Appendix I. The fold-out map on the opposite page (Figure 5) shows the resulting land protection rankings for the inholdings on the Izembek Refuge Complex. Private lands were classified as high, medium, or low priority, with approximately ⅓ of the total acreage of conveyed private lands and Native allotment applications in each category. Acquisition funding requests will be based on these priority rankings and on an additive criteria — threats.

Evaluation of Threats

Wildlife resource values and management concerns, as scored by the APS model, are major considerations when selecting the necessary level of land protection. However, in addition to the APS model score, the potential for development or other land use changes must be considered. These "threats" are evaluated separately from the APS model.

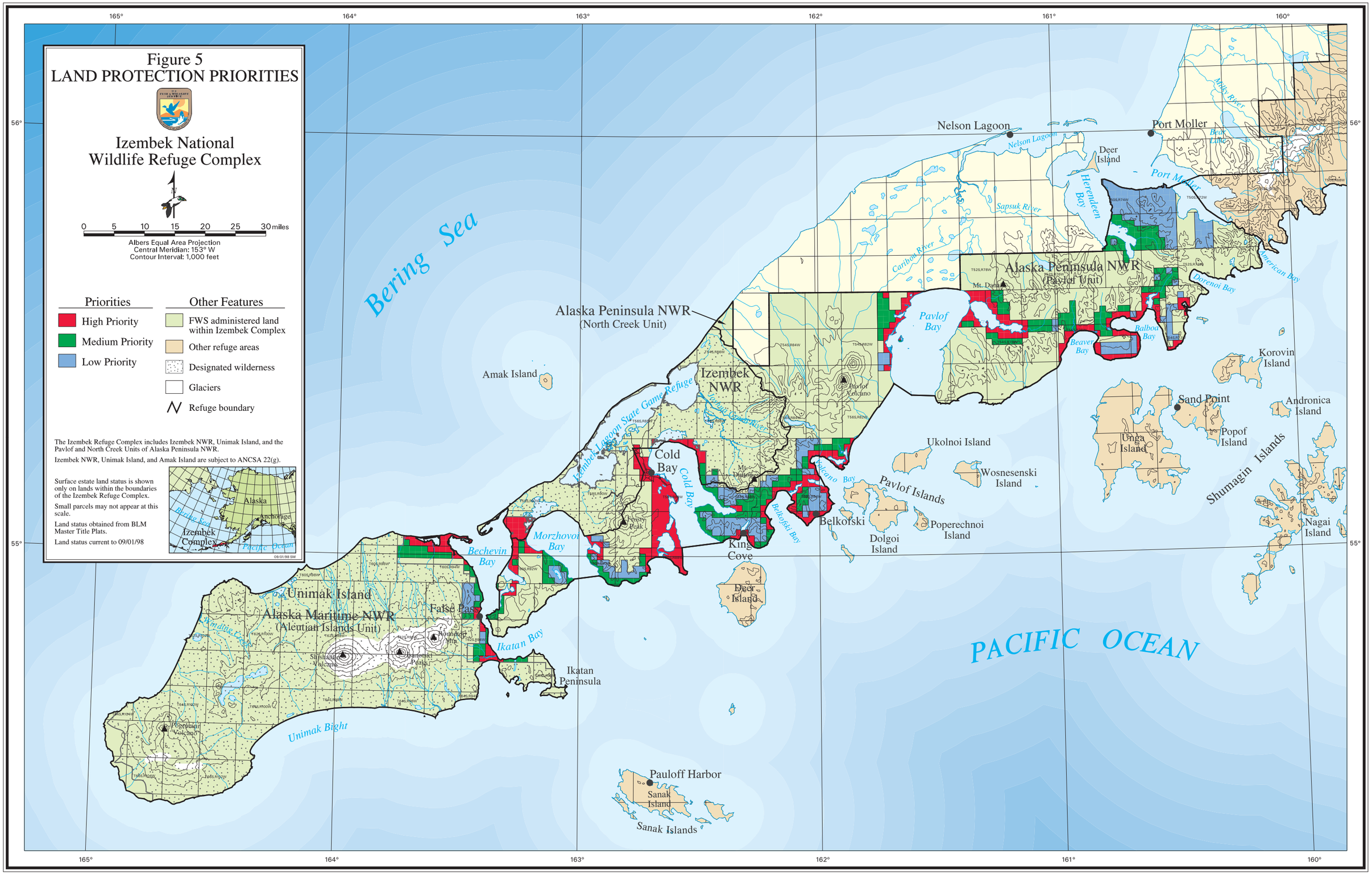


Figure 5
LAND PROTECTION PRIORITIES
Izembek National
Wildlife Refuge Complex
0 5 10 15 20 25 30 miles
Albers Equal Area Projection
Central Meridian: 153° W
Contour Interval: 1,000 feet
Priorities
High Priority
Medium Priority
Low Priority
Other Features
FWS administered land within Izembek Complex
Other refuge areas
Designated wilderness
Glaciers
Refuge boundary
The Izembek Refuge Complex includes Izembek NWR, Unimak Island, and the Pavlof and North Creek Units of Alaska Peninsula NWR.
Izembek NWR, Unimak Island, and Amak Island are subject to ANCSA 22(g).
Surface estate land status is shown only on lands within the boundaries of the Izembek Refuge Complex.
Small parcels may not appear at this scale.
Land status obtained from BLM Master Title Plats.
Land status current to 09/01/98
Alaska
Anchorage
Izembek Complex
Bering Sea
Pacific Ocean
09/01/98 SM
165°
164°
163°
162°
161°
160°
56°
55°
Bering Sea
PACIFIC OCEAN
Nelson Lagoon
Port Moller
Deer Island
Herendeen Bay
Sapsuk River
Caribou River
Alaska Peninsula NWR
(Pavlof Unit)
Mt. Dana
Pavlof Bay
Dorenoi Bay
American Bay
Balboa Bay
Beaver Bay
Alaska Peninsula NWR
(North Creek Unit)
Amak Island
Izembek NWR
Izembek Lagoon State Game Refuge
Pavlof Volcano
Cold Bay
Mt. Dutton
Frosty Peak
Morzhovoi Bay
Bechevin Bay
King Cove
Belkofski Bay
Belkofski
Ukolnoi Island
Wosnesenski Island
Pavlof Islands
Dolgoi Island
Poperechnoi Island
Korovin Island
Sand Point
Andronica Island
Popof Island
Unga Island
Shumagin Islands
Nagai Island
Deer Island
Unimak Island
Alaska Maritime NWR
(Aleutian Islands Unit)
False Pass
Ikatan Bay
Ikatan Peninsula
Shishaldin Volcano
Isanotski Peaks
Pogromni Volcano
Unimak Bight
Pauloff Harbor
Sanak Island
Sanak Islands

Potential threats to wildlife and their habitats are considered separately from resource values.

To evaluate whether development or other land use on private lands may pose a threat to refuge wildlife or resources, inholdings are evaluated as follows:

- **Suitability for Development** - Is the site geographically suitable for development, and would it be economically feasible to develop it?
- **Probability of Development** - Has the land owner expressed an interest in a development action, or is it probable that the site will be developed in the next ten years?
- **Extent of Impact to Refuge Resources** - How seriously would development impact refuge resources? Would the impacts be short term or have long term consequences? Does the parcel rank well in the APS model? Are there other values not measured by the APS model? Will land protection measures be able to reduce the threat to wildlife?

Threats to Refuge Resources

Development or other human uses on private lands within the Complex could adversely affect wildlife habitats and populations in several ways.

Development may result in habitat loss or degradation, or may cause wildlife to abandon favorable habitats.

Disturbance resulting from development projects can result in the outright loss of habitat or the conversion of optimal habitats to less desirable ones. Disturbance of the surface vegetation in fragile tundra areas leaves scars that are extremely slow to recover and can result in soil erosion and degradation of water quality in rivers, ponds and wetlands. Alteration or reduction of instream flows or surface drainage patterns resulting from construction projects can ultimately affect both fish and wildlife populations.

Even when outright habitat loss is minimal, human development and activity may cause wildlife to abandon optimal habitats, or to alter traditional migration routes, in order to avoid human presence. Many species that depend on the exceptional habitats of the Izembek Complex, including brant and other waterfowl, are sensitive to noise

and visual disturbance during staging and molting. It is critical for the continued health of these populations that disturbance is minimized near key habitat areas.

Human activity and development can degrade surrounding wildlife and wilderness values.

Human activity or development on private lands can compromise the wilderness character of adjacent refuge lands. Currently, most of the large private inholdings adjacent to designated wilderness areas continue to meet Federal criteria for designation as wilderness should these lands be reacquired. However, the wilderness character of the land has the potential to be altered by actions of the landowners. Future activities on these lands may also conflict with adjacent wilderness resource values on refuge lands.

The Wilderness Act of 1964 defines wilderness areas as "untrammeled by man . . . retaining a primeval character and influence, and without permanent improvements or human habitation." They offer "outstanding opportunities for solitude or a primitive and unconfined type of recreation." Increased human activity or development on private lands, and the resultant increase in noise, visual presence, and access corridors can degrade these wilderness values on adjacent refuge lands.

Although development pressures are currently low, the potential exists.

The remoteness and limited access of much of the private land in the Izembek Complex lessens its suitability for development. However, there is the potential for development on non-Federal lands within the refuge boundary. The abundance of fish and wildlife within the Complex makes it especially attractive as a base for hunting and fishing cabins or lodges. Currently, seven bear/big game guides operate within the boundaries. The large size of brown bears in the area make the Complex a popular destination for trophy hunters. In addition, waterfowl hunting is a popular recreational activity for visitors, as well as local residents. Several guides that specialize in waterfowl hunting now operate in the area. Hunting, fishing, and other compatible wildlife-dependent forms of recreation, are important priority uses of the refuge. However, there is the potential for negative impacts on refuge wildlife populations if increasing numbers of recreational cabins and commercial lodges are constructed on private lands and public use continues to increase.

Other threats to refuge resources could result from oil and gas exploration and development on private or State lands. Although the

potential for commercially viable oil fields in this area was once considered promising, test wells have failed to locate recoverable quantities of oil. Current interest in the area is low. However, technological advances in recovery methods could increase the potential for future development.

Road construction and road-based development may also pose a threat to refuge resources. There is currently a proposal to construct an all-season road between the communities of King Cove and Cold Bay (Figure 6).

In addition to crossing 20 miles of King Cove Corporation land, the proposed 30-mile road corridor would cross 10 miles of refuge land, including seven miles of the Izembek Wilderness, before connecting to a seasonal road emanating from the Cold Bay road system.

A proposed road corridor would cross essential habitat on the narrow isthmus separating Kinzarof and Izembek lagoons.

In April of 1997, the King Cove Corporation offered to exchange Corporation lands at the mouth of Kinzarof Lagoon for a road easement across refuge lands on the narrow isthmus separating Kinzarof and Izembek lagoons. This lagoon area contains outstanding and essential habitat for a variety of species, including the threatened Steller's eider, Pacific black brant, tundra swan and emperor goose. It is an important wintering area and migration corridor for the Southern Alaska Peninsula Caribou Herd and is adjacent to a key brown bear natal area that supports the highest densities of bears on the lower Alaska Peninsula. Recognizing that the proposed road would have an adverse impact on the significant wildlife and wilderness resources in the area, the Service declined the exchange proposal.

Road proponents are pursuing this issue through two other channels. Special legislation has been introduced in Congress that would facilitate road construction by authorizing a transfer of land interests, while providing relief from environmental review statutes. The road proposal has also been nominated to the Alaska Department of Transportation and Public Facilities' (DOT&PF) statewide "needs list" (Transportation Needs and Priorities in Alaska).

The proposal to construct a road across both refuge and King Cove Corporation lands is currently the greatest known potential threat to wildlife and wilderness values within the Izembek Complex.

Threatened areas with high APS scores receive additional consideration.

Wildlife areas that are both "threatened" and rank high in the APS model, receive special attention in the evaluation process. However, the initial consideration is whether land protection measures available to the Service will be able to reduce the threat to wildlife. Currently, there are no known major, imminent threats to refuge resources that could be eliminated by methods described in this plan. However, inholdings will be evaluated periodically as the economy and development pressures change.

John Sarvis

The Joshua Green watershed, in the Izembek Wilderness, provides critical habitat for brown bears. Bears den in the higher elevations, like the Left Hand Valley pictured here. The lower elevations are important foraging and natal areas.

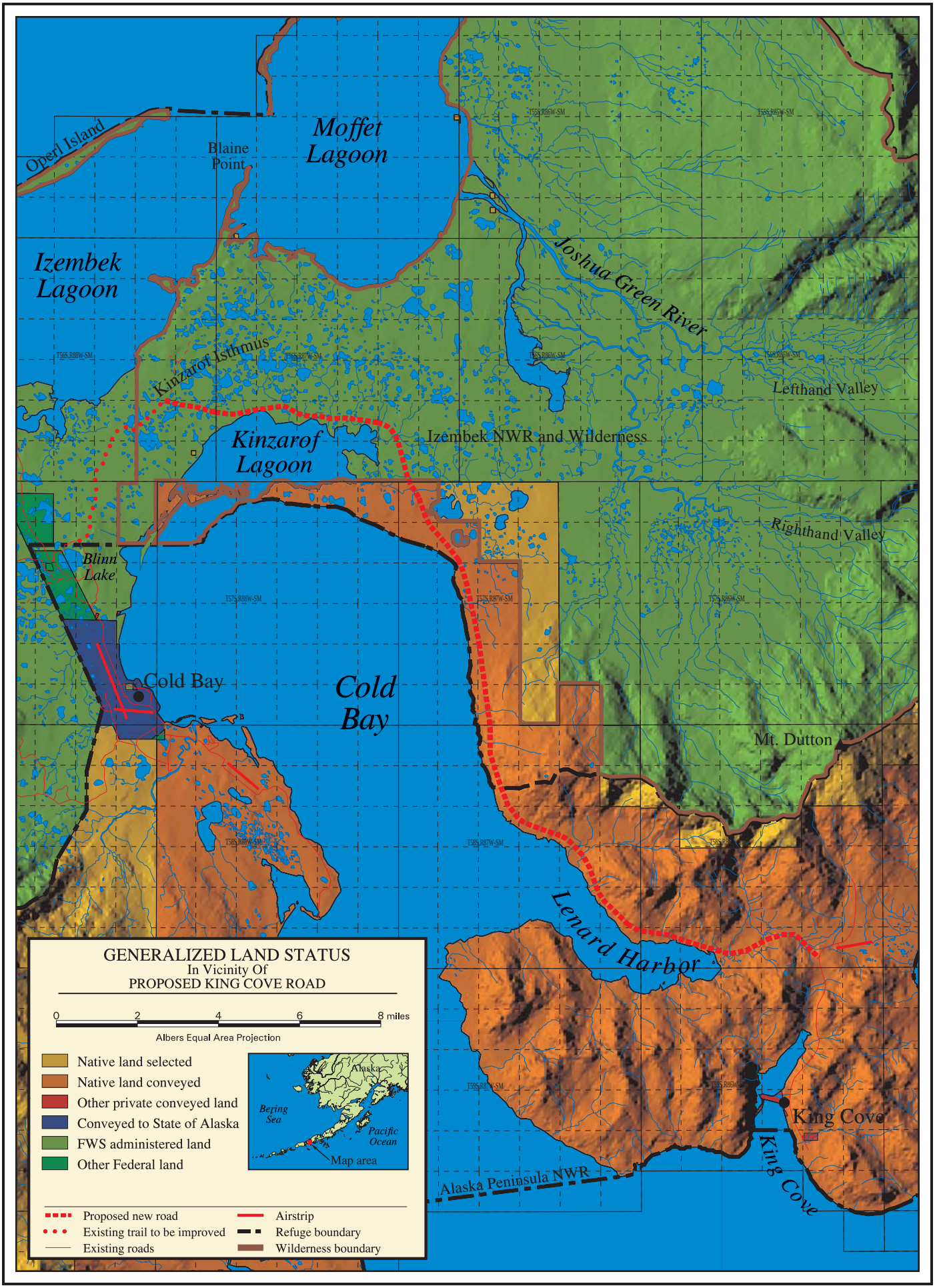
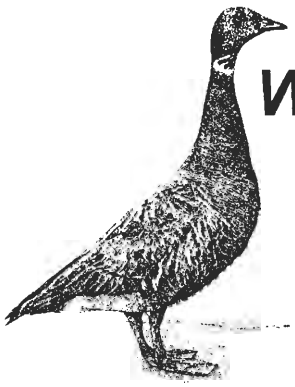

GENERALIZED LAND STATUS
In Vicinity Of
PROPOSED KING COVE ROAD
0 2 4 6 8 miles
Albers Equal Area Projection
Native land selected
Native land conveyed
Other private conveyed land
Conveyed to State of Alaska
FWS administered land
Other Federal land
Alaska
Bering Sea
Pacific Ocean
Map area
Proposed new road
Existing trail to be improved
Existing roads
Airstrip
Refuge boundary
Wilderness boundary
Operl Island
Blaine Point
Moffet Lagoon
Izembek Lagoon
Joshua Green River
Kinzarof Isthmus
Lefthand Valley
Kinzarof Lagoon
Izembek NWR and Wilderness
Righthand Valley
Blinn Lake
Cold Bay
Cold Bay
Mt. Dutton
Lenard Harbor
King Cove
King Cove
Alaska Peninsula NWR

Figure 6



What land protection measures do we recommend?

A major objective of this plan is to make recommendations for land protection measures on private lands within refuge boundaries. Because of the number and size of private parcels within the Complex, it is not possible to individually list parcels and specify our preferred protection methods.

In general, parcels identified as high priority (Figure 5, page 49) have sufficient wildlife value to warrant acquisition by the Service. However, a number of other factors influence our priorities, including the probability of development that could harm refuge resources, and the willingness of a particular landowner to sell or cooperate with the Service in conserving wildlife values on their land. Service policy is to acquire the minimum interest needed to protect refuge resources. In many cases, wildlife resources may be adequately protected under private ownership and no Federal action would be recommended.

All land protection proposals, initiated by either the landowner or the Service will be evaluated on a case-by-case basis. Decisions for resource protection on the Izembek Refuge Complex will be based on the following guidelines:

1. **The relative ranking of resources in the APS model;**

   - The APS model divides the total acreage of non-Federal lands within the refuge boundaries into three priority categories according to relative resource value. High priority lands within the refuge, except for those close to concentrated residential developments, have sufficient wildlife values for the Service to pursue acquisition of an

interest in the land. In some cases, the interest may be a conservation easement or a lease. In other cases, fee acquisition may be necessary to adequately protect the refuge and its resources. The Service might also be interested in acquiring lands through an exchange that is beneficial to both parties. For instance, refuge uplands in proximity to a village might be exchanged for remote wetlands with high wildlife value.

- Medium and low priority lands may be adequately protected by entering into a cooperative agreement with the landowner. However, some of these lands may have sufficient wildlife resources to warrant long term protection measures, such as a conservation easement. Because the APS model assigns a priority ranking based on the **relative** resource value, even low priority lands may have noteworthy resources that warrant protection.

- Usually, higher ranked lands are acquired before lower ranked lands, assuming threats to wildlife resources are the same.

2. **Evaluation of development threats that would harm refuge resources;**

   - Development or human use of private lands that could impact refuge wildlife adds urgency to the need for protection. This is particularly true of lands with naturally high resource values — either high APS rankings or of high value to species whose conservation is listed by ANILCA as a purpose of the refuge.

3. **The effect of land protection strategies on refuge management;**

   - Land protection measures should simplify, not complicate, refuge management. Generally, the Service is not interested in acquiring a private tract of land embedded within a larger tract of private property if there is little prospect of obtaining the larger parcel.

4. **The effect of land protection strategies on the ecological integrity of the refuge;**

   - Land protection strategies should strive to preserve the ecological integrity of the refuge. In order to protect a key habitat area, the Service may need to adopt similar habitat protection measures on the surrounding parcels of land, regardless of their APS ranking. The Service must work cooperatively with landowners to ensure that the ecosystem is protected now and in the future.

5. **The willingness of landowners to work with the Service to protect the natural resources on their land;**

   - The Service acquires land only from willing sellers. Interest in land can be obtained by lease, easement, exchange, donation, or fee title purchase.

   - Cooperative agreements with landowners may adequately protect the resource if acquisition of an interest in the land is not necessary or the owners do not wish to sell.

6. **The availability of funds for land acquisition or other protection measures.**

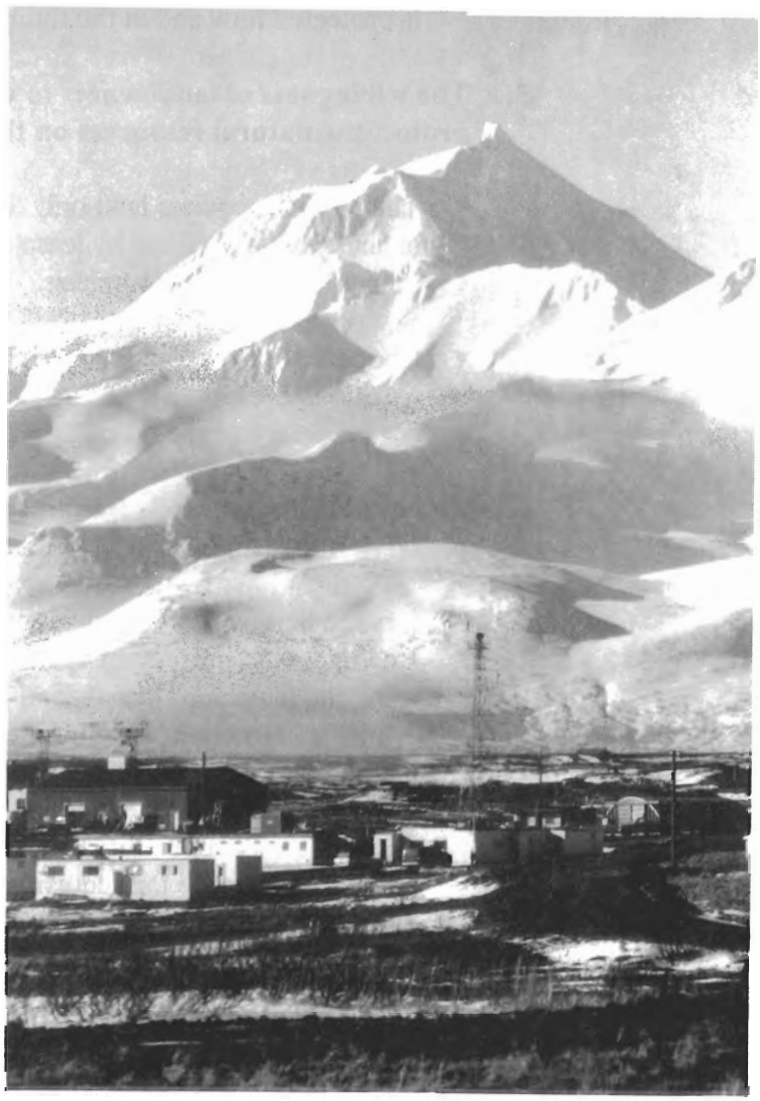
   - It is the Service's responsibility to work with local landowners to protect the highest value wildlife habitats using the most appropriate land protection measures available. However, funding shortfalls may limit the methods available for protection. Alaskan refuges must compete with the National Park Service, the U.S. Forest Service, the Bureau of Land Management and other wildlife refuges nationwide for acquisition funding from the Land and Water Conservation Fund.

The Service does not prioritize subsurface interests.

Subsurface interests are not prioritized in our land protection plans. By the provisions of ANCSA, the subsurface interests on Unimak Island and Izembek proper were Congressionally withdrawn for refuge purposes, while the subsurface of Native conveyed lands in the Pavlof unit were conveyed to the Aleut Corporation. In Alaska,

the Service does not seek to acquire subsurface interests because: (1) surface use is already regulated wherever the surface is refuge land; and (2) the vast amount of privately-owned surface land must receive primary consideration.

John Sarvis



Generally, lands in close proximity to communities are unsuitable for acquisition by the Service.

How might our protection priorities affect landowners and others?

The communities of King Cove, Cold Bay, False Pass and Belkofski lie within the boundaries of the Izembek Complex. Although the village site of Belkofski has been abandoned, the other three communities are important population centers within the Complex. Both King Cove and False Pass began as salmon canneries in the early 1900's, whereas the community of Cold Bay grew out of the Fort Russell Army Air Corps Post, established during World War II. The refuge headquarters and visitor center are located in Cold Bay. Other nearby communities include Sand Point and Nelson Lagoon. The villages of Atka, Pauloff Harbor, St. Paul, and St. George also hold land within the refuge boundaries.

Cultural Resources

The Complex has a rich cultural history.

Early occupants of the southern Alaska Peninsula and eastern Aleutian chain included the Aleut and possibly the Yup'ik Eskimos. These peoples lived on one of the most volcanically and climactically dynamic landscapes on earth, but also one of ample natural resources. The abundance of marine mammals, salmon, waterfowl and other foodstuffs may have facilitated the transition from mobile hunters and fishers to settlers of large, permanent villages. At the time of European contact, the region supported some of the most politically complex and fully sedentary (village-based) hunter-gatherers known to anthropology (Maschner et al. 1997). It has been documented archaeologically that the ancestors of the modern Aleut have resided in the Aleutians for at least 4,000 years and may have been present more than 7,000 years ago. The many archeological sites in the refuge, particularly along the coastlines and lagoons, attest to a long history of Native occupation.

Russian fur traders were attracted to the Peninsula by the large numbers of sea otters in the area. By the late 1700's, the first Russian settlements and camps were established in the upper Peninsula. Within a few decades, the fur trade was well established throughout the Peninsula, and many Native villages were being "Russianized" by missionaries of the Russian Orthodox church. It is estimated that the Aleut population declined by 50% within the first 10 years of Russian colonization, as a result of disease, starvation or open conflict (Jones and Wood 1973).

Mike Boylan

Russian fur traders were attracted to the Alaska Peninsula and Aleutian Islands because of the large numbers of sea otters in the the coastal waters. Possessing the densest fur of any animal, sea otters were harvested commercially until their dwindling numbers resulted in Federal protection in 1911.

There are numerous archeological sites on conveyed Native corporation lands. The Aleut Corporation has selected additional sites as cemetery sites or historical places, and the portions certified eligible by BIA will be conveyed (Table 4). Acquisition by the Service would not impact cultural resources. If returned to Federal management, these resources would be protected under Section 106 of the National Historic Preservation Act of 1966, which requires Federal agencies to take into consideration cultural resources when granting Federal licenses, permits, or funds to projects that could affect such resources.

Carole Fritz

Remains of a whale bone house on Unimak Island. Cultural resources on private lands would continue to be protected if returned to Federal ownership.

Impact on Landowners

Implementation of this plan will likely have limited impacts on most individual landowners. Most permanent residents within the Complex live in, or near, one of the three local communities. Generally speaking, privately-owned lands near these communities would be unsuitable for acquisition by the Service.

Most of the remaining private lands are currently undeveloped and owned by Native corporations. Some of these corporations could receive a cash payment for their land. Acquisition by the Service would preserve the lands in their present state. All acquired lands would be managed in the same manner as the surrounding, or nearby, refuge lands.

Implementation of this plan will have limited impacts on most residents.

Other landowners might benefit by exchanging some of their lands for Service-owned lands. For example, wetlands with high wildlife value that are unsuitable for development might be exchanged for Service lands in more desirable building locations, or for Service-owned subsurface (sand, gravel, rock etc.) beneath private lands.

Impact on the Economy

The economies of King Cove and False Pass are highly dependent on the commercial fishing industry. Residents from both communities sell their salmon catch to floating processors or to a processing plant in King Cove. The majority of fish processing jobs are filled by seasonal workers who leave the area when canning is completed. The government and the transportation industry are the major employers in Cold Bay.

Non-resident recreational use of the refuge is probably limited by the relatively high cost of airfare, but does provide some economic support for local businesses. Hunting is the most popular recreational activity on the refuge. Commercial operations, such as big game guiding, are allowed in the refuge by permit and attract mostly non-Alaskan clientele.

Land protection measures should not significantly affect these industries. Since the economy is largely driven by ocean-based commercial fisheries, land protection measures within the refuge boundaries may prove beneficial by helping to protect the watersheds

and drainages that serve as spawning and rearing areas for anadromous species. Conservation of habitat and resources through public ownership will benefit recreational use, as well as commercial fishing offshore. Managing the resource to provide habitat for wildlife and fish will ensure that hunting, fishing and other recreational opportunities continue.

Public ownership provides benefits.

The local economy may benefit if an active land acquisition or exchange program develops in the future. Some Native corporations could receive a cash payment for their land, or for an interest in their land (such as a conservation easement).

The local government would receive annual payments authorized by the Refuge Revenue Sharing Act if the Service acquired inholdings through fee simple acquisition or exchange. Revenue sharing payments are based on whichever of the following is greater: 25 percent of net receipts collected from refuge management fees (permit fees, sale of minerals, sand and gravel, etc.), 75 cents an acre for the total acreage of the property purchased, or three-fourths of one percent of the fair market value of the property. Property is reappraised every five years to determine its current fair market value. Congress is authorized to appropriate funds to cover any deficits in the Service's revenue sharing fund. However, if Congress fails to do so, payments are reduced accordingly.

Local governments receive annual revenue sharing payments when the Service acquires inholdings.

Impact on Public Use

Access is a component of public use that can be affected by land ownership. On Native corporation lands, some access is provided through Section 17(b) of ANCSA. This section provided for public use easements across lands and at periodic points along major waterways within Native conveyed lands. There are currently more than sixty 17(b) easements within the refuge boundaries. Unfortunately, it is often difficult for recreationists to determine whether they are on public or private land, especially in areas of checkerboard ownership. The result is a tendency to use private lands as though they are part of the refuge.

Federal ownership would maintain or improve public access.

Under refuge ownership all lands are open to public access. However, access may be regulated to protect fish, wildlife, and habitats from the impacts of overuse. In addition, the means of

access may be limited to foot travel, boat, and/or snowmachine. The Service cannot necessarily provide road access on refuge lands.

If the refuge acquires private lands through acquisition or exchange, long term traditional public access generally will be maintained. Although the refuge may impose some regulations on public use to protect resources, the likelihood of access restrictions or use fees on private lands is greater in the long term than on Federal land.

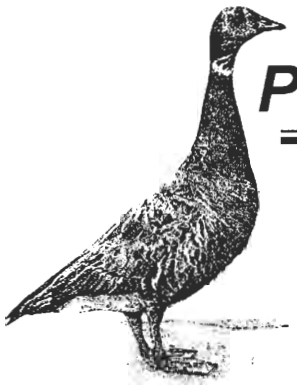
Any new land acquired by the Complex will be managed in the same manner as the surrounding refuge land. All commercial ventures, including guided hunting and fishing would be subject to the same special use permit restrictions as on adjacent refuge land.

Impact on Subsistence

Subsistence hunting and fishing is a purpose of the Complex.

Subsistence is a primary purpose of the Complex. Title VIII of ANILCA established a Federal policy protecting subsistence activities on Federal land in Alaska. Rural residents receive a priority to harvest wildlife for subsistence purposes on all Federal lands where the Federal Subsistence Board has determined that there is a customary and traditional subsistence use of a particular wildlife population or fish stock. In contrast, the State subsistence priority is not restricted to rural residents. Although rural residents have a subsistence priority under Federal policy, subsistence harvest may be limited or prohibited whenever it is determined that population numbers have fallen to dangerously low levels. Subsistence harvest is allowed whenever populations are considered to be healthy.

Acquisition of inholdings would assure a subsistence priority on that land for rural residents. The benefit to residents may be limited at times because of special harvest restrictions or because there is no subsistence priority for some species. For example, the 1997/1998 Federal subsistence regulations do not provide a subsistence priority for moose or brown bear, although hunting for brown bear may be permitted under State sport hunting regulations. In addition, subsistence harvest of caribou in the Southern Alaska Peninsula Caribou Herd is prohibited whenever annual population estimates fall below the 2,500 animals considered necessary to sustain a harvest. For further information, see the *Subsistence Management Regulations For Federal Public Lands in Alaska* (USFWS 1997).



Public Involvement

Citizen Participation

The main focus of this Land Protection Plan is the wildlife resources on private lands within the Izembek Refuge Complex. The planning process was designed to encourage landowners and members of the interested public to work with us to identify and protect important wildlife habitats. The planning team made an effort to notify and involve all interested individuals.

The Service contacted the public early in the planning process.

The first step was to develop a citizen participation program to identify the needed level of public involvement. This program was developed with the refuge staff and drew heavily on their experience with earlier refuge planning efforts. A preliminary mailing list was developed at that time. This mailing list is constantly being updated as individuals express an interest in the plan.

Statewide public meetings were held in Anchorage and Fairbanks during October, 1990 to announce the beginning of the LPP process for all refuges in Alaska. A flyer announcing the beginning of the planning process and upcoming public meetings for the Izembek LPP was sent out in February, 1996. The flyer was mailed to village leaders, Native corporations, individual land owners, and organizations or individuals on the mailing list. Additional public meetings were held on April 15, 1996, in King Cove, on April 16, 1996, in Cold Bay and April 17, 1996, in False Pass. Notes were taken during the public meetings and copies of these notes were mailed to participants.

Land protection planning on the Izembek Refuge Complex is an ongoing process. Maintaining a working relationship with all landowners and interested individuals is an important part of this process. This commitment includes additional public or private meetings to further discuss the LPP if necessary. Please contact the Izembek Refuge or the Division of Realty if you have any questions

or would like to request a meeting. The addresses and telephone numbers are listed on the landowner interest form at the end of this chapter.

Land Protection Plan Revision

The Izembek Land Protection Plan will be reviewed by the Service on a recurring basis. Actual revision of the LPP will be based on the rate of change in land ownership and land uses, and whether these changes would affect our land protection priorities. Landowners and the general public will be notified if significant revisions are made.

We would like to hear from landowners.

Land ownership on the Izembek Refuge Complex changes as land is conveyed, subdivided or sold. For this reason, we have not included a list of individual owners. The Service does, however, keep a list of owners who express an interest in land protection plan options. The Division of Realty for the Alaska Region of the Fish and Wildlife Service in Anchorage maintains a computerized database of landowner responses. This list will be updated as new responses are received. The following page contains a form which a landowner can use to express an interest in working with us. Just fill out the form, tear it out, fold it, and mail it to the address pre-printed on the back.

LANDOWNERS: Would you like to work with us to protect wildlife on your land?

IZEMBEK REFUGE PLANNING PARTICIPANTS: Would you like to receive future mailings concerning the Izembek Refuge Complex Land Protection Plan?

Please use this form to express your interest in the Izembek Refuge Complex Land Protection Plan. The information you provide here will be used primarily for planning purposes and does not constitute an offer to buy land.

Name: _____

Address: _____

_____

Telephone: _____

Please add my name to the Izembek Refuge LPP mailing list _____

There are 6 basic options that have been identified in the plan. Check the options in which you have an interest:

No Action (I'm not interested) _____

Cooperative Agreement (An agreement between a landowner and the Service to help each other manage the land. No money is involved) _____

Conservation Easement (Landowner keeps title to land but sells development rights to the Service) _____

Exchange land for other federal land _____

Sell land to the Fish and Wildlife Service _____

Donate land to Fish and Wildlife Service _____

Legal description of my parcel or allotment (on the Deed or other official correspondence):

T ___ S R ___ W Section ___ Lot _____

Comments: _____

_____

If you have any questions, please contact:

Refuge Manager
Izembek National Wildlife Refuge
P.O. Box 127
Cold Bay, Alaska 99571
(907)532-2445

U.S. Fish and Wildlife Service
Division of Realty
1011 E. Tudor Road
Anchorage, Alaska 99503
(907)786-3463

Please fold form and mail to address on the other side

Fold here

Place
Stamp
Here

From:

_____

_____

_____

To: U.S. Fish & Wildlife Service
Division of Realty
1011 East Tudor Road
Anchorage, Alaska 99503-6119

Staple or Tape Here ↓

List Of Preparers

Division of Realty

Brewer, John	Cartographic Technician
Janis, Sharon	Chief, Division of Realty — Land Status Technical Consultant
Jerry, Danielle	Chief, Biology and Archeology Branch — APS Model Author
McGee, Scott	Cartographic Technician — Map Design
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Vandegraft, Doug	Lead Cartographic Technician
Wolfe, Cyndie	Wildlife Biologist — Project Leader, Izembek LPP

Information Resources Management

Dearborn, Barry	Computer Systems Analyst — APS Program Author
Johnson, Jay	Computer Systems Analyst
Wylie, I. Jean	Computer Systems Analyst — APS Program Author

Izembek National Wildlife Refuge

Dau, Christian	Wildlife Biologist/Pilot
Dochat, Tina	Biological Technician
Schafer, Tracy	Biological Technician
Schulmeister, Robert	Maintenance
Schulmeister, Susan	Assistant Refuge Manager
Siekaniec, Greg	Refuge Manager

Sources of Information

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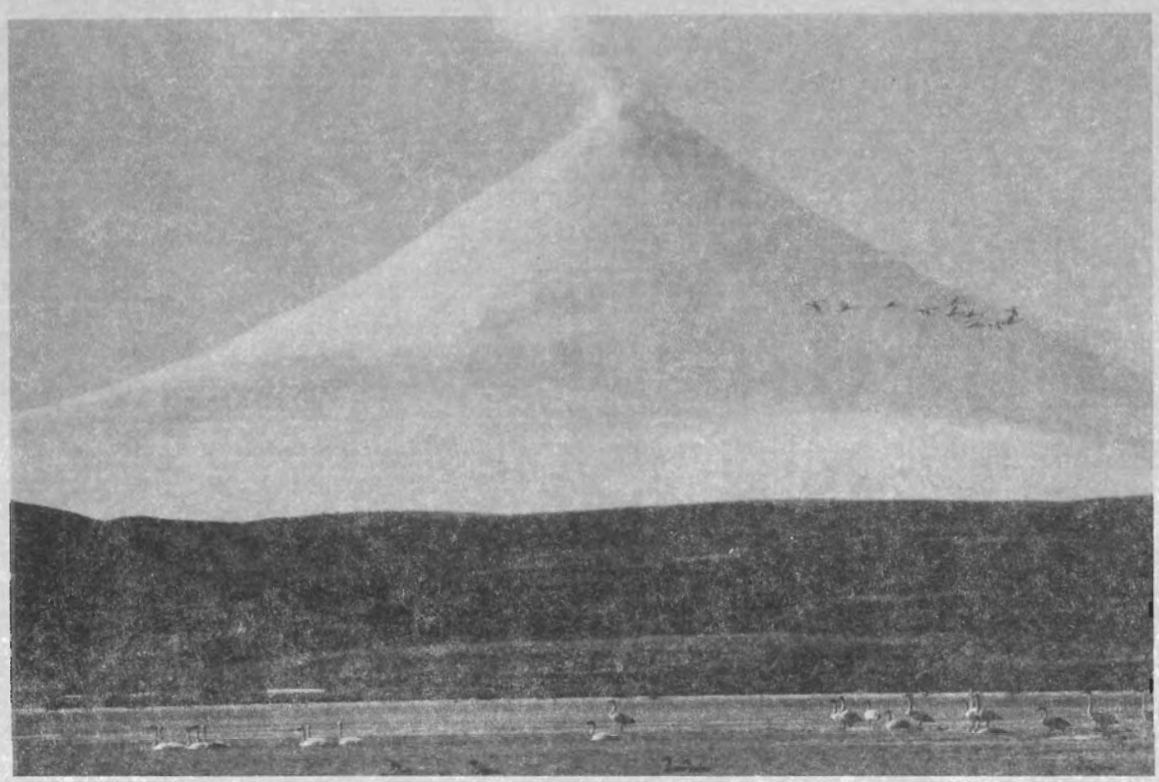
John Sarvis

Appendix I

The Alaska Priority System (APS)



John Sarvis

APS Model

The APS model uses seven resource and two management criteria to rank land and resources. The seven resource criteria are: endangered species, migratory birds, diversity of wetlands, diversity of uplands, marine mammals, resident refuge purpose species, and fisheries. The two management criteria are public use and refuge management — the capacity of acquisition to enhance management of refuge lands (Figure A-1).

The resource criteria are subdivided into several categories, representing species of animals. For example, in the migratory birds criteria for Izembek Refuge Complex are 11 species of birds, including ducks, geese, swans, and eagles. There are also 4 groups of species (raptors, waterfowl, seabirds, and shorebirds) that are specifically mentioned in ANILCA as a purpose of one or more of the refuges that comprise the Complex. The resident refuge purpose species criterion is made up of mammals specifically mentioned in ANILCA. For the Izembek Complex these include moose, brown bears, and caribou. Species 'groups' listed in ANILCA (e.g., furbearers or marine mammals) are not included in this criterion they get points in the upland or wetland diversity categories. Point values are assigned to each category (species) in the model based on the densities, distribution, and/or diversity of specific wildlife populations. The refuge management criterion is subdivided into categories relating the effect that private lands have on access and the ability of the refuge to efficiently carry out its management functions. The public use criterion includes both subsistence and recreational use.

Criteria Point Score Distributions

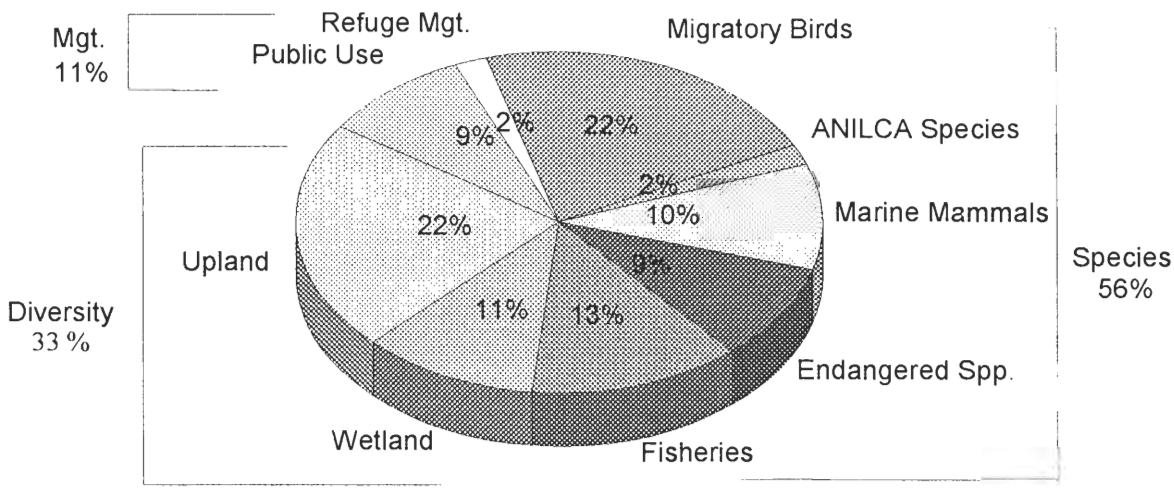


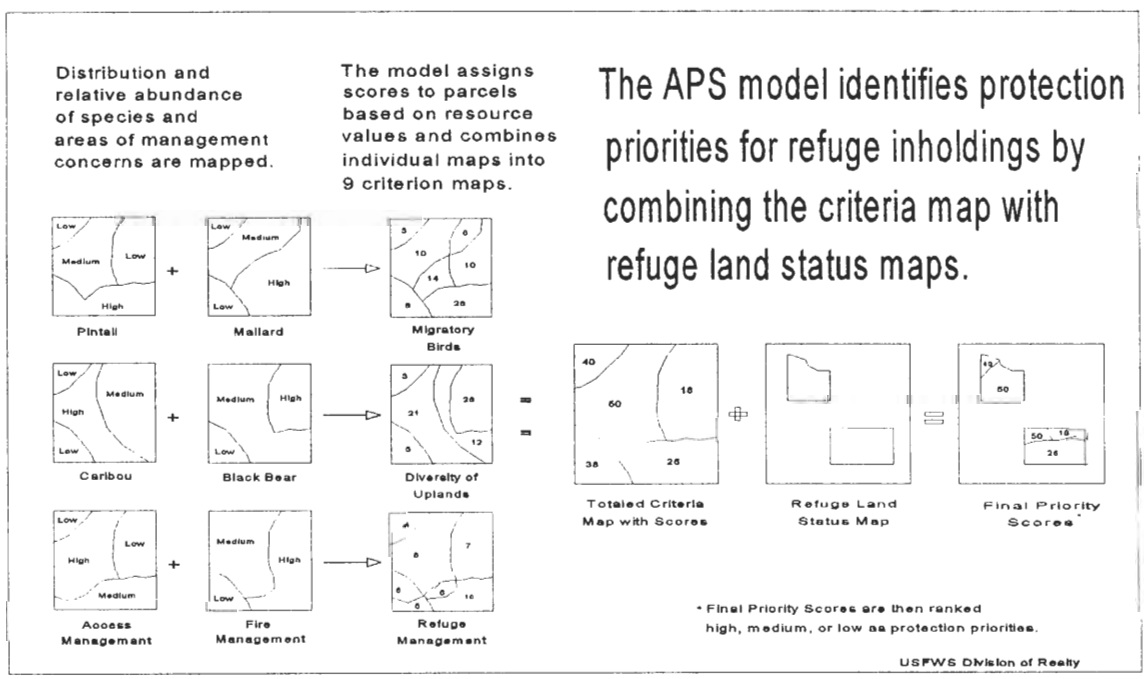
Figure A-1. The seven resource criteria used in the Izembek APS model contributed 89% of the total points, while the two management criteria contributed 11% of the points.

Priority Levels

The priority process begins with the gathering and mapping of fish and wildlife data and management information. The hand drawn maps are then digitized using the geographic information system software known as ARC/INFO (Environmental Systems Research Institute 1989). The computer program ARC/INFO allows concurrent manipulation of computerized maps and attribute data. The result is a set of layers of mapped resource information in ARC (e.g. Figures A-1 through A-11) and numerical descriptions, which are the point scores associated with the mapped resources, in INFO.

To combine all of the maps into a final priority map, the maps of the individual species or management concerns are merged into nine criterion maps (Figure A-2). The point scores were all added and then recalculated to the maximum points allowed in each criterion. The nine criterion maps with their recalculated scores were merged into one final resource map, with a final set of scores.

Figure A-2. The Alaska Priority System uses ARC/INFO to rank priorities.



The final step in the priority process is to rank the private lands and create a priority map. To rank the private lands, the model totaled the acreage of conveyed private lands and Native allotment applications, then divided that acreage into three approximately equal parts (high, medium, or low) based on point scores.

Table A-1. Number of acres of land in each land protection priority category, by owner, on the Izembek Refuge Complex, Alaska.[1]

Landowner[2]	High Priority Lands	Medium Priority Lands	Low Priority Lands	Totals
Atxam Corporation (Atka)	7,250	11,464	1,906	**20,620**
Belkofski Corporation (Belkofski)	19,715	13,723	16,494	**49,932**
Isanotski Corporation (False Pass)	31,235	24,746	8,174	**64,155**
King Cove Corporation (King Cove)	42,441	30,413	29,871	**102,725**
Sanak Corporation (Pauloff Harbor)	5,541	14,396	14,778	**34,715**
Shumagin Corporation (Sand Point)	36,959	24,053	16,402	**77,414**
St. George Tanaq (St. George)	3,136	9,450	0	**12,586**
St. Paul Tanadgusix Corporation (St. Paul)	5,418	3,826	3,195	**12,439**
Native Allotment (Conveyed)	4	0	1,078	**1,082**
Native Allotment (Selected)	0	43	181	**224**
State	2,779	20,261	56,276	**79,316**
Other Private	256	138	22	**416**
Totals	**154,734**	**152,513**	**148,377**	**455,624**

[1] These acreage figures were derived from the APS computer model. Acreage may not match BLM summaries due to differences in scale and detail between the Service's automated land status and hand-drafted BLM master title plats. Water bodies are not included in these figures.
[2] Only conveyed lands are prioritized.

On the priority map, (Figure 5), priorities are displayed in whole sections, based on the highest score for each section. A detailed description of the APS model criteria, categories, and point values can be found in a separate APS paper available from the Anchorage Realty Office (USFWS 1995).

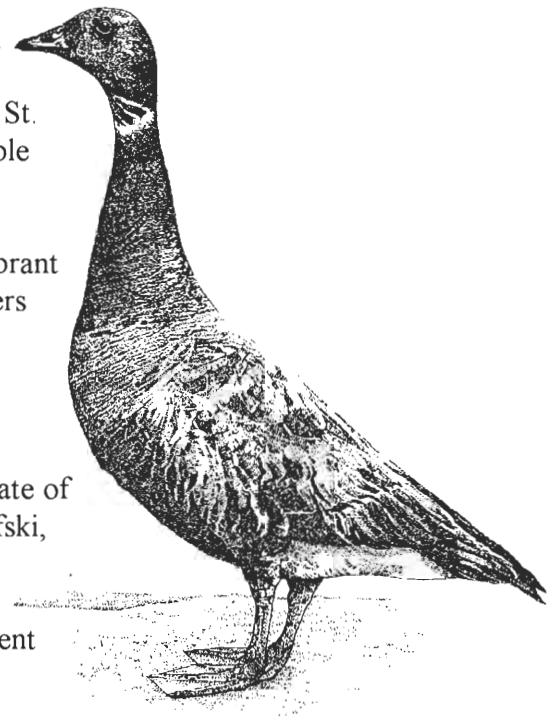
The following maps are examples of the resource maps used in the Izembek APS model. A total of 30 different maps were used: since some maps were used in more than one criterion, (e.g. the brown bear map was used in both ANILCA species and Diversity of Uplands) the model had 52 different layers. Large parcels of private land, in this case Native Corporation lands, are identified in these examples to show their relationship to the areas of relative abundance of certain animals.

Distribution and Relative Abundance of Key Wildlife Species

within the

Izembek Refuge Complex

Pacific Brant



The distribution of Pacific brant during the non-breeding season is intrinsically tied to the distribution of eelgrass, their primary food. The extensive eelgrass beds of Izembek, Kinzarof and Big lagoons, St. Catherine Cove and Hook Bay provide an irreplaceable food resource for staging brant.

The largest concentrations of spring and fall staging brant gather in Izembek Lagoon. In the spring, low numbers of staging brant may be found wherever conditions favor eelgrass production, including the sheltered waters of Dushkin Lagoon, Bear Bay, and Captain Harbor. All of the areas used by brant (lagoons, submerged lands, and tidelands) are owned by the State of Alaska, while the surrounding lands belong to Belkofski, Isanotski, or King Cove Native corporations.

Most brant migrate south in late fall, however, in recent years an increasing proportion of the population (approximately 10%) are overwintering on Izembek Refuge. Over-wintering brant use three distinct areas of the refuge: central Izembek Lagoon, Kinzarof Lagoon and the coves of Bechevin Bay. These State-owned lagoons and coves are surrounded by a mix of private and refuge lands. Of the three, only Izembek Lagoon is surrounded entirely by refuge lands. Kinzarof Lagoon is bordered by King Cove Corporation lands to the south and Bechevin Bay is bordered by conveyed and selected Isanotski Corporation lands.

Minimizing human disturbance during staging and wintering is critical for the continued health of the Pacific brant population. The staging period is a time of physiological stress for brant. Not only must they recover from the rigors of breeding, brood rearing and molting, they must also build fat reserves for a lengthy migration. Because staging brant are sensitive to noise and visual disturbance, increased human presence may result in birds losing more energy (through increased flight and lost feeding time) than they are able to recoup by food intake. Persistent disturbance can displace birds from optimal habitats and ultimately reduce reproduction and survival rates.

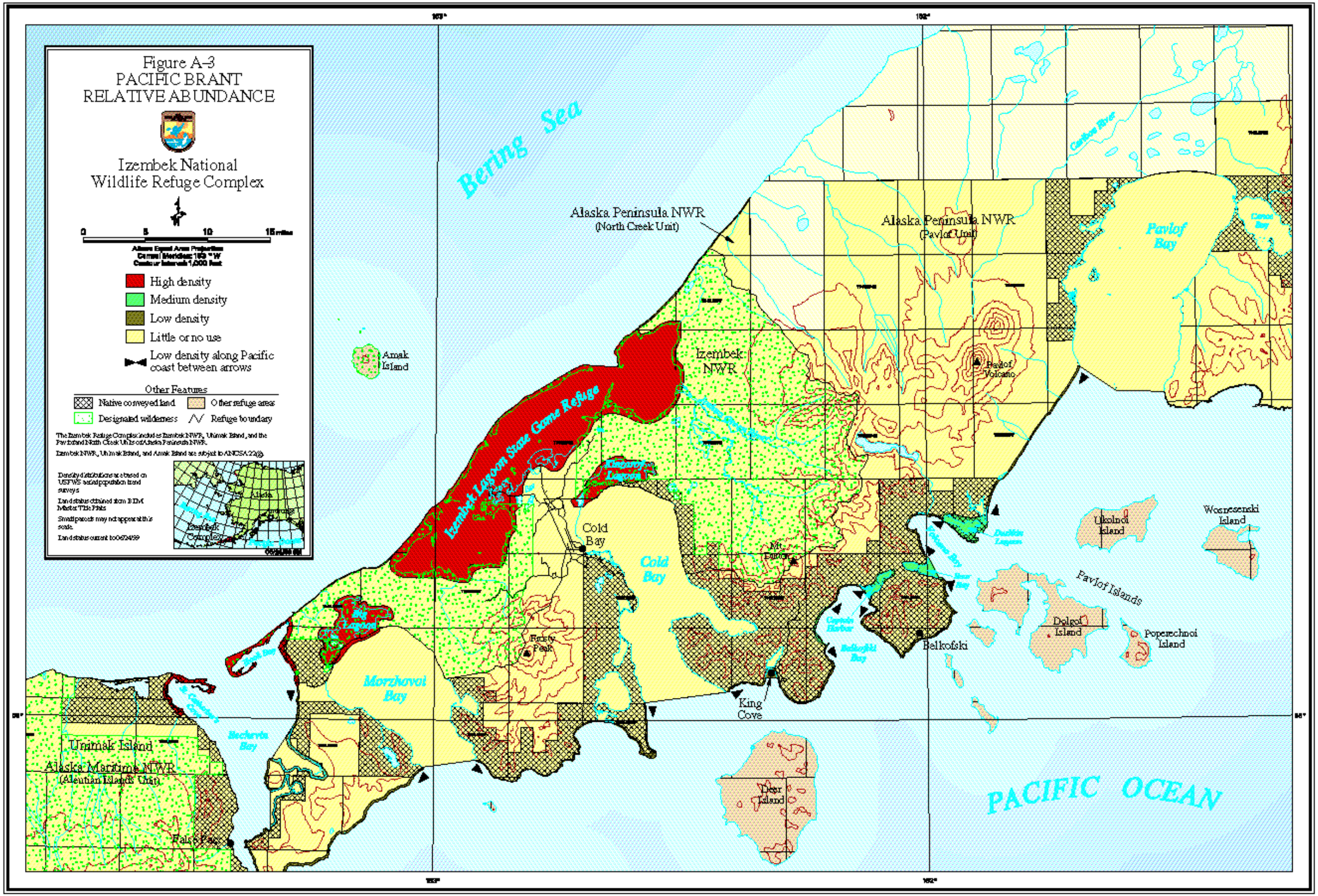
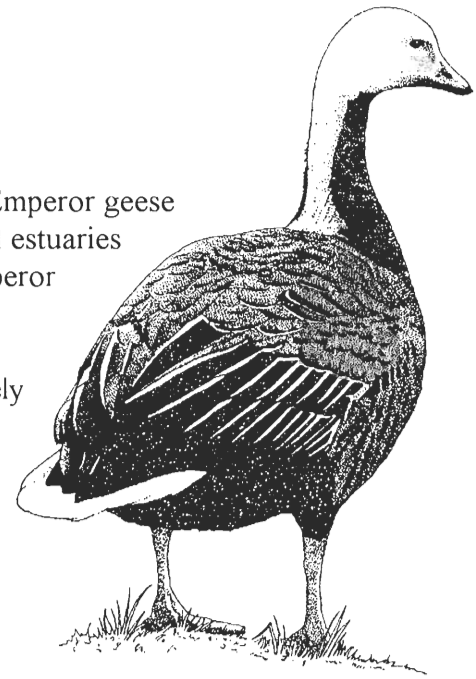


Figure A-3
PACIFIC BRANT
RELATIVE ABUNDANCE
Izembek National
Wildlife Refuge Complex
0 5 10 15 miles
High density
Medium density
Low density
Little or no use
Low density along Pacific coast between arrows
Other Features
Native conveyed land
Other refuge areas
Designated wilderness
Refuge boundary
Bering Sea
Alaska Peninsula NWR
(North Creek Unit)
Alaska Peninsula NWR
(Pavlof Unit)
Pavlof Bay
Izembek NWR
Amak Island
Pavlof Volcano
Izembek Lagoon State Game Refuge
Cold Bay
Cold Bay
Mt. Dutton
Ukolnoi Island
Wosnesenski Island
Pavlof Islands
Dolgoi Island
Poperechnoi Island
Belkofski
King Cove
Morzhovoi Bay
Unimak Island
Alaska Maritime NWR
(Aleutian Islands Unit)
False Pass
Deer Island
PACIFIC OCEAN

Emperor Goose



Each spring and fall, the entire world population of Emperor geese (est. ~ 64,000 in the spring of 1997) stages in coastal estuaries of the Izembek Refuge. The highest densities of emperor geese can be found in the major lagoons. However, smaller numbers utilize coastal bays and shorelines throughout the refuge. In recent years, approximately 20 percent of the population has remained to overwinter in the refuge.

Steller's Eider

Approximately 50-60 percent of the world's Steller's eiders (est. ~ 150,000) overwinter in Izembek and Kinzarof lagoons and adjacent estuaries. Up to half of the population molts in specific areas of the lagoons. Like emperor geese they can be found in smaller numbers in coastal areas throughout the Complex.

Both species are found primarily on State-owned lagoons and bays within the Complex. With the exception of Izembek Lagoon, all high quality habitats of these species are in close proximity to private lands. Land owners include Tanadgusix, Shumagin, King Cove, Sanak, and Isanotski corporations.

These species, like brant, are sensitive to human disturbance during staging and molting. In order to protect and enhance these populations, it is important not only to preserve their marine habitats, but to minimize human development and activity on adjacent lands.

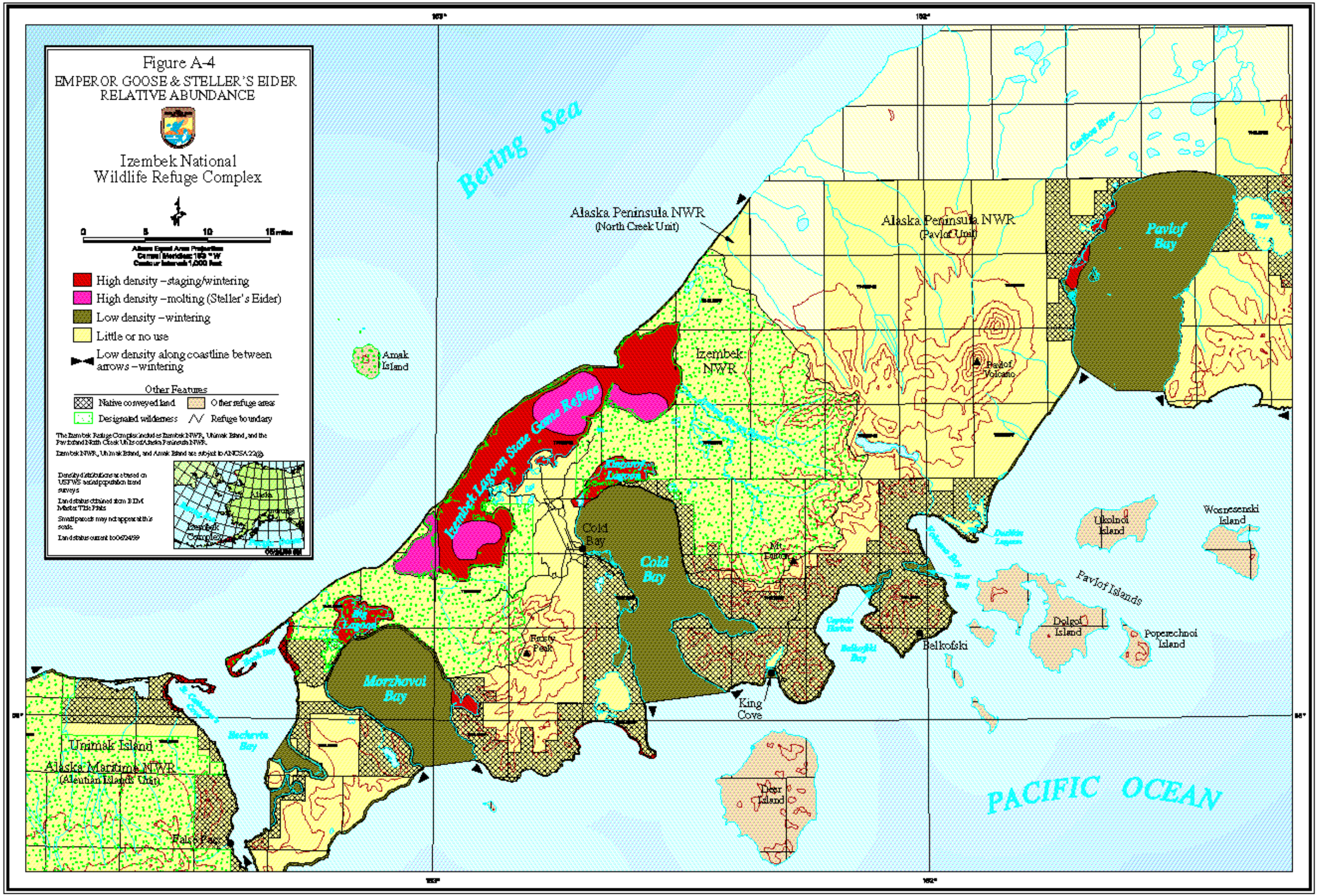
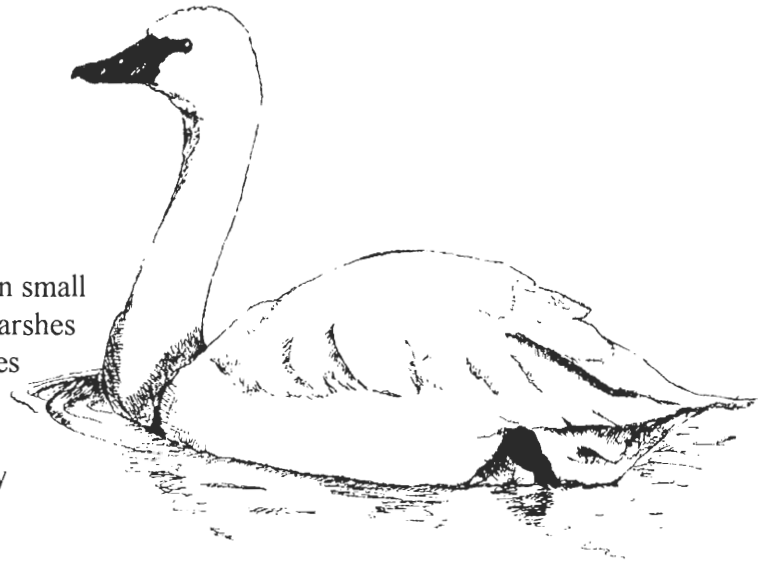


Figure A-4
EMPEROR GOOSE & STELLER'S EIDER RELATIVE ABUNDANCE
Izembek National Wildlife Refuge Complex
0 5 10 15 miles
High density – staging/wintering
High density – molting (Steller's Eider)
Low density – wintering
Little or no use
Low density along coastline between arrows – wintering
Other Features
Native conveyed land
Other refuge areas
Designated wilderness
Refuge boundary
Bering Sea
Alaska Peninsula NWR (North Creek Unit)
Alaska Peninsula NWR (Pavlof Unit)
Pavlof Bay
Izembek NWR
Amak Island
Pavlof Volcano
Izembek Lagoon State Game Refuge
Cold Bay
Cold Bay
Mt. Dutton
Ukolnoi Island
Wosnesenski Island
Pavlof Islands
Dolgoi Island
Poperechnoi Island
Belkofski
King Cove
Morzhovoi Bay
Unimak Island
Alaska Maritime NWR (Aleutian Islands Unit)
False Pass
Deer Island
PACIFIC OCEAN

Tundra Swan



Tundra swans nest near water, often on small islands, peninsulas, or hummocks in marshes or wet meadows. Large, secluded lakes are the preferred molting habitat. The Izembek population is unique in being the only essentially nonmigratory breeding population in North America.

The highest densities of swans occur in the vicinity of Izembek and Kinzarof lagoons, the Joshua Green watershed, and the Big/Middle lagoon areas. Population surveys have averaged 150 birds/mi^2 in high density wintering areas and 0.7 birds/mi^2 in high density breeding and molting areas. Most high density areas are on refuge lands. However, about 13% of the tundra swan's high-use nesting and overwintering habitat can be found on private lands owned by Isanotski, King Cove and Shumagin corporations.

Development of private lands in high-use areas could have adverse impacts on the swan population. Tundra swans are extremely intolerant of human activity, especially while breeding or molting. Currently, annual productivity within Izembek Complex is low due to high rates of egg predation and cygnet mortality. If human activity and development were to displace swans from optimal to less desirable habitats, the current rates of reproduction and survival could probably not be sustained.

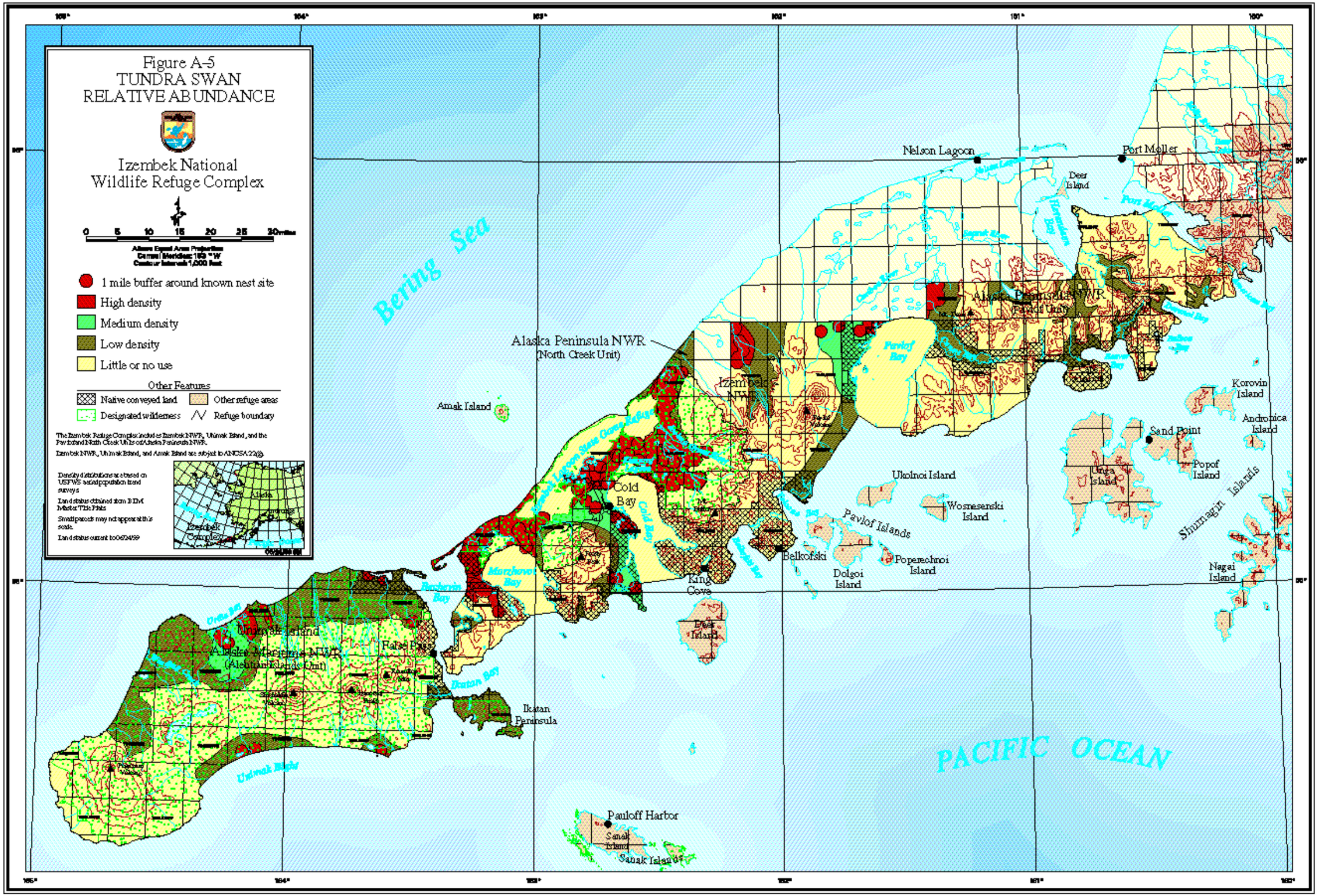
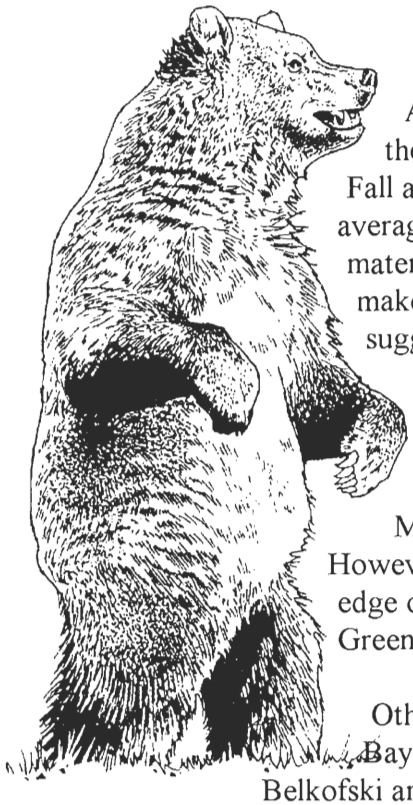


Figure A-5
TUNDRA SWAN
RELATIVE ABUNDANCE
Izembek National
Wildlife Refuge Complex
0 5 10 15 20 25 30 miles
1 mile buffer around known nest site
High density
Medium density
Low density
Little or no use
Other Features
Native conveyed land
Other refuge areas
Designated wilderness
Refuge boundary
Bering Sea
PACIFIC OCEAN
Nelson Lagoon
Port Moller
Deer Island
Alaska Peninsula NWR
(North Creek Unit)
Izembek NWR
Amak Island
Cold Bay
Pavlof Bay
Korovin Island
Andronica Island
Sand Point
Popof Island
Unga Island
Shumagin Islands
Ukolnoi Island
Wosnesenski Island
Pavlof Islands
Belkofski
Dolgoi Island
Poperechnoi Island
King Cove
Nagai Island
Morzhovoi Bay
Unimak Island
Alaska Maritime NWR
(Aleutian Islands Unit)
False Pass
Ikatan Peninsula
Pauloff Harbor
Sanak Island
Sanak Islands

Brown Bear



Although brown bears may be found throughout the Refuge, the highest densities occur within the Joshua Green watershed. Fall aerial population trend surveys over the past 20 years have averaged 97 bears (0.6/mi^2), with almost a third of these being maternal sows. Because the crepuscular/nocturnal habits of bears make them easily missed by these daylight surveys, it has been suggested that the population may actually exceed 320 bears (2.0/mi^2) (USFWS 1997b). The small home ranges and high productivity characteristic of this area result from a combination of quality habitat, including an adundant food supply, and low levels of human disturbance (Dau 1990). Most of this remote area is included in the Izembek Wilderness. However, King Cove conveyed and selected lands lie on the western edge of this high use area, three miles to the southwest of the Joshua Green River.

Other areas that support high densities of bears include the Canoe Bay watershed to the east of Pavlof Bay, Cape Aliaksin, the Belkofski area, the Urilia Bay watershed on Unimak Island, and the southwest drainages of Izembek Lagoon. Approximately 21% of these high density foraging areas are Native conveyed lands. Land ownership includes Atxam, Belkofski, St George Tanaq, and Shumagin village corporations.

High density denning areas (7.3 bears/mi^2) are typically found in mountainous terrain. Most of these areas are refuge lands, however some high-use denning habitat (about 10% of the total) is owned by King Cove and Isanotski corporations.

Currently, the private lands in these high-use areas are largely undeveloped. However, future development could increase human presence in areas that have traditionally served as summer and fall foraging areas. It is not necessarily the degradation of prime habitat that leads to diminishing bear populations. Often more important is an intolerance of bears and an increase in bear-human conflicts, whereever there is an increase in human presence. The result is that some bears may be displaced from otherwise good habitats to avoid human activity. Bears that do not leave the area may be considered a threat and killed.

Access into the Joshua Green watershed could increase substantially if a proposed road right-of-way across King Cove Corporation and Izembek Refuge lands is approved. Prior experience has shown that brown bears can be displaced from prime feeding and denning areas by road construction and use.

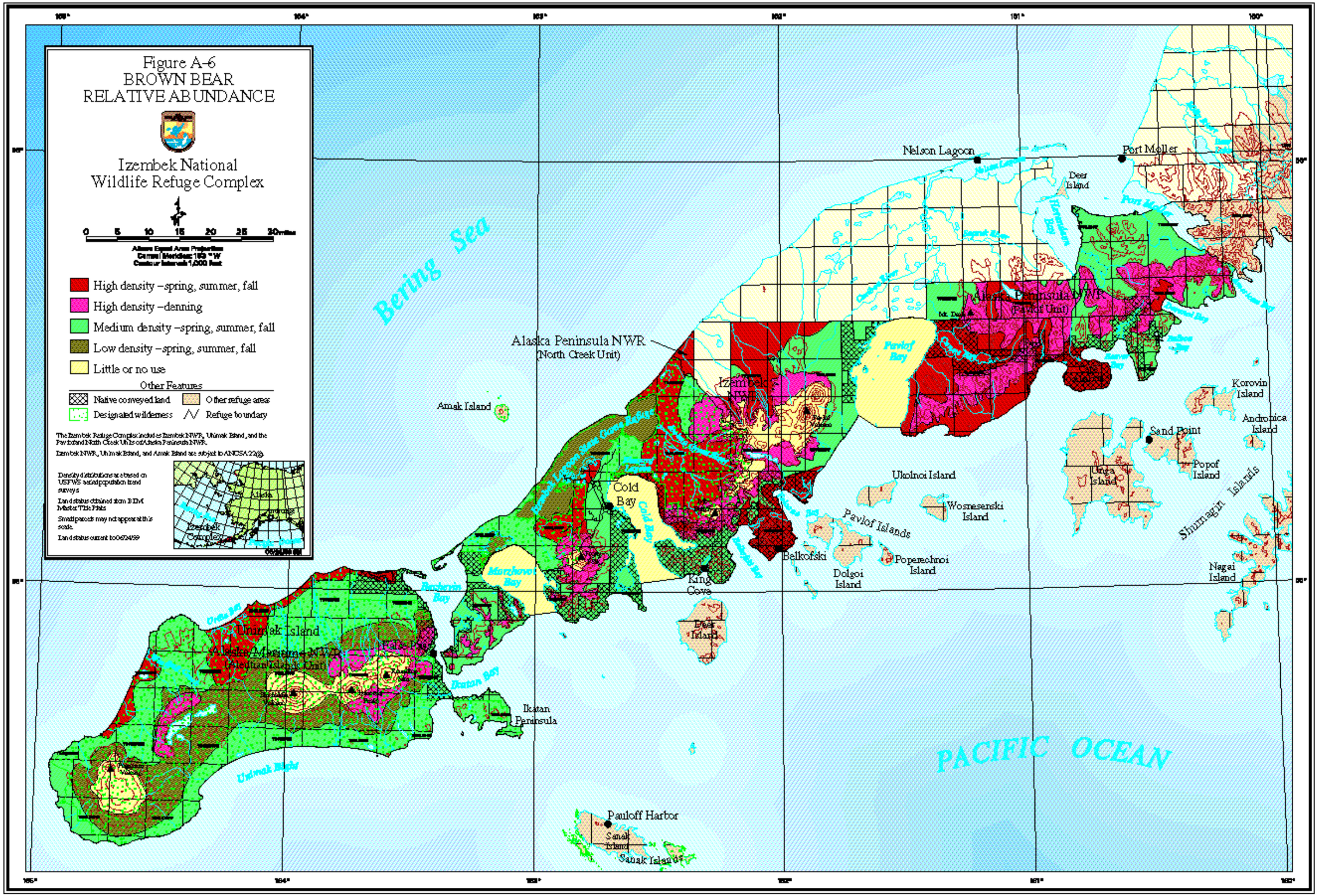
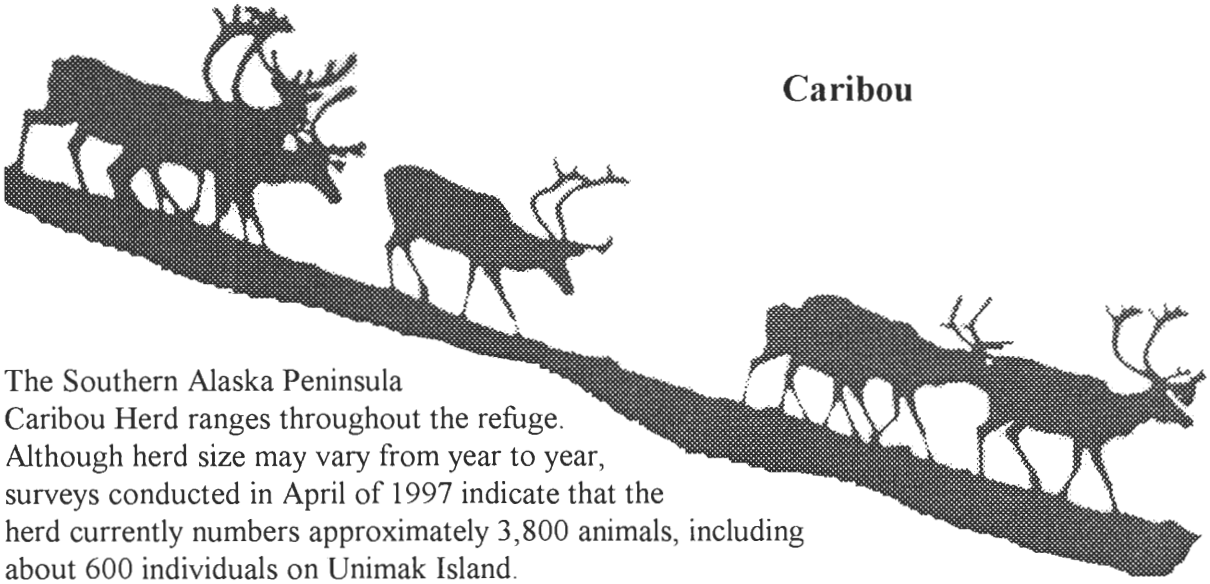


Figure A-6
BROWN BEAR
RELATIVE ABUNDANCE
Izembek National
Wildlife Refuge Complex
0 5 10 15 20 25 30 miles
High density –spring, summer, fall
High density –denning
Medium density –spring, summer, fall
Low density –spring, summer, fall
Little or no use
Other Features
Native conveyed land
Other refuge areas
Designated wilderness
Refuge boundary
Bering Sea
PACIFIC OCEAN
Nelson Lagoon
Port Moller
Deer Island
Alaska Peninsula NWR
(North Creek Unit)
Alaska Peninsula NWR
(Pavlof Unit)
Izembek NWR
Amak Island
Korovin Island
Andronica Island
Sand Point
Popof Island
Unga Island
Shumagin Islands
Ukolnoi Island
Wosnesenski Island
Pavlof Islands
Popenechnoi Island
Belkofski
Dolgoi Island
Cold Bay
King Cove
Deer Island
Nagai Island
Unimak Island
Alaska Maritime NWR
(Aleutian Islands Unit)
False Pass
Ikatan Peninsula
Pauloff Harbor
Sanak Island
Sanak Islands



Caribou

The Southern Alaska Peninsula Caribou Herd ranges throughout the refuge. Although herd size may vary from year to year, surveys conducted in April of 1997 indicate that the herd currently numbers approximately 3,800 animals, including about 600 individuals on Unimak Island.

The primary migration corridor between the calving grounds and wintering areas passes through refuge lands on the narrow isthmus between Kinzarof and Izembek lagoons. Most high density wintering grounds are on refuge lands. However, about 16% of these areas are on lands owned by King Cove and Sanak corporations.

Most of the high density calving areas lie on State-owned lands to the north of the Complex boundary. However, a portions of the calving grounds are on refuge lands as well as Shumagin and Aleut selected lands.

Numerous studies in Alaska and Canada have focused on the effects of human development and/or road intrusion on caribou behavior and populations. Disturbance of calving grounds and the increased opportunities for harvest seem to comprise the most substantial impacts (Dau and Cameron 1986, Bergerud et al 1989, Cameron et al. 1992). However, studies conducted along the Dempster Highway in the central Yukon suggest that vehicular traffic and human presence pose a barrier to caribou movements. In addition, disturbance on the winter range can displace caribou from key wintering habitat to less suitable areas. The additional physiological stress from disturbance may adversely affect reproduction and survival (Murphy and Curtalo 1986).

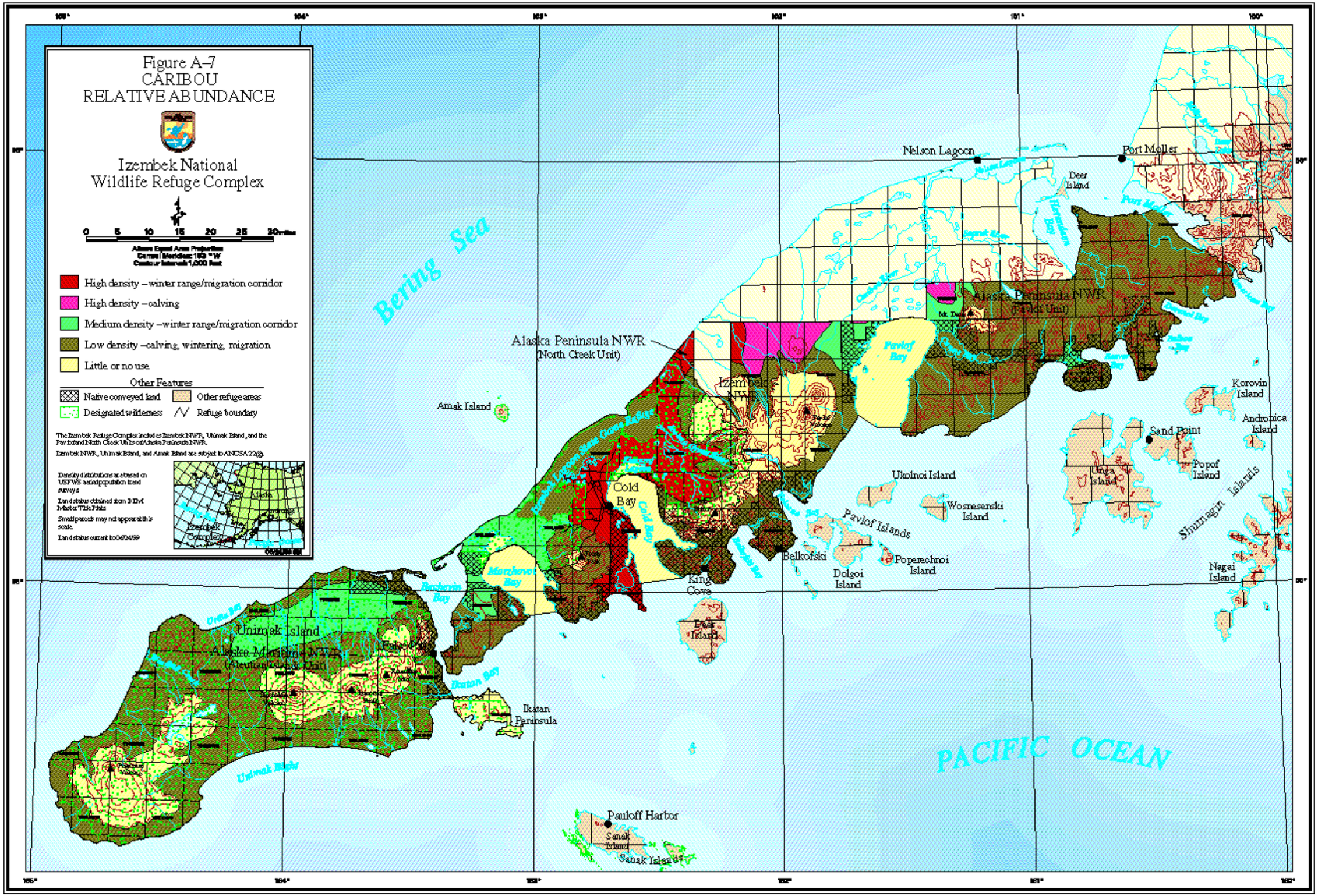


Figure A-7
CARIBOU
RELATIVE ABUNDANCE
Izembek National
Wildlife Refuge Complex
0 5 10 15 20 25 30 miles
Albers Equal Area Projection
Central Meridian: 163 °W
Contour Interval: 1,000 feet
High density – winter range/migration corridor
High density – calving
Medium density – winter range/migration corridor
Low density – calving, wintering, migration
Little or no use
Other Features
Native conveyed land
Other refuge areas
Designated wilderness
Refuge boundary
The Izembek Refuge Complex includes Izembek NWR, Unimak Island, and the Pavlof and North Creek Units of Alaska Peninsula NWR.
Izembek NWR, Unimak Island, and Amak Island are subject to ANCSA 22(g).
Density distributions are based on USFWS aerial population trend surveys.
Land status obtained from BLM Master Title Plats.
Small parcels may not appear at this scale.
Land status current to 06/24/99
Alaska
Izembek Complex
Bering Sea
PACIFIC OCEAN
Nelson Lagoon
Port Moller
Deer Island
Alaska Peninsula NWR
(Pavlof Unit)
Alaska Peninsula NWR
(North Creek Unit)
Izembek NWR
Amak Island
Korovin Island
Andronica Island
Sand Point
Popof Island
Unga Island
Shumagin Islands
Ukolnoi Island
Wosnesenski Island
Pavlof Islands
Popenechnoi Island
Belkofski
Dolgoi Island
Nagai Island
Cold Bay
King Cove
Deer Island
Unimak Island
Alaska Maritime NWR
(Aleutian Islands Unit)
Ikatan Peninsula
Pauloff Harbor
Sanak Island
Sanak Islands