COOK INLET & KVICHAK WATERSHED

PARKS, REFUGE AND SANCTUARY (see BEARS for more details)

• The Environmental Quality Improvement Act requires that Environmental Impact Statements address “possible conflicts between the proposed action and the objectives of Federal, regional, State, and local (and in the case of a reservation, Indian tribe) land use plans, policies and controls for the area concerned” (40 CFR §1502.16(c)).

AFFECTED PARKS:

• The McNeil State Game Sanctuary and Refuge were established for these purposes:
  • The permanent protection of brown bear and other fish and wildlife populations and their habitat for scientific, aesthetic, and educational purposes;
    1) To manage human use and activities in a way that is compatible with that purpose and to maintain and enhance unique bear viewing opportunities in the sanctuary;
    2) To provide compatible opportunities for wildlife viewing, fisheries enhancement, fishing, temporary safe anchorage and other activities both in the sanctuary and refuge, and in the refuge, for hunting and trapping opportunities if compatible with sanctuary management objectives.¹
• “The purpose of Lake Clark National Park and Preserve is to protect a region of dynamic geologic and ecological processes that create scenic mountain landscapes, unaltered watersheds supporting BristolBay red salmon, and habitats for wilderness dependent populations of fish and wildlife, vital to 10,000 years of human history.”²
• “The purpose of Katmai National Park and Preserve is to protect, study, and interpret active volcanism surrounding the Valley of Ten Thousand Smokes, extensive

coastal resources, habitats supporting a high concentration of salmon and brown bears, and an ongoing story of humans integrated with a dynamic subarctic ecosystem. The park and preserve offer unique opportunities to explore vast wilderness and immense volcanoes, watch brown bears, fish for salmon and trout, and many other activities.”

CONFLICTS:

• A number of species protected by these parks, refuge and sanctuary range outside the parks. Wolves, bears, caribou, moose, and migratory birds all have ranges that indicate travel through the mining area. Populations will be harmed by mining operations and infrastructure.
• McNeil Refuge and Sanctuary, as well as Lake Clark and Katmai National Parks are in the Kvichak Watershed. This watershed is the basis for the health of ecosystem and is threatened by contamination from mine dust, potential Pebble tailings dam failure.
• Heavy metals bioaccumulate and move up the food chain, so dust contamination close to the mine site will impact the larger animals that travel from McNeil, Lake Clark and Katmai.

WATERSHEDS IN PEBBLE AREA

3 https://www.nps.gov/katm/planyourvisit/basicinfo.htm
ECOTOURISM

• Jobs will be made and jobs will be lost.
• The Project Description (pebbleprojecteis.com) states that the Pebble Project will create 850 jobs.
• The existing mainstays of the economy in this region are all wilderness-compatible and sustainable in the long run.
• In 2014, the EPA assessed jobs based on a “Wild Salmon Ecosystem” in Bristol Bay Region (outlined in watershed map above) as follows: sport fish - 854, sport hunt - 132, wildlife viewing - 1,669. 4
• Pebble will take a lot of good jobs: need an estimate of how many jobs lost. Is it worth it?
• Total estimated recreational direct spending in Alaska attributable to Bristol Bay wild salmon ecosystems (sport fishing and hunting and “non-consumptive” spending, eg. wildlife viewing) was 173.3 million in 2009. 5
• When re-assessed for current proposal, the number of jobs and total value of the ecotourism industry based in the Kvichak and Nushagak Watersheds, as well as along the transportation corridor, must include the following:
  • Wildlife and bird viewing
  • Lodges


• Sport fishing
• Transportation and support industries
• Hospitality sector on Kenai Peninsula
• Integrated tourism sectors, such as sport fishing on Kachemak Bay and Kenai River.
• Media outlets, freelance photographers, journalists, videographers producing media in area.

• In 2017, the bear-viewing program at McNeil River State Game Sanctuary (MRSGS) attracted 972 applicants from 15 different countries. The MRSGS bear-viewing permit program generated approximately $73,400.00 in 2017 that was deposited into the state’s Fish and Game Fund.7
  • This park, the bears it protects, and it’s bear-viewing program will be directly harmed by the mine infrastructure.
  • Amakdedori beach is a landing beach for bear viewing flights.
  • Visitors to McNeil will not have a wilderness experience if Pebble goes in. For many, this experience is extremely valuable and the reason they pay to go to region.
  • Bear behavior will change. Bears will be pushed out. (see BEARS for more)
• Lodges around Lake Iliamna that guide guests on bird and wildlife viewing trips and sport fishing trips will be harmed.
  • wildlife displacement
  • habitat destruction
  • contamination
  • wilderness experience

• Lake Clark and Katmai National Park are nationally significant protected lands and are important visitor destinations. Between 2006 and 2016, Katmai attracted an average of 43,791 visitors per year and Lake Clark attracted an average of 11,102 visitors.8

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KEY SPECIES IMPACTED IN KVICHAK WATERSHED AND COOK INLET

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6 The Bristol Bay region is especially renowned for the size and abundance of its rainbow trout: between 2003 and 2007, an estimated183,000 rainbow trout were caught in the Bay Management Area. (https://www.epa.gov/sites/production/files/2015-05/documents/bristol_bay_assessment_final_2014_es.pdf )


8 https://www.nationalparked.com/katmai/visitation-statistics
NORTHERN SEA OTTER, STELLER’S EIDER, BELUGA WHALES, HUMPBACK WHALES, RIGHT WHALES, HARBOR SEALS, BROWN BEARS, SALMON, TROUT, SCALLOPS, HERRING, MIGRATORY BIRDS (PACIFIC FLYWAY POPULATIONS)\(^9\), WOLVES, CARIBOU, MOOSE...

• All these species need baseline studies conducted on population density; range; forage; habitat; health of population; stressors.
• All need impacts assessed.
• All need mitigation of impacts assessed.
• Cumulative impacts to all species = NO ACTION.

NORTHERN SEA OTTER

• Protected under the the Marine Mammal Protection Act (MMPA).
• Southwestern distinct population segment (DPS) listed as threatened under the Endangered Species Act (ESA).
• Proposal disturbs designated Critical Habitat for Southwestern DPS.

• The port facilities and pipeline cross Unit 5 of the Northern sea otter Critical Habitat.
  • The pipeline and port will disturb considerable benthos, including known shellfish and scallop beds (food for otters).

\(^9\) “Each year at least a billion birds migrate along the Pacific Flyway, but these birds are only a fraction of those that used the flyway a century ago. Habitat loss, water shortages, diminishing food sources, and climate change all threaten the birds of the Pacific Flyway” (http://www.audubon.org/pacific-flyway).
• Project Description states that concentrate will be transferred at port as follows: “Once inside the hold, the container lid will be opened and turned upside down to unload the concentrate into the ship’s hold. The container will be lowered as close as possible to the bottom of the hold to minimize the drop distance and the potential for dust generation during ship loading. The empty containers will be cleaned of any residue on the outside while at the port, and then returned to the laydown pad. They will then be returned to the mine site and reused for transporting concentrate.”

• Effects of contamination from port must be assessed, effects potential spills of fuel and toxic concentrate must be assessed. Contamination resulting from blow-out of the mine dam could reasonably damage critical habitat in Unit 4 and Unit 5: impact must be assessed.

• Habitat will be removed. Sedimentation of habitat.

• Boat strike dangers.

• Noise and activity can drive them out of habitat.

• Approximately 6,918 ± 4,271 Otters in Kamishak Bay in 2002: this is a designated critical habitat refuge.¹⁰

• Sea otters are considered a keystone species, strongly influencing the composition and diversity of the nearshore marine environment they inhabit.

• The MMPA does not allow for human activity that disrupts their behavior, such as that required for nursing young and breeding.

• Development activities in the coastal zone, especially those that create disturbances in nearshore waters or release effluent, could have negative effects on endangered sea otters.

• Must develop and implement monitoring of sea otter population in this area. Research must include marking system or genetic analysis to distinguish between Northern (Enhydra lutris kenyoni) and Southern sea otter (Enhydra lutris nereis).

• Baseline information on contamination levels needed.

• Estimation of life history variables and potential impacts needed.

• Must incorporate native knowledge into conservation strategies.

BROWN BEARS

- Proposed development borders McNeil State Game Refuge.
- Bears protected by McNeil State Game Refuge and Sanctuary and Katmai National Park will be impacted.
BASELINE DATA NEEDED FOR EIS:

- According to ADF&G’s McNeil River State Game Sanctuary Annual Management Report 2017, the department “does not conduct bear surveys or have bear use data on the entirety of the sanctuary or refuge.” The EIS needs baseline density data for region that accounts for seasonal migration patterns of bears. Baseline study must also run long enough to account for known year-to-year density variability.

- Range of movement:
  - How far and where are bears moving?
  - Do bears move between the coastal and the mine areas?
  - Are there areas that limit movements, such as bottlenecks, pinch points?
  - Where do bears currently cross the proposed road alignment?
  - How much are bears moving between protected areas in McNeil Refuge and Sanctuary and Katmai and transportation corridor and port?
  - Must identify habitat linkages: finite geographical area used by brown bears for movement between different areas of their range.

- Identify denning locations: density, and time.
- Population trends: gender, age, reproductive.
- Feeding patterns, feeding concentrations, nutrient needs.
- Composition of population segments at seasonal feeding concentrations on salmon streams – gender, age, species.
- Temporal use of streams.
- Genetic relatedness of bears – differential reproductive fitness, which bears are most productive?
- Permit Application more than 222 stream crossings: not all have been surveyed. Survey of all streams along transportation corridor to update ADF&G Anadromous Waters Catalog.
  - How many fish are in these streams?
  - Current patterns in subsistence use and hunting must be assessed: How many bears are taken? Where are they taken? Who is taking them?
- All research must be subject to peer review, methods and results must be transparent and made available to the public.

ENCROACHMENT ASSESSMENT:

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11 Transect surveys flown between 1999 and 2005 (some data from 1991) suggest that the overall bear density in Game Management Unit 9 is about 6,000–6,800 bears and the McNeil River State Game Sanctuary and national parks are thought to contain an additional 2,000–2,500 brown bears (Alaska Department of Fish and Game Division of Wildlife Conservation, Wildlife Management Report: Brown Bear Management Report from July 2006-June 2008. Patricia Harper, Ed.)

• Human activities such as road construction and commercial, residential, recreational and industrial developments are known to alter brown bear habitat.\textsuperscript{13} Seventy five miles of road and three port infrastructures will be constructed in known areas of high brown bear concentration. Habitat loss must be assessed along transportation corridor: denning habitat, feeding habitat, travel corridors.
  • Contamination of streams and water table from mine mine dust, as well as potential spills of fuel and concentrate along road and at port all threaten wild salmon and trout. Bears depend on healthy fish, berries and water. These impacts must be assessed.
  • The port is located in shallow water and will need to be dredged to be used. All dredgeate will be stored on land at the port site: containment area of approximately 170 acres will be excavated for storage site: this is right near Amakdedori Creek, a known salmon creek with high concentrations of bears feeding. Also linked by Amakdedori Creek to McNeil Refuge. Need assessment of impacts.
  • The port will be noisy and busy: includes power generation station, a compressor station, distribution facilities, maintenance facilities, employee accommodations, and offices. Need assessment of impacts to of noise, garbage, human presence, spills of fuel and concentrate into creeks...
  • Impacts to loss of food access where road crosses salmon streams. Potential impacts around spills of fuel and concentrate in streams along road.
• Expected use of road is up to 70 trips per day.
  • Road will kill bears and may disrupt migration. These bears are not habituated to roads, mortality will be higher: need impact assessment.
  • The EIS must assess impacts on habitat fragmentation from port and road: fragmentation can result in separating previously continuous populations.
• Human encroachment into brown bear habitat has led to significant increases in the number of bears killed to protect life and property on the Kenai Peninsula.\textsuperscript{14} Increase in bear “takes” to protect life and property must be assessed with influx of people, activity, garbage etc.
• Human activity displaces bears.\textsuperscript{15}
  • Assess bear displacement potential at the mine, at port facilities at Iliamna, along road corridor, at port facilities in Kamishak - Impacts to denning and feeding?


HUNTING PRESSURE

• The road will allow for greater contact between bears and humans: from tribes, visitors, and mine workers. A significant component of this contact will be increased hunting pressure. Need assessment of impacts.

• A study on similar “private” road to Ambler Mine in the Kobuk River valley shows that “the proposed road should be expected to substantially impact subsistence production in communities that are not currently connected to the road system.”16

BEARS IN THE ECOSYSTEM

• Bears are keystone species:
  • spread seeds
  • till land
  • disperse essential nutrients (eg. nitrogen from salmon)

• Research is needed on potential impacts to ecosystem if bears are pushed out of the mining area or “taken” at higher rates due to improved access from road.

• Watershed contamination impacts must be assessed.

• Potential conflict and mortality as bears pushed out of traditional range and into other bears’ ranges.

MCNEIL & KATMAI

• The Environmental Quality Improvement Act requires that Environmental Impact Statements address “possible conflicts between the proposed action and the objectives of Federal, regional, State, and local (and in the case of a reservation, Indian tribe) land use plans, policies and controls for the area concerned” (40 CFR §1502.16(c)).

  • The objectives of McNeil Refuge and Sanctuary as well as of Katmai National Park are in conflict with the proposal: the mine will impact bears and the wildlife viewing opportunities they are explicitly designed to protect.

  • McNeil is home to the world’s largest concentration of wild brown bears. As many as 144 individual bears have been observed at McNeil River through the summer with as many as 74 bears observed at one time. It is a unique place in the world. McNeil River is a National Natural Landmark.

    • “Preservation of these wildlife habitats and the unique brown bear concentration is the primary management goal of the Alaska Department of Fish & Game at the McNeil River Sanctuary.”17

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17 http://www.adfg.alaska.gov/index.cfm?adfg=mcneilriver.main
• The bear viewing program in McNeil limits the number of people who may be present at McNeil River Falls (or the other viewing locations) to no more than 10 individuals between June 7 and August 25.
• The sanctuary has served as a valuable part of the department’s investigations into the life history of brown bears.
• Katmai National Park and Preserve “is to be managed for the following purposes, among others: to protect habitats for, and populations of, fish and wildlife, including, but not limited to, high concentrations of brown/grizzly bears and their denning areas; to maintain unimpaired the water habitat for significant salmon populations; and to protect scenic, geological, cultural, and recreational features.”
• Katmai is in the Kvichak Watershed. This watershed is the basis for the health of ecosystem and is threatened by potential Pebble tailings dam failure as well as spread of mining dust. The ecosystem and ecotourism effects could be significant. Potential impacts to parks and ecotourism must be estimated.
• Bears protected by parks do not stay in parks.
• Males have range areas of about 200-500 square miles, though some have ranges of up to 1,615 square miles. Females generally have smaller home ranges, averaging 50-300 square miles.
• Bear numbers in McNeil Sanctuary build during June and the first half of July and peak the last 2 weeks of July when chum salmon (O. keta) are available at McNeil Falls, a short stretch of rapids that impedes the migration of salmon. By mid-August bear numbers decline by up to 80% as bears move to other river systems or begin foraging for berries. Where do they go?
• Some research has been done on movement of bears protected by McNeil and Katmai, but more needs to be done.

18 https://www.nps.gov/katm/learn/management/index.htmld
• Bears from Katmai and McNeil are likely to become conditioned to garbage and other human activities that could make them dangerous to people visiting the refuge; preventing this kind of conditioning is one of the primary reasons for the Park, Refuge, and Sanctuary. EIS must address the danger and loss of value of protected areas.
• PLP’s proposed transportation corridor runs along in the McNeil Refuge, at times within less than a mile. A significant portion of Amakdedori Beach (likely bear transportation corridor) is in the McNeil Refuge.
• Noise, harm from toxic mine dust, contamination of salmon streams, death from road collision, habituation, displacement, loss of denning habitat, increased hunting pressure, kills in defense of life and property are all potential impacts to bears in McNeil and Katmai.
• Brown Bear population in McNeil may need extra protection: ADF&G’s 2006 McNeil River State Game Sanctuary Annual Management Report states that the number of hearers at McNeil River “had declined significantly since 1998 and remains well below the level identified by sanctuary managers necessary to maintain the quality of the bear-viewing program.”
BELUGA WHALES

- Cook Inlet Beluga Whale DPS is listed as Endangered under the US Endangered Species Act.
- Project is in Critical Habitat area of Belugas.
- Protected by Marine Mammal Protection Act (MMPA)

- Boat Striking is a concern: kills whales.
- Noise is a concern: drives them out.
- Natural gas, diesel, and concentrate spills are a concern.
- Belugas used to be found in the southern Inlet, now they are in the north; NOAA states that may be because of destruction, modification, or curtailment of its habitat or range including:
  (1) oil and gas exploration, development, and production
  (2) industrial activities that discharge or accidentally spill pollutants (e.g., petroleum, seafood processing, ship ballast, municipal wastewater treatment systems, runoff from urban, mining, and agricultural areas).²¹

To the extend that the proposed pipeline and increased industrial activity of the mine are similar disturbances, it is reasonable to expect that they will contribute to loss of Beluga habitat and continued endangerment. This must be assessed in EIS.
- The MMPA does not allow for any human activity that disrupts Beluga behavior, such as that required for nursing young and breeding.
- The proposed construction is in Cook Inlet Beluga Whale DPS Critical Habitat Area:

STELLER’S EIDER

- Listed as threatened under the Endangered Species Act (ESA).
- IUCN Red List: Vulnerable (Species at high risk of global extinction)
- State of Alaska species of special concern: Imperiled breeding population
• Protected under the U.S. Migratory Bird Treaty Act.


• The port site may harm Steller’s habitat: Contaminants are a concern for this species due to their habit of congregating in large dense groups in a few areas. Contamination, such as an oil spill, in a wintering or molting area, could have a major impact on the entire population.

• Dredging maintenance could harm Steller’s forage: they forage by diving or dabbling in shallow water. In marine habitats they eat small fish and saltwater invertebrates, including snails, clams, worms, and echinoderms found in the bottom sediment.

• Noise and activity can drive them out of habitat.
HARBOR SEALS ON LAKE ILIAMNA
• Protected by Marine Mammal Protection Act (MMPA).

• Freshwater seals on Lake Iliamna are a unique population of harbor seals. Most are thought to live on the lake year-round, though more data needs to be collected on movement.
• The ice breaker ferry is proposed to cross Lake Ilimana once a day. Ice breaking is loud and activity may drive out harbor seals. It may also break up their habitat.
• Two ports will be constructed, and it is not clear if they will be used by the public and if so to what extent: how much traffic and noise can be expected? How will this impact Harbor seals?
• Approaching harbor seals during rearing is known to lead to abandonment and death of pups. Ice-breaker ferry activities and increased activities at port may constitute MMPA definition of harassment: “any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal or marine mammal stock in the wild; or has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to migration, breathing, nursing, breeding, feeding, sheltering” is illegal.
• A recent study published by NOAA scientists suggests that a single ship in one glacial fjord may cause up to 14% of the local seal population (11% of pups) to flush into the water (Jansen et al. 2015). With multiple vessels visiting daily, overall disturbance in these seal habitats is likely higher.
• Harbor seals can be disturbed at up to 500-1000 meters (or about 0.25 to 0.66 mi); seals approached by vessels at 100 m (about 100 yds.) can be 25 times more likely to flush from the ice than seals at 500 m; and seals approached head-on are also more likely to flush from the ice (Jansen et al. 2006, 2010).
• A study published in 2015 indicated that exposure of harbor seals to increased vessel traffic may result in altered behavior, increased energetic expenditures, and increased exposure to stress, which could in turn negatively affect the health, condition, and reproductive success of harbor seal populations that reside in glacial fjords (Karpovich et al. 2015).
• More details are needed on the ferry and Iliamna ports to assess risks to this population.

FISHES

HARVESTED FISHES:
The following species are distributed across much of both the Nushagak and Kvichak river drainages: Five species of salmon (keystone species), northern pike, humpback whitefish, rainbow trout, Arctic char, Dolly Varden, lake trout, and Arctic grayling.

OTHER FISHES:
Lampreys (Family Petromyzontidae), Suckers (Family Catostomidae), Mudminnows (Family Umbriidae), Smelts (Family Osmeridae), Salmonids (Family Salmonidae), Sticklebacks (Family Gasterosteidae), Sculpins (Family Cottidae)

• Baselines needed for all: freshwater distribution and habitats, life cycle, predator-prey relationships, stressors.


23 For the last Pebble Proposal, ADF&G collected baseline data on channel characteristics, stream discharge, periphyton (measured as chlorophyll-a concentrations), aquatic invertebrates (density and community composition), metals concentrations in juvenile Dolly Varden Salvelinus malma, and fish presence. (Aquatic Biomonitoring at the Pebble Prospect, 2010. Technical Report No. 11-04 (Revised) K.J Harper, J.M. Brekken, J.M. Alas, R.C. Benkert and S.B. Haught. ADF&G, Division of Habitat)
• Need to update Anadromous Waters Catalog.

ADF&G Anadromous Waters Catalog
For more maps go to: https://www.adfg.alaska.gov/sf/SARR/AWC/

• Impact assessment needed for all:
  • contamination from mine dust and spills to species and forage in streams and waters around transportation corridor.  
    • ”Several metals could be sufficiently elevated to contribute to toxicity, but copper is the dominant toxicant.”
    • Copper would cause death or reduced reproduction of aquatic invertebrates 13-25 miles under current proposal, and 37-51 in a full-

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24 Routine operations involve leaks: “Wastewater treatment is assumed to meet all state standards and national criteria, or equivalent benchmarks for chemicals that have no criteria. However, water quality would be diminished by uncollected leakage of tailings and waste rock leachates from the containment system, which would occur during routine operations.” (An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska, Executive Summary. EPA 910-R-14-001ES. January 2014. Online at https://www.epa.gov/sites/production/files/2015-05/documents/bristol_bay_assessment_final_2014_es.pdf)

25 For example, arsenic, copper, and nickel, zinc, cadmium and chromium concentrations have all been found to be above the guidelines in studies conducted at Kensington Goldmine near Juneau. (Aquatic Studies at Kensington Gold Mine, 2017. Technical Report No. 18-02. Johnny Zutz. ADF&G, Devison of Habitat. February 2018).

build out scenario.27 These invertebrates are the primary food source for juvenile salmon and all life stages of other salmonids, so reduced invertebrate productivity would be expected to reduce fish productivity.

• habitat damage related to road (222 stream crossings).
  • ”Culverts commonly fail to allow free passage of fish. They can become blocked by debris or ice that may not stop water flow but that create a barrier to fish movement. Fish passage also may be blocked or inhibited by erosion below a culvert that “perches” the culvert and creates a waterfall, by shallow water caused by a wide culvert and periodic low streamflows, or by excessively high gradients.”28
  • ”After mine operations cease, the road would likely be maintained less carefully by the operator or may be transferred to a government entity that would be expected to employ a more conventional inspection and maintenance schedule.”29

• habitat damage and loss related to burying pipeline along transportation corridor
• discharge of warm water used to cool power plant and compression station
• contamination related to discharge of ballast water in Kamishak Bay
• impacts related to loss of habitat at Amakdedori creek.

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PACIFIC FLYWAY BIRD POPULATIONS

- Protected by U.S. Migratory Bird Treaty Act

- Each year at least a billion birds migrate along the Pacific Flyway.\(^{30}\)
- Impacted wetlands are stop-overs for migratory birds.\(^{31}\)
- The lake over the tailings pile is toxic for birds.
- Dust from mine can be expected to enter waters used by these birds as landing places and enter the food chain, harming birds who feed in the many wetlands around the mine.

http://www.ducks.org/Conservation/Waterfowl-Research-Science/Understanding-Waterfowl-The-Flyways

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\(^{30}\) “These birds are only a fraction of those that used the flyway a century ago. Habitat loss, water shortages, diminishing food sources, and climate change all threaten the birds of the Pacific Flyway” (http://www.audubon.org/pacific-flyway).

NORTH PACIFIC RIGHT WHALE

- Listed as endangered throughout its range under the Endangered Species Act (ESA).
Because of their rare occurrence and scattered distribution, it is nearly impossible to assess all the threats to this species, but possible threats include:

- ship strikes
- entanglement

The relevant major actions recommended in the Draft North Pacific Right Whale Recovery Plan are:

- Reduce or eliminate injury or mortality caused by ship collision
- Protect habitats essential to the survival and recovery of the species
- Minimize effects of vessel disturbance
- Monitor the population size and trends in abundance of the species
- Maximize efforts to free entangled or stranded right whales and acquire scientific information from dead specimens
SCALLOPS

• The Pipeline appears to cross over known scallop beds that are also used for commercial harvest: impacts must be assessed.

From ADF&G Homer Commercial Fisheries Management
Map of Natural Gas Pipeline Route

From the Project Description in the Application for Permit (POA-2017-271).