

Final Report

**A Study of the Drift Gillnet Fishery and Oil/Gas Industry Interactions and  
Mitigation Possibilities in Cook Inlet**

Prepared for

**U.S. Department of the Interior  
Minerals Management Service, Alaska OCS Region**

by

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## **Appendix A: Annotated Bibliography**

This appendix presents the annotated bibliography developed during the course of the study. The intent of the bibliography is two-fold. First, it is developed as a reference source for persons interested in the fisheries-oil and gas interface, related mitigation issues, and associated topics. While the references and entries are in large part specific to the interface and region of interest, materials from various maritime contexts around the world are also reviewed, thereby broadening the opportunities for comparative analysis. Second, the bibliography reveals strategies and models used around the United States and abroad to mitigate problems associated with the interface of interest. As such, it allows identification of the cases best suited to understanding and mitigating the drift gillnet-oil and gas industry interface in Cook Inlet. The bibliography is arranged alphabetically by author. Entries are selected from often extensive literatures based on degree of relevance to the goals and objectives of the project.

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**Ackefors, H., and K. Grip. 1994. *Swedish Coastal Zone Management: A System for Integration of Various Activities*. Copenhagen, Denmark: International Council for the Exploration of the Sea.**

This report describes the Swedish coastal zone with regard to multiple uses and pressures such as urban settlement, industries, tourism, fishing, aquaculture, mineral exploitation, pipelines, shipping, nature conservation, and marine archeology). Analysis addresses attendant competition and conflicts among human users, and the challenges of managing human activities and marine wildlife in this resource rich area. Conflicts between the oil and fishing industries are managed in part under policies associated with Swedish laws that are analogous to those enforced in the United States. Relevant laws in Sweden include the Water Act, the Natural Resources Act, the Environmental Protection Act, the Nature Conservancy Act, and the Water Pollution Act.

**Al-Rashoud, A. K., et. al. 1994. Conservation and Management of Coastal Fishery Resources of Kuwait. In P. G. Wells and P. J. Ricketts (eds.), *Cooperation in the Coastal Zone: Conference Proceedings*. Vol. 1. Dartmouth, Nova Scotia: Coastal Zone Canada Association, Bedford Institute of Oceanography.**

Kuwaiti fisheries management strategies take the form of limitations on catch per unit effort and strict implementation of coastal laws and regulations. The 1991 Gulf War incurred extensive effects on the region's 195-kilometer coastline, including some six million barrels of spilled oil and extensive airborne emissions, with lessons for managing spills elsewhere. The proceedings review the effect of the oil spills and oil fire fallout on the productivity of the marine ecosystem and commercial fishing interests in Kuwait, and suggest ways to conserve fish, shrimp, and pearl oyster stocks under these challenging environmental conditions.

**Bergen Chamber of Commerce and Industry. 1989. *Proceedings of the First International Conference on Fisheries and Offshore Petroleum Exploitation*. Chamber of Commerce and Industry. Bergen, Norway.**

Fisheries and petroleum industry interactions are the focus of these proceedings. The main areas of potential conflict reviewed include loss of access to fishing grounds, the threat of oil spills and blowouts, various impacts on marine life, and damage to fishing gear and vessels. A variety of policy options are reviewed, with relevance for similar conflicts in other high latitude areas such as Alaska.

**Berkes, Fikret. 1989. Co-Management and the James Bay Agreement. In Evelyn Pinkerton (ed.), *Cooperative Management of Local Fisheries: New Directions for Improved Management and Community Development*, pgs. 189-208. University of British Columbia Press: Vancouver.**

Several land claim agreements with Canada's Natives demonstrate detailed provisions for Native co-management in the allocation of subsistence resources. The chapter deals specifically with the James Bay Agreement of 1975. Key themes are greater local participation, preferential and exclusive rights, and deregulation of native fishing rights subject to a conservation principle. The study centers on the impact of a hydro-electric project, harvesting regulations, and fish and wildlife resource planning. A joint government-Native Coordinating Committee works as a forum for Native concerns and as an advisory group to state and federal agencies. Problems are found in the meshing of traditional Native "political" mechanisms and non-Native mechanisms of policy and control. The question of whether or not Natives have an inherent system of resource management is debated. The author sees a lack of clarity, despite detailed provisions, and conflicts with current government policies.

**Berman, Matthew D. and Teresa Hull. 1987. *The Commercial Fishing Industry In Alaska's Economy*. Institute of Social and Economic Research, University of Alaska, Anchorage.**

Berman and Hull describe the commercial fishing industry against the larger Alaska economy, focusing on the nature and importance of direct, indirect, and induced economic elements and effects of fishing. Employment and income associated with harvesting are considered direct elements, while indirect elements involve employment and income generated from the seafood processing industry and associated business transactions. Induced effects addressed in the study involve income and employment derived from spending income generated from the direct and indirect elements. The study provides an overview of commercial fishing, and insight into the economic configuration of the industry across Alaska.

**Boudreau, P. R., D. C. Gordon, G. C. Harding, J. W. Loder, J. Black, W. D. Bowen, S. Campana, P. J. Cranford, K. F. Drinkwater, L. Van Eeckhaute, S. Gavaris, C. G. Hannah, and G. Harrison. 1999. The Possible Environmental Impacts of Petroleum Exploration Activities on the Georges Bank Ecosystem. Canadian Technical Report of Fisheries and Aquatic Sciences, No. 2259. Dartmouth, Nova Scotia: Department of Fisheries and Oceans.**

This Department of Fisheries and Oceans regional advisory report describes an assessment of the Georges Bank ecosystem and summarizes potential effects from petroleum exploration activities in the region. The assessment process included input from Canadian and U.S. government scientists, external reviewers, and representatives from fishing groups and petroleum industry interests. According to the report, routine exploratory seismic activity could have significant but temporary effects on adult fish behavior and movement, which could in turn affect catch rates and spawning behavior. It was further reported that (1) the effect of routine operational exploratory drilling activity on the ecosystem and fishing fleets depends on the location and timing of activities, and on the properties of drilling discharges, (2) drilling could lead to a temporary loss of access to relatively small portions of the fishing grounds, and (3) seismic activity could lead to temporary space conflicts with fishing activities, depending on timing, location, and the gear types involved.

**Bradner, Tim. 2003. "Salmon Season a Time of Hope." *Alaska Journal of Commerce*. June 30. Online at <[http://alaskajournal.com/stories/063003/loc\\_20030630001.shtm](http://alaskajournal.com/stories/063003/loc_20030630001.shtm)>.**

This article assesses the prospects for the 2003 Cook Inlet salmon harvest on the eve of the drift gillnet openings. Bradner interviews fishermen and stock assessment specialists who provides mixed reviews of the harvest forecast. The fishermen were cautiously hopeful that low rates of harvest and low prices of recent years had bottomed out and that this season held better prospects. The stock assessment specialists also anticipated a modest recovery over recent years.

**Bureau of Land Management, Alaska Outer Continental Shelf Office. 1978. Monitoring Petroleum Activities in the Gulf of Alaska. Alaska OCS Socioeconomic Studies Program, Technical Report, Number 17. Anchorage.**

This report describes exploratory drilling activity occurring on the OCS in the Northern Gulf of Alaska and Lower Cook Inlet between 1975 and 1978. The report provides information concerning the number, timing, location, depth, and results of wells drilled, as well as the kinds of equipment used, changes in community-level employment, wages paid, transportation routes used, and communities affected by the activity. The document provides some useful if dated insight into the nature of effects associated with exploration in the Cook Inlet region. Communities examined in the study include Homer, Seward, and Yakutat.

**Busiahn, Thomas R. 1989. The Development of State/Tribal Co-Management of Wisconsin Fisheries. In Evelyn Pinkerton (ed.), *Cooperative Management of Local Fisheries: New Directions for Improved Management and Community Development*, pgs. 170-185. University of British Columbia Press, Vancouver.**

This subjective chapter deals with attempts in Wisconsin to develop co-management arrangements in Lake Superior fisheries and smaller lake fisheries. A polemic has formed in the experience of Lake Superior co-management processes versus those of the smaller local lake processes. The former has experience, business-like demeanor, and success. The latter has inexperience, politicized fervor, and unsuccessful results. Reasons cited for the successes are: information and technical expertise available to both parties, the groups interacted constructively (both wanted an agreement), and inclusion of professional mediators to keep the meetings on track. Inland fisheries and fishing are portrayed as an altogether different animal.

State officials and Natives have yet to find compromise on many issues, most specifically, spearing. Although a mechanism for consensus was established in the Technical Working Group, lack of utilization has produced little positive results. Most conflict is seen as stemming from treaty rights given to Natives and the regulations placed on their neighbors. Here co-management is wrapped in larger issues such as sovereignty and validity of tribal governments.

**California Coastal Commission. 2001. Legislative Report. February. California Coastal Commission. San Francisco.**

This report includes a summary and analysis of California S.B. 1, which would create the California Endowment for Marine Preservation and the California Marine Resources Trust Fund as a permanent funding sources for projects designed to conserve, protect, restore, and enhance the state's coastal marine resources. The primary revenue source for both the endowment and the fund would be the savings afforded to owners/operators of decommissioned oil and gas platforms that remain in place after lease expiration. The report suggests that the absence of conclusive scientific evidence about the viability of marine habitats associated with offshore oil and gas platforms in part defines conflicting interests between key ocean user groups in California.

**California State Lands Commission. 1999. Mineral Resources Management Division Rigs-to-Reefs Workshop. Los Angeles.**

There are 33 oil facilities active in the offshore waters of California. Ten are situated in State jurisdiction waters, and 23 are on the OCS. Six of the state facilities operate on islands. The remaining are steel platforms. There have been proposals to use drilling platforms for artificial reefs since the first platform was decommissioned and removed in 1974. But no artificial reefs have been established since the productivity of reefs built from structural steel is a subject of debate, and because of lingering concern about hazards to navigation and liability. The need to complete prospective artificial reef projects in a timely manner has also limited such efforts amidst a complex permitting process. Nevertheless, the potential benefits of artificial reef from

rigs are reportedly attractive to many, and remain a subject of interest to various parties in the region.

**Centre for Environment, Fisheries and Aquaculture Science. 2001. Strategic Environmental Assessment 2: North Sea Fish and Fisheries. Technical Report 3. United Kingdom Department of Trade and Industry. London. Available online at <[http://www.offshore-sea.org.uk/sea/dev/html\\_file](http://www.offshore-sea.org.uk/sea/dev/html_file)>.**

The European Commission is instituting increasingly stringent fishery management strategies to alleviate declining fish stocks in the North Atlantic and North Sea. This report notes that such actions have the potential to increase conflict between the fishing industry and the offshore oil and gas industry since fleets in the region could potentially be displaced from traditional fishing grounds and forced to fish closer to existing and prospective offshore oil and gas fields.

Meanwhile, mobile exploration activities (both seismic and drilling), and the physical presence of offshore infrastructure required for production reportedly can incur significant effects on fishing activities. Direct effects are said to include (a) loss of access to fishing grounds at exclusion zones and near obstructions, (b) gear entanglement and damage, and (c) safety risks associated with “fastening” of fishing gear to obstructions. Indirect ecological effects on commercially targeted species reportedly can occur as a result of various physical disturbances and discharges inherent in oil-and-gas exploration and production activities. In addition to reviewing such inter-industry conflicts, this report summarizes regionally well-established means of liaison between government agencies and the fishing and offshore oil and gas industries. Though the efforts are not without notable problems, such agencies typically take a proactive role in overseeing safety issues, addressing compensation claims, and providing for an inter-industry forum on best practices.

**Chamberlain, Dilworth W. 1991. Effects of Non-explosive Seismic Energy Releases on Fish. In Colleen S. Benner and Robert W. Middleton (eds.), *Fisheries and Oil Development on the Continental Shelf*, pgs. 22-25. American Fisheries Society Symposium 11. Bethesda.**

This short piece discusses a major concern of fishermen, government agencies, and the general public, namely petroleum exploration related non-explosive energy releases. Early geophysical seismic techniques used explosives and were lethal to marine life. Those practices have been outlawed in the USA. The air gun is now the primary tool of choice for geophysical surveys. Testing of non-explosive effects focuses on the use of the air gun and water gun at varying decibels and distances. All though some harmful effects are noted, the author claims inconclusive evidence of detriment to marine life. Main conclusions focus on a “no harm to marine life, but possible harm to commercial fishermen” discussion. The author suggests “with concern and adequate communication between the petroleum industry and commercial fishermen, potential economic effects can be substantially reduced”.

**Cicin-Sain, B., and A. Tiddens. 1989. Private and public approaches to solving oil/fishing conflicts offshore California. *Ocean and Shoreline Management*, 12(3), 233–251.**

This paper draws on a survey of regional fishery participants to examine the effects of oil operations on the commercial fishing industry in California. Reportedly significant effects include displacement, wherein participants in the various sectors work to adapt to new locations, supply sources, and markets. Both public and private efforts have been undertaken to mitigate such problematic effects in California, reportedly with mixed results. According to the authors, in conflict cases involving publicly owned resources and contestants of unequal power, private mediation should be a supplement to and not a replacement for established public policy decision-making processes.

**Cook Inlet Keeper. 2003. *The Keeper. Protecting the Cook Inlet Watershed and The Life it Sustains*. Winter/Spring edition. Homer.**

This bi-annual newsletter documents various environmental issues affecting the Cook Inlet watershed. Articles in this issue include citizen protests concerning gas and oil lease sales, reportedly toxic oil and gas dumping in the inlet, and other news items outlining environmental effects of energy resource development. The tone and content of the editorial “Message from the Keeper” is pessimistic about trends in contemporary environmental legislation in the region, asserting that “anyone concerned about the health of our natural systems has been labeled an ‘enemy of the state,’ harkening back to the red-baiting scare tactics of the early Cold War years.”

**Cook Inlet Regional Citizens Advisory Council (CIRCAC). 2002. 2002 Annual Report. Kenai.**

The CIRCAC annual report outlines short-term objectives and long-term projects for effecting CIRCAC policy interests in the region. Since its inception in 1990 following the *Exxon Valdez* oil spill, Alaska’s Regional Citizen’s Advisory Councils have worked with various environmental, fishing, and oil interests to improve maritime transportation and safety. CIRCAC is one such Council. Some of the issues specifically addressed by CIRCAC in recent years include vessel crew training, vessel inspection, and oil spill response. The 2000 Annual Report reviews CIRCAC’s recent efforts in water monitoring activities, resource mapping, various natural science research, and public outreach.

**Cook Inlet Regional Citizens Advisory Council (CIRCAC). No date. *How the Pieces of the Puzzle Fit Together*. Kenai. Pamphlet.**

This pamphlet outlines the efforts of the Cook Inlet Regional Citizens Advisory Council and its accomplishments in addressing the threat of oil spills in the region. The document also summarizes: (1) the historical and economic importance of commercial fishing to the communities of Cook Inlet, (2) the Council’s commitment to protect the region’s “pristine” environment, (3) the importance of the oil industry in the region, (4) CIRCAC’s putative

responsibility to Alaska Natives residing in the region, and (5) its commitment to promote recreation and tourism in the region.

**Coriel, Paul. 1993. The Diversification of a Louisiana Coastal Community. In S. Laska and A. Puffer (eds.), *Coastlines of the Gulf of Mexico*, pp. 96-102. American Society of Civil Engineers. New York.**

This article discusses community-level reactions to rapidly changing oil prices in the mid-'80s. The author argues that most coastal Louisiana communities failed to anticipate the effects of economic dependency on oil operations, and when both oil and fishing industries experienced problems, few parishes were prepared to react. The local government of Cameron Parish was exceptional in that its leadership sought to diversify the local economy by sponsoring various tourism-related projects such as town festivals, development of various attractions, and investment in a visitors' bureau. The author argues that Cameron leadership successfully advocated economic diversity largely as a result of the ability to anticipate, conceptually grasp, and effectively act in response to a growing problem.

**Cormick, Gerald, and Alana Knaster. 1986. Oil and fishing industries negotiate: mediation and scientific issues. *Environment*, 28(10), 6–15, 30.**

This article reviews the manner in which the discovery of oil reserves and subsequent development activities along the California coast led to interactions between the oil industry and commercial fishing industry. Issues included increased traffic as seismic exploration vessels surveyed promising areas and as supply vessels sought to use the fastest routes to the platforms. Such traffic occasionally resulted in damaged fishing nets and gear, and some fishing groups expressed concerns that acoustic signals from seismic exploration would disperse fish and damage eggs and larvae. Rather than turn to protracted and expensive court battles, the parties tended to pursue mediation.

An impartial scientific subcommittee was organized to address the seismic testing issue, and equity issues were addressed through traditional negotiations in a joint committee. The authors observed that “although some of the research findings (of the seismic science subcommittee) failed to meet the expectations of particular industries or agencies, the participants’ mutual commitment to a process that they had designed helped both the negotiators and their constituents to accept the results” (p. 13). The reputation and credibility of the scientists involved reportedly also helped legitimate the mediation process and its results.



**Dale, Norman. 1989. Getting to Co-Management: Social Learning in the Redesign of Fisheries Management. In Evelyn Pinkerton (ed.), *Cooperative Management of Local Fisheries: New Directions for Improved Management and Community Development*, pgs. 49-72. University of British Columbia Press, Vancouver.**

A public policy problem: how to invent approaches for collaborative problem-solving across broad and heterogeneous social groupings. Using the Pacific coast as a case study in solution-resistant conflicts, the author sets out to discover lessons, mechanisms, and procedures for dealing with conflict in salmon use and management in British Columbia. The Northwest Indian Fisheries Commission was established in 1974 to create an “equal share” stake in fisheries management for the tribes. With the courts forcing cooperation, new organizational conflicts and various co-management efforts sprang forth. The Fisheries Advisory Board (FAB) was created in 1976 to handle various controversies. This and other councils revealed differences in terminology, definitions, and goals.

After nearly a decade of struggle and finally mediation at Port Ludlow, compromises were made and a new “consciousness” developed. An era of cooperation led to a diminished role for the FAB. The author suggests that using the tools of “social learning” is the best way to reach co-management goals with the least amount of conflict.

**Daly, Emma, Mark Townsend, and Antony Barnett. 2002. “How Oil Slick Will Bring Black Death to Coast's Way of Life.” Guardian Unlimited, *The Observer Online*. November 24.**

These journalists provide an on-location account of the extensive environmental effects resulting from the sinking and cargo leakage of the oil tanker *Prestige*, in November 2002, 133 miles west of the Spanish coast and port city of Galicia. The incident and its aftermath preceded litigation in which the governments of Spain and Britain, municipal authorities of Galicia (home of the majority of the EU commercial fishing fleet), the EU, and the ship’s operators continue to seek resolution of damage claims. The situation is seen to typify the complexities of conflict between the petroleum and fishing industries on environmental risk and loss-of-livelihood issues. The authors argue that the petroleum transport industry remains largely unseen and unregulated on the high seas.

**Dixon, Patrick S. Running Against the Tide: An Oral History of Commercial Fishing in Cook Inlet, Alaska. (1999). Unpublished Thesis, Cambridge College, Cambridge, MA.**

In this Master’s Thesis, Patrick Dixon uses an oral history approach to describe chronologically over a century fishing and associated community life in the Cook Inlet region of Southcentral Alaska. Of particular note and relevance are detailed descriptions of gillnet fishing and associated techniques, and the changing regulatory process which has had a reportedly profound effect on the fleet. The author further addresses the politics of fishing in the region, contending that politics, especially politics associated with the sport fishing fleets have resulted in a shorter

fishing season and a more limited area of fishing for the drift gillnet fleet. Dixon also examines the growing influence of the oil industry in the region.

**Doubleday, Nancy C. (1989). Co-Management Provisions of the Inuvialuit Final Agreement. In Evelyn Pinkerton (ed.), *Cooperative Management of Local Fisheries: New Directions for Improved Management and Community Development*, pgs. 209-227. University of British Columbia Press, Vancouver.**

The Inuvialuit Final Agreement of 1985 is the means by which the claims to traditional lands of the Inuvialuit people have been exchanged for title to lands in fee simple, cash (\$45 million), and specific land rights such as participation in resource development and management. This agreement draws a blueprint for the construction of a co-management regime. Each affected department and member describes its needs and wants and responsibilities. Final decisions rest with government ministers. On paper, the agreement seems to be the closest to “proper” co-management yet. However, several of the institutions have yet to be created, and it is noted that these very institutions are constructs of the non-Native population (a sentiment echoed in the James Bay Coordinating Committee). A positive wait-and-see attitude is expressed.

**Edyvane, K. S. 1999. Coastal and marine wetlands in Gulf St. Vincent, South Australia: understanding their loss and degradation. [\*Wetlands Ecology and Management\*](#), 7(1), 83–104.**

Despite the vast size of the South Australia coast, approximately 95 percent of its population of 1.4 million resides in and around the Adelaide metropolitan area along the coastline of the Gulf of St. Vincent. The concentration of human activity around this shallow, sheltered gulf ecosystem has led to extensive conflict and competition over the use of marine and coastal resources. According to the authors, continual loss and degradation of marine and coastal wetlands in the gulf has been exacerbated by inadequate environmental protection measures, lack of integrated management structures and policies, and conflict between competing user groups, most notably the oil and fishing industries.

Stringent marine and coastal resource use policies and integrated decision-making based on sound information are reportedly needed for equitable and sustainable use of the coastal near-shore ecosystem. Priorities for regional marine and coastal zone policy-makers are said to include development of coastal and biodiversity inventories, understanding of regional estuarine and marine ecological processes, understanding of linkages between coastal and offshore habitats, and establishment of coastal spatial mapping and information systems.

**Faroe Islands Hydrocarbon Planning Commission. 1997. Report to the Faroese Government Preparation for Oil Exploration. Ministry of Petroleum: Tórshavn, Faroe Islands. Available online at <[http://www.oms.fo/uk/petrol\\_info\\_reports\\_reportcont.htm](http://www.oms.fo/uk/petrol_info_reports_reportcont.htm)>.**

In light of the predominant position of the fishing industry in Faroese society, this report views government policy-making as the key to cooperation between the fishing and oil industries. By this account, the disagreements that may arise from the two industries operating in the same area are mainly attributable to competition over specific areas but can also be incurred at times by damage to fishing gear and by marine pollution. According to the region's Planning Commission, area conflicts occur due to the presence of seismic vessels, drilling platforms, production platforms, and loading buoys on the fishing grounds. Displacement of fishers around safety zones, underwater installations, temporarily abandoned drilling holes, satellite wells, manifolds, templates, and various pipelines is also contested.

To ensure that fishers in the Faroes can continue to work under secure conditions and with the least possible inconvenience, Commission recommendations include bringing fishery-related problems into early phases of petroleum-planning; starting investigations before conflicts arise to determine whether additional regulations are needed on the selection of areas for the oil industry; continuing seasonal restrictions on seismic activities; ensuring that there are trained personnel available who can safeguard the fishing industry's interests in relation to the oil industry; establishing a liaison committee consisting of the fishing organizations, the fisheries authorities, the licensees, and the petroleum administration; establishing adequate damage and compensation rules; and designing offshore installations so that the authorities have a real choice concerning removal, abandonment, or salvaging at the time of decommission.

**Fentiman, Alicia. 1996. The anthropology of oil: the impact of the oil industry on a fishing community in the Niger Delta source." *Social Justice: A Journal of Crime, Conflict & World Order*, 23(4), 87–99.**

The village of Oloma is an Ibani fishing community on the Island of Bonny in the Eastern Niger Delta. According to Fentman, oil production has affected components of the local environment and indigenous sources of livelihood. The author suggests that one problematic aspect of oil industry activities that often goes unrecorded is the way in which culture is affected, and that the institutions central to the identity of the Ibani fishing community need to be documented and examined to understand the full range of effects of oil development in the region. Apparently, Niger delta communities have experienced extensive environmental and cultural degradation, the former seen, the latter largely unrecognized.

The author documents one of the major obstacles to traditional fishing methods in the creeks and waterways; that is, the constant movement of trucks traveling to and from the flow station located at the end of the creek in Oloma. Fishing lines, nets, and traps are often torn by the vehicles despite protests from the community. While some argue that overfishing and overpopulation are responsible for low returns on fishing effort, many believe oil pollution has

adversely affected the fishing economy. Numerous residents have been forced to find alternative sources of livelihood, and the resulting migration has led to gradual depopulation of Bonny and associated socio-cultural change.

**Fox, Jeff and Pat Shields. 2003. *Upper Cook Inlet Commercial Fisheries Annual Management Report, 2002*. April. Alaska Department of Fish and Game, Commercial Fisheries Division, Central Region. Anchorage.**

This report outlines the fish harvest for the salmon, herring, and razor clam fisheries for the 2001 season. The authors calculate harvest by gear type, Inlet sub-region, and harvest levels for each fishery. The report also provides statistics for personal use fisheries for 2001. Tabulated fishery statistics for the period 1960 to 2002 are also included. Of note in the tables is the dramatic growth of the drift gillnet fleet between 1960 and 1970, and the particularly high yield in pounds and dollars during the mid-1980s

**Frenett, Brian, Marianne McNair, and Herman Savikko. 1995. *Catch and Production in Alaska's Commercial Fisheries*. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division. Juneau.**

This report incorporates catch and production figures for the commercial fisheries of Alaska for 1995. That was a year of numerous records in catches for the salmon industry. Overall harvest exceeded 200 million fish, which had the unfortunate effects of a saturated world market and poor prices. These problems were exacerbated by an increase in farmed salmon production in Chile and Scandinavia. Data are categorized by region, and further refined to specific sub-region. In the Cook Inlet area of the Central region, the average drift gillnet take of Chinook was 506 pounds, and the product sold at \$1.02 per pound on average. Average sockeye salmon harvest was just over 10,000 pounds and sold for \$1.18 per pound. Take of Coho averaged 1,373 pounds per vessel and sold at \$.49 per pound on average. Average pink harvest was 222 pounds, selling at \$.15 per pound on average, and chum harvest averaged 472 pound and sold at \$.25 per pound on average (p. 25).

**Freudenburg, William R. and Gramling, Robert. 1992. *Community impacts of technological change: toward a longitudinal perspective*. *Social Forces* 70 (4): 937-955.**

Freudenburg and Gramling suggest that while sociologists have made advances in understanding community-level effects of technological and environmental change, attention to date has focused almost exclusively on the relatively brief development stage of construction and rapid expansion. Significant social changes reportedly can take place both before and after the phases of the most intense physical activities (construction, production, expansion), and pathways of influence can be social as well as physical. The authors model an "opportunity-threat" stage, during which most social and economic effects are associated with opportunities and/or threats to biophysical, economic, social, cultural, and psychological aspects of the human environment. It is asserted that if development proceeds, opportunities and threats are joined by effects of visible,

physical activities. Over time, both of these types of effects are said to be joined by an accumulation of experience with the project (cumulative effects).

**Freudenburg, William R. and Robert Gramling. 1993. Socioenvironmental factors and development policy: understanding opposition and support for offshore oil. *Sociological Forum* 8:341-64.**

This article examines social response to the siting of offshore oil projects, and attempts to theorize the role of environmental variables in the divergent attitudes and movements for and against OCS development in Northern California and in Louisiana. The authors examine and compare between regions issues of coastal land access, marine access, energy of sea, and topography and composition of the sea bottoms. In California, the slope of the OCS is very steep and relatively close to shore and as such requires rigs to be sited within site of land (most are in state waters). In Louisiana, the broad, shallow shelf allows distant siting of platforms. Similarly, the wide flat shelf in Louisiana means that fisheries can operate close to shore and do not have to compete as voraciously with rig activity for space as in California where the corridor of movement is quite narrow.

Social and economic factors are also considered. Louisiana's coastal economies have been traditionally extractive-oriented, whereas the California coast is (now) valued primarily for amenity. The authors assert that Louisiana's ongoing dependence on both oil and fishing has led to a level of integration not experienced in California. Indeed, Louisiana residents experiencing little direct contact with the oil industry reportedly have positive feelings about it because they see the value for their friends and neighbors. Residents of coastal areas in California are said to be most typically socially disconnected from people directly involved in the oil industry or who would stand to benefit directly from oil development. It is argued that many of California's coastal residents are newcomers who have chosen to live on the coast for its beauty rather than for its development potential. These factors are said to combine to shape how people in each area perceive their physical environment, and thus how they think about and organize themselves vis-a-vis offshore oil development.

**Freudenburg, William R. and Robert Gramling. 1994. *Oil in Troubled Waters: Perceptions, Politics and the Battle over Offshore Oil Drilling*. SUNY Press. New York.**

This book examines reactions to offshore oil leasing in several coastal communities in the U.S. The authors assert that the attitudes of people in communities near offshore oil projects are shaped primarily by their experiences with the local economic effects of the oil industry, by their perceptions of whether and how the industry will raise living standards and opportunities, and by their perceptions of the likely effects of drilling on the coastal environment. The analysis suggests that residents of Southern Louisiana communities have generally favored oil drilling because they saw increased potential for employment, wages, and investment in their community, and reportedly felt uneasy about their dependence on oil whenever the industry was in a state of decline. Such persons tended to perceive oil drilling as a means to modernization and progress in a rural area. While residents in Northern California communities generally

shared this interest in economic growth, perceived environmental impacts tended to diminish overall interest in oil development in the region..

The authors point to several historical factors in Louisiana's recent economic development to explain overwhelmingly favorable attitudes to oil drilling. These include the fact that there was relatively little commercial fishing and shrimping activity occurring in the region prior to offshore drilling, and that "both of the major offshore activities in Louisiana -- oil and gas development, and the [commercial] harvesting of fish and other types of renewable resources -- essentially grew up together" (p. 76). Meanwhile, Northern California's fishing interests are said to have predated interest in oil exploration, ostensibly leading to a different kind of relationship to drilling and the ocean and coastal environment.

**Fribrock, Dorothy. 1997. *Sockeye Sunday - and other Fish Tales*. Fribrock Kistler Publishing. Kasilof, Alaska.**

This memoir describes life in the Cook Inlet region during the early to mid-twentieth century. Various aspects of fishing around the Kenai Peninsula are reviewed from the perspective of an avid fishing family. Fribrock recounts memories of Snug Harbor, and develops various stories about life in the region, many of which in some fashion relate to set netting, drift gillnetting, and other kinds of fishing in the Inlet. The author describes a range of activities associated with fishing, including the nature of life for winter watchmen at local canneries, daily life for the wives of fishermen, and the evolution of fishing practices in the region. The volume includes many photographs from the period.

**Fusaro, Craig. 1991. *Improving Communication between the Oil and Fishing Industries*. In Colleen S. Benner and Robert W. Middleton (eds.), *Fisheries and Oil Development on the Continental Shelf*, pp. 9-17. American Fisheries Society Symposium 11. Funded by the U.S. Department of the Interior, Minerals Management Service. Bethesda.**

Fusaro describes the origins of the Joint Oil/Fisheries Committee and Liaison Office, established in 1983 to address inter-industry problems occurring between fishermen and oil industry operations in the state and federal jurisdiction waters of California. This was and is an area of extensive offshore exploration and production activity, and many fishermen have reported gear loss, vessel traffic problems, and other problem interactions and spatial conflicts. A professionally-mediated negotiating session led to the establishment of a formal mechanism through which the groups could interact and communicate. The Joint Committee involved the participation of five members from the offshore oil and gas industry and five from the fishing industry. One of the more important functions of the Committee was communication about the timing of offshore testing and exploration activities. The Liaison Office was established to assist in relaying information between key members in each of the industries, and to provide a neutral meeting place and support for interactions. Its functions gradually expanded to include facilitation of claims between fishing operations and the offshore oil and gas industry, such as gear loss claims under federal and local reimbursement programs, and right-of-way issues and

claims presented by both parties. The Committee and Office continue to function under state and local funding administration.

**Gadsby, J. William, Arnold E. Donahue, Martha S. Ditmeyer. March 2000. Assessing the Need for the Fisherman's Contingency Fund. Prepared by the National Academy of Public Administration for the Financial Services Division, National Marine Fisheries Service, National Oceanographic and Atmospheric Administration. Washington, D.C. Available online at: [www.napawash.org/pc\\_management\\_studies/fcf.pdf](http://www.napawash.org/pc_management_studies/fcf.pdf)).**

This document examines the question of continuing need for the Fishermen's Contingency Fund. The fund was established as Title IV of the OCSLA in 1978, and serves to reimburse fishermen who can prove gear loss due to underwater obstructions associated with oil and gas industry infrastructure. The document outlines the history of the fund, describes patterns of claims and claim actions, examines the issue of fraud, and evaluates its ongoing utility. Most claimants are shrimp trawl captains in Louisiana where there are thousands of drilling platforms operating in close proximity to the fleet, and often in relatively shallow water. Possible alternatives for the program are reviewed. These include termination, privatization, and remanding its operation to states and/or counties.

Of note, the claimant and claim must satisfy various criteria prior to award. For instance, the fishing operation must be commercial in nature, and with the exception of pipelines, the obstruction causing the damage must be sub-surface, and cannot have been charted or marked with a navigational aid. But increasing charting and marking of sites is said to be reducing the number of claim approvals despite increasing rates of underwater obstruction. There were 355 claims and 177 approvals in 1999, down significantly from 1301 claims and 860 approvals in 1990 (p. 11).

The report concludes that the fund remains valid and should be continued under federal administration since there are no other legal or private sector options for compensating damages attributable to offshore oil activities. But there are significant caveats. The reviewers assert that "the fund ameliorates, but falls short of remedying the problems associated with underwater obstructions," and that "despite continuing increases in offshore oil and gas activities, the steady decline in claims paid and the declining area eligible for compensation [through increased charting and marking] underscore that the value of the fund to fishermen is eroding; this will continue" (p. 24). The reviewing body concludes that the benefits from the fund are inherently short-term in nature, and that "the time appears to have come when offshore oil, fishing, and government should increase their focus on obstruction removal, site clearance, and mitigation efforts, rather than rely solely on the fund to compensate the fishing industry for damages" (p. 25).

**Gaskin, Malcolm. The Implications for the Economy. pp. 83-104). In Peters, A. F, (ed.) 1974. *Impact of Offshore Oil Operations*. Applied Science Publishers, Ltd. Essex.**

This article draws on the European experience in the early years of North Sea oil development to suggest that the local and regional economic effects of offshore development tend to be positive where it is perceived that the new industry would lead to creation of new jobs and development of modernized infrastructure. This perspective and prediction is qualified in that the author asserts that in embracing offshore oil development to the exclusion of other options, the communities in question may subsequently have to endure the effects of reduced economic diversification.

**Gil, Rocio. 1998. *Laguna de Terminos, an Ecological Reserve*. Victoria, British Columbia: Lester B. Pearson College.**

The ecological reserve Laguna de Terminos is located along the coastal zone in the State of Campeche in the southern part of Mexico. Since the mid-1970s, the reserve has been a strategic zone for gas and petroleum extraction. According to the author, when oil activity started in the region, the area experienced an influx of oil industry workers from around the country. Social conflicts between cultural and linguistic groups, and effects on local fishing production from oil pollution and restrictions on fishing areas reportedly resulted from the changes.

**Gramling Robert and Sarah Brabant. 1986. Boomtowns and offshore energy impact assessment: the development of a comprehensive model." *Sociological Perspectives* 29(2): 177-201.**

This article examines the applicability of the boom-effects model of offshore energy development in Louisiana. The boomtown model predicts that energy development will result in enhanced job opportunities and elevated income for affected communities, but also a strained local labor pool, rapid in-migration, and stressed service infrastructure. Moreover, the model suggests that boomtowns are vulnerable to busts when intensive development fails or ends. The authors argue that new offshore oil development in St. Mary's Parish, Louisiana has not followed this pattern in full. Its labor pool was able to meet the needs of the new industries and thus little in-migration occurred, and because of the nature of offshore work, new rig workers who did arrive generally lived outside of the affected area. Long-time residents of St. Mary's thus did not directly compete with the pool of new workers, but rather worked in the secondary and tertiary support industries. Finally, rather than experiencing a simple bust after the boom, oil-dependent communities in the parish experienced fluctuating economic conditions related to complex and ongoing changes in the global oil market.



**Gramling, Robert and William R. Freudenburg. 1990. A closer look at local control: communities, commodities, and the collapse of the coast." *Rural Sociology* 55(4):541-558.**

Gramling and Freudenburg compare the effects of the 1981 decline in oil prices on two Louisiana communities partly dependent on OCS drilling. One is a diversified administrative center and the other a blue-collar community with a large proportion of offshore platform and shore-side support workers. The authors assert that external structures shaped the nature and intensity of the social impacts of the sudden price drop. As evidence, the authors show that the world-wide price of oil was a better predictor of local rates of employment than endogenous factors (measured by previous years' employment trends at the national and local levels). They conclude by suggesting that locally controlled planning and management of economic development had little effect on how impacts were experienced, and thus social impact studies should examine the dynamics of larger-scale systems to understand the development and impact-recovery process.

**Grant, J. P. 1978. The conflict between the fishing and the oil industries in the North Sea: a case study. *Ocean Management*, 4(2-4), 137-149.**

This report finds that the activities of the fishing and oil industries can in various ways be less than optimally compatible. Offshore extractive operations, and the attendant installations and devices, are reportedly problematic for a long-established fishing industry: marine areas can be closed to fishing, offshore structures can constitute a hazard to navigation, debris from offshore operations can damage fishing gear and vessels, and offshore operations can result in damage to fish stocks and their food through pollution. By this author's account, with the exception of the control of pollution, laws and government regulations may be in need of revision to meet the needs of the two industries and resolve inter-industry conflicts.

**Hanley, Peter T. 1984. A Manual for Geophysical Operations in Fishing Areas of Alaska. Prepared by the Oil/Fisheries Group of Alaska. Peter T. Hanley (ed.). Anchorage.**

The Oil/Fisheries Group of Alaska (OFGA) was formed in 1983 in response to concerns voiced by fishing industry representatives then active in the Bering Sea that oil and gas industry seismic vessels would likely interfere with and undermine their fishing and processing operations. This inter-industry group involved representatives from several major oil companies, from the primary fishing and processing organizations in Alaska, and from a number of geophysical testing companies. The intent of the group was to "provide a forum for inter-industry communication, education, and resolution of potential problems related to [geophysical] operations in Alaska . . . and to promote the successful co-existence of commercial fishing, processing, and oil industry activity in Alaska offshore areas (p. C-1).

Participants included representatives from the following organizations: Amoco, Chevron, Exxon, Gulf Oil, Mobil, Placid, Shell, Soho Alaska Petroleum, Union Oil, Alaska Independent Fishermen's Marketing Association, Bering Sea Fishermen's Association, Central Bering Sea Fishermen's Association, Alaska Dragger's Association, Fishing Vessel Owners' Association, North Pacific Vessel Owners' Association, Peninsula Marketing Association, Pacific Seafood

Processors' Association, United Fishermen's Marketing Association, Western Alaska Cooperative Marketing Association, Comap Geosurveys, Inc., Geophysical Service, Inc., International Association of Geophysical Contractors, McClelland Engineers, Inc., Marine Technical Services, Inc., and Nekton, Incorporated.

The Manual for Geophysical Operations was developed by the OFGA for potential use by seismic vessel companies active in Alaska's offshore zones. The intent of the work was to develop and advocate voluntary procedures for circumventing problems and conflicts between the fishing and oil and gas industries occurring potentially occurring as a result of seismic testing and associated vessel activity in the fishing grounds on the OCS. Facilitation of problem-solving through inter-group communication and cooperation is emphasized.

**Hamilton, Lawrence C. and Carole L. Seyfrit. 1994. Resources and hopes in Newfoundland. *Society and Natural Resources*. Volume 7, pp. 561-78.**

The authors compare surveys of high school students in two rural towns in Newfoundland during the construction of Hibernia, the region's first major offshore oil facility. Newfoundland is one of the poorest provinces in Canada, traditionally dependent on a fragile and fluctuating fishing industry. The region's population has steadily declined over the last decades due to out-migration. The Hibernia project has been mired in controversies over public financing, but was expected to transform and modernize a rural economy. The surveys were conducted in one "boomtown" area most affected by Hibernia construction and one "comparison" area. Results were similar in both surveyed area, and students' expectations of a future career generally differed markedly from that of their parents.

Students generally preferred jobs in non-extractive industries, but were likely to foresee short-term employment in a resource industry. Students' anticipation of the need to migrate for preferred forms of employment was not significantly different between the survey areas. Students in this case were not attracted to offshore oil development as a hope for the future and were generally pessimistic about the promises of both oil and fishing as venues for employment.

**Huskey, Lee. 1986. Labor Force Participation in Rural Alaska: The Determinants of Change. Institute of Social and Economic Research, University of Alaska: Anchorage.**

This report examines the community-level economic benefits of the OCS lease sale process, developing and testing an economic model of labor force participation for various rural Alaska communities. Huskey notes that OCS beneficiary communities may ultimately share economic rents generated by the resource, and enjoy increases in employment opportunities associated with various project phases.

**International Collective in Support of Fishworkers. 1999. For a few oil dollars more. *Samudra Report*. Issue 24, pp. 24–26.**

This brief NGO report describes a campaign by regional and international environmental groups to slow the plans of a multinational oil consortium to construct an offshore oil terminal in the fishing area of Campo-Kribi, Cameroon. The main concerns of the local fishermen included diminishment of resources, lack of information on fisheries regulations, oil pollution, and problems along the coastal zone potentially resulting from exploration and production. The NGO views the current retreat of the oil multinationals from this region as temporary.

**Jannotta, Sepp. 2002. “Salmon Fisherman have their Say.” *Homernews.com*. November 14. <[http://homernews.com/stories/111402/new\\_111402mew0020001.shtml](http://homernews.com/stories/111402/new_111402mew0020001.shtml)>.**

This article outlines the concerns of local fishermen about the future of the fishing industry on Cook Inlet. Fishermen argue that the flooding of the U.S. market with farmed salmon from Chile and the loss of various overseas markets has ruined the salmon industry in Alaska. Indicative of the anxious mood of many harvesters and processors in the region, one fisherman interviewed for the purposes of the article stated that, “None of us who recently bought a salmon permit expect to survive the next few years.”

**Kearney, John F. 1991. Co-Management or Co-Optation? The Ambiguities of Lobster Fishery Management in Southwest Nova Scotia. In Evelyn Pinkerton (ed.), *Cooperative Management of Local Fisheries: New Directions for Improved Management and Community Development*, pgs. 85-102. University of British Columbia Press: Vancouver.**

Initiating co-management in a cooperative vacuum is very difficult. In the case of fishery licensing, it is easier to attach to a cooperative project or social movement already in action. This study deals less with the development of co-management between state and fishermen and more with the capacity of the fishermen to respond to such a possibility. Arguments for social solidarity and cooperative social movements call upon the fishermen of the region to stand together in efforts to be on equal footing with state officials. The author places these needs as preeminent and movement into co-management as subsequent if any chance at effectiveness is to be had. Relationships between historically opposing parties were deemed necessary to create a united front. Organization on the local and regional level, overcoming categorical differences (boat size, type of rig, catch), and maintaining momentum are all essential in a strong union.

**Kenai Peninsula Borough Planning Commission. 1993. Meeting Minutes. August 23. Soldotna, Alaska.**

These minutes provide an informative snapshot of a community-based planning commission weighing competing and on certain issues, conflicting interests of the region’s oil and fishing industries. In their review of State Oil and Gas Lease Sale 78, Kenai Peninsula Borough commissioners note the concerns of the Kenai Peninsula Fishermen’s Association and the United

Cook Inlet Drift Association. Among the principal concerns were that the fishing fleet must adapt their fishing strategies to stationary objects such as offshore platforms. The potential of reduced water quality from possible oil spills was another stated concern.

**Kenai Peninsula Historical Commission. 2002. *Alaska's Kenai Peninsula: The Road We've Traveled*. Kenai Peninsula Historical Association. Hope.**

This history derives from L.H. Allen's 1946 publication, *Alaska's Kenai Peninsula*. The publication builds on the original text by adding communities not included in the original and by offering insights on the region's prehistory. In addition to describing the fishing industry of the

Kenai Peninsula, this volume describes the regional influence of the oil and gas industry. The author describes the area's oil and gas fields and nearby operations in Cook Inlet, suggesting that practicality underlay the importance of Kenai as the region's industrial center, stating that "with a major airport, plus sea and highway access, Kenai was the logical center for the oil industry in the area" (p. 85).

**Kenai Historical Society. (1985). *Once Upon the Kenai: Stories from the People*. Kenai Peninsula Historical Society.**

This anecdotal history of the Kenai Peninsula features personal stories from people who have built their home and lives in the region. The volume examines experiences from "nearly every point of view – as told by native-born Alaskans, adventurers, homesteaders, doctors, nurses, merchants, lawmen, teachers, missionaries, fishermen, trapper, homemakers, laborers, builders." The text is referenced by individual's names, some of whom are members of long-standing Cook Inlet fishing families. Section two includes a chapter titled "The Pile Driver and Fish Traps" which describes the summer salmon seasons from as early as 1946, until 1959 when fish traps were declared illegal. This publication was published for the 25<sup>th</sup> anniversary of Alaska's entry into the Union.

**Kenai Watershed Forum. 2003. *Hydrocarbon pollution in the Kenai River - the facts. Currents, (1-7)*. Soldotna.**

This article outlines efforts to monitor hydrocarbon pollution in the Kenai River watershed. Although such monitoring has been limited to date, the program of mention has managed to establish baseline water quality measures, with recommendation for ongoing monitoring over time. Findings thus far indicate that the Moose River, a tributary of the Kenai River, was the only area in which hydrocarbons were detected from July 2000 to July 2002. Concentrations [in that area] exceeded state standards "for fish and aquatic life in the lower river on each of the three summer sampling occasions." (p. 3). The article concludes that all potential sources of pollution have not yet been identified and more studies are needed to evaluate the watershed.

**Klapp, M. G. 1980. Inter-Industry Conflict in the North Sea and South China Sea: A Comparative Analysis of Oil, Shipping, and Fishing in Four Nations. Unpublished doctoral dissertation, University of California. Berkeley.**

This research documents four cases (in Norway, Britain, Indonesia, and Malaysia) that illustrate how inter-industry conflict has arisen among oil, shipping, and fishing interests owing to competing industrial investment or use of offshore space. The author conducted nearly two hundred interviews with officials of national government ministries and international organizations, and with high-level representatives of corporations and trade unions. Klapp suggests that inter-industry conflict emerged in each of the countries analyzed due to variable interplay of four primary factors: (1) new offshore industrial development held great economic promise, (2) extensions of national jurisdiction were in a state of contestation, (3) recognition of the broader economic and political significance of offshore resources was gaining force, and (4) international competition for ocean industrial resources was considerable.

**Knaster, A. S., C. Fusaro, and J. Richards. 1998. Mediating conflicts between fish and oil: a prototype for joint problem solving of space-use and resource conflicts." In O. R. Magoon, H. Converse, B. Baird, and M. Miller-Henson (eds.), *Taking a Look at California's Ocean Resources: An Agenda for the Future*. Vol. 2. Reston, VA: ASCE.**

In April 1983, negotiations between the offshore oil industry and commercial fishermen were convened to address a number of issues resulting from increase oil and gas permitting activities along the central California coast. According to the authors, both industries experienced challenges in their attempts to coexist in a constrained work space and without a formal mechanism for communication and coordination. Representatives of the two industries invited the State Lands Commission, Coastal Commission, and Minerals Management Service to participate in these initial talks. This meeting set a course for future problem-solving that remains operational to the present and that has been replicated as an approach for resolving a variety of issues among disputants in the region. The lessons learned regarding the effective elements of a dispute resolution system and consensus-building process are applicable to a wide variety of ecosystem and resource management conflicts

**Langdon, Steve J. (1989). Prospects for Co-Management of Marine Mammals in Alaska. In Evelyn Pinkerton (ed.), *Cooperative Management of Local Fisheries: New Directions for Improved Management and Community Development*, pgs. 154-169. University of British Columbia Press, Vancouver.**

The Marine Mammal Protection Act (MMPA) of 1972 (amended 1982) calls for a near universal moratorium on the taking of marine animals with exemption for Alaskan Natives. Federal government, state government, and Alaskan Natives all have an interest in marine mammal management. Management practices surrounding the Pacific walrus are used as examples of this three-way interaction. The federal government, specifically the US Fish and Wildlife Service, sought to return management to the state. This was nearly unilaterally opposed by Native groups. In 1978, Native leaders formed the Eskimo Walrus Commission (EWC) to show state

and federal groups that the Natives were in a position to best deal with walrus management. The management plan, modeled after federal and state management plans, is lacking in enforcement procedures and provisions for self-regulation. Talks between the state, US FWS, and the EWC concerning co-management were begun in 1986, but were discontinued for unstated reasons. The co-management of marine mammals in Alaska is of limited quality and scope due to poor communication and “divergent objectives”. The author predicts only a biological threat to the species will precipitate a true drive towards a co-management environment.

**Laychak, Eugenia. 1991. Mitigation for offshore development/fishing conflicts. In Orville T. Magoon et al. (eds.) *Coastal Zone '91*. Volume 3, pp. 2182-2196. American Society of Civil Engineers. New York.**

Laychak analyzes three cases of conflict associated with the interaction of fishing fleets and offshore development. The two Alaska cases are quite different. One addresses a gold extraction operation in relatively rich fishing grounds offshore Nome in the Bering Sea. The other examines offshore oil operations at Endicott Causeway offshore the North Slope where commercial fishing is minimal. The California case examines offshore oil development at the Irene Platform near Santa Barbara. This was a moderately active commercial fishing zone at the time of the study. Extensive mitigation efforts were undertaken by the lessees in all cases.

Laychak’s WestGold case is most relevant to the situation in Cook Inlet. An offshore gold mining operation was initiated in the rich commercial fisheries of Norton Sound under a regulatory regime delineated by the Alaska consistency process. A conflict avoidance strategy was arranged through the establishment of a project review committee comprised of WestGold and its consultants, and representatives of the University of Alaska, state and federal regulatory and wildlife agencies, local/regional governments, and special interest groups like the Bering Sea Fishermen’s Association.

WestGold worked under committee guidance to establish a clear pre-impact environmental baseline and monitoring program. The monitoring program was flexible in that its emphasis shifted as the base of knowledge about how fisheries and other environmental elements were affected also evolved. Subsequent mining plans were then subject to the results of monitoring and associated analysis. Most parties praised WestGold’s operation. The review committee process was generally seen as an excellent forum for defining and addressing the issues of concern, and for encouraging meaningful communication between what might have been highly conflicted marine resource user groups.

**LGL Alaska Research Associates, Inc. 2000. Mapping Cook Inlet Rip Tides Using Local Knowledge and Remote Sensing. Prepared for the U.S. Department of the Interior, Minerals Management Service, Alaska OCS Region, Environmental Studies Unit. OCS Study MMS 2000-025. Anchorage.**

This report, prepared for the Minerals Management Service, is intended to map rip tides in Cook Inlet, to develop and analyze existing records concerning the consistency of rip tide locations,

and to develop an information base on fishermen's use of these rip tides. The objective of the study was to assist MMS in planning to avoid conflicts between local fishermen and future offshore oil industry activities. Using Canadian RADARSAT 1 satellite data, in conjunction with local fisherman "ground-truthing," in combination with historic radar imagery from the ERS-1 and ERS-2 satellites between 1992 and 1999, principal rip tides (a west rip tide and a combined middle and east rip tides) appeared consistently in both the satellite and fisherman reports. This information, and the fact that fish tend to closely follow these rip tides, and fishermen tend to concentrate effort along these rip tides, supports the view that the location, persistence, and importance of these rip tides needs to be carefully considered in future MMS lease sale activities in Cook Inlet.

The report describes the possibility of conflict between offshore oil and gas industry development and the salmon drift gillnet fishery. Sources of conflict include the construction of stationary drilling rigs that obstruct fishing patterns, contaminants from operations affecting fish reproduction or marketability, and the increased risk of accidents and catastrophic oil spills.

**Lasut, Markus T., and Veronica A. Kumurur. 2001. Consequences of anthropogenic pressures in coastal areas: conflict of interests." *Ekoton*, 1(2), 71–77.**

The authors summarize and describe the range of conflicts that can develop among multiple users of coastal resources, such as fishermen, offshore oil operators, pleasure boaters, and other recreational groups. The article describes the interaction of offshore oil development with fish stocks (concentration and reproduction), and various forms of competition between fishermen and offshore oil interests. Especial focus is applied to the manner in which fishing and oil interests vie for limited infrastructure such as harbor space.

**Lawson, D., R. Scoles, and J. Terry. 1980. Lower Cook Inlet Petroleum Development Scenarios: Commercial Fishing Industry Analysis. Final Report to Minerals Management Service. Contract Nos.: BLM: CT6-61, MMS: 14-12-0001-29002. Anchorage: Alaska Sea Grant Program, University of Alaska.**

The subject of this report is potential conflict between the commercial fishing industry and OCS oil and gas industry interests as examined in advance of Lease Sale 60 in Lower Cook Inlet. The authors forecast activity levels of Cook Inlet and Shelikof Strait commercial fishing in the absence of OCS activity associated with Lease Sale 60 based on then current and select historical information. Oil and gas industry activities in the area (under low-, medium-, and high-find OCS petroleum scenarios) and associated pertinent projections of economic conditions, physical systems, and transportation systems were derived from prior studies. Three potential sources of conflict are considered in detail: labor, components of community infrastructure, and ocean space.

The four main findings of this study are as follow. First, the effect of OCS labor requirements on the commercial fishing industry increased between low find and high find scenarios. Under the low find conditions, OCS oil and gas operations require primarily skilled labor. As operations

and the use of unskilled labor increase, competition with fish-processing employees can be expected to increase.

Second, competition for ocean space could also increase with successively larger find scenarios, and would be reflected in increased fishing costs. The commercial fishing industry conceived in its entirety was not expected to be affected significantly, although individual participants could be significantly affected relative to degree of dependence on fishing and ability to engage in other forms of employment. Gear loss was the major area of conflict. Drift gillnet and purse seine fisheries are active further from shore and use large areas to pursue their quarry, and as such are most susceptible to conflicts involving use of ocean space.

Third, the anticipated competition for electric power and water was not deemed significant for any scenario. Finally, competition for port and harbor facilities is expected to increase with successively larger finds but is expected to be relieved by construction of dedicated facilities during the development phase.

**Loshbaugh, Doug. 2001. "Against the Current: Commercial Fishers Cry Foul at Recent 'Fish Politics.'" *Peninsula Clarion*. July 18. Available online at <[http://www.peninsulaclarion.com/stories/071801/cha\\_0718010001.shtml](http://www.peninsulaclarion.com/stories/071801/cha_0718010001.shtml)>.**

This article states that the commercial fishing industry in Upper Cook Inlet is perceived by residents to be endangered by decisions that have been made by the Governor and the Board of Fisheries. The article outlines various fishery allocation disputes, and implies that current government policy is moving toward replacement of the commercial fishing industry with tourism-related industry.

**Loy, Wesley. 2003. "More Gloom: Low Prices, Spotty Catches Leave Many Fisherman Frustrated." July 6. *Anchorage Daily News*.**

The article outlines the uneven yields throughout Cook Inlet, and the low prices fisherman expect for the catch of the 2003 season. Cannery closings and fewer processing ships on the water indicate the decline of the industry may be permanent. The article also discusses local residents may welcome the gas and oil industry back to Bristol Bay to create new industry and help stimulate the local economy.

**Mann, Anthony. 1953. *Thunder Bay* [Film]. USA.**

This classic black and white film chronicles a struggle between Louisiana shrimpers and out-of-town offshore oil entrepreneurs. The story is set in 1946, with ex-Navy engineer Steve Martin (James Stewart) arriving in Morgan City, Louisiana with a dream: to build a safe platform for offshore oil drilling. Having finessed financing from a big oil company, formerly penniless Steve and his partner are in business. But opposition from the fishing community grows rapidly, led by Stella Rigaud (Joanne Dru). Other hazards include sabotage, a hurricane, and challenges from the



company's board of directors. According to Nadel (1988; see entry below), Mann depicts shrimpers as backward, ignorant folk who resist the economic promise of energy development.

Matthews, Mary. 2002. Regional Stakeholder Analysis in the Caspian Environment Programme: Identification of Potential Conflicts of Interests in Caspian Waters. Paper presented at the Caspian Sea Regional Policy Symposium. Sponsored by the U.S. Department of State and the Starr Foundation. March 15. Shepherdstown, West Virginia,

Matthew examines relationships among stakeholder groups in the Caspian region in order to test environmental attitudes, commitments, concerns, and conflicts associated with the region's marine and coastal environment. Based on analysis of surveys administered during the summer of 2001 in all Caspian states, the author identifies eight major perceived problems and issues: decline in certain fisheries, decline in coastal infrastructure and amenities, decline in overall environmental quality, threats to human health, decline in biodiversity, coastal landscape degradation, potential damage from oil and gas activities, and potential damage from invasive species. Survey participants were also asked to rank basic causes for environmental concerns in the region so as to assess the likelihood for generating conflicts between groups in the region, and to recommend strategies for avoiding those conflicts.

**Maw, Roland. 2002. Tri-Borough Position Paper Federal Outer Continental Shelf Oil & Gas Leasing Program. State of Alaska Comments on the Call for Information for Cook Inlet Lease Sales 2007. United Cook Inlet Drift Association. Soldotna.**

This position paper states the support of the United Cook Inlet Drift Association (UCIDA) for Lease Sales 191 and 199, with the provisions that drift gillnet fleet experiences no loss of fishing area or fishing time. The paper outlines five items the Association argues must be included in the Lease Sale EIS: (1) no offshore loading of tankers, (2) plans implemented to minimize commercial gear conflicts with oil exploration and/or production, (3) adequate spill prevention and response implementation, (4) identification of critical habitat areas and prioritization of habitat protection, and (5) provisions for local government revenue sharing. The paper concludes that if the items are not addressed, the association would not support future lease sales in the region.

**McGoodwin, James R. 1990. *Crisis in the World's Fisheries: People, Problems, and Politics*. Stanford University Press. Stanford, CA.**

This book addresses fisheries management for small-scale fishers. The modern fishing environment is described and followed by a chapter on maritime anthropology, or the cultures of fishing peoples. Several chapters are devoted to active and passive indigenous regulation as examples for fisheries management methodology. Each topic gives the manager a means to regulate the fishing industry from within its unique geographic and cultural setting. The author chastises governments for a perceived lack of social analysis in solving fisheries problems and influencing policy decisions. A move away from "top-down" management and toward to co-management with public input and coordination is proffered as a step in the right direction.

**McKernan, Donald L. John T. Gharrett, and Howard Tait. 1956. A Study of Proposals to Reduce Fishing Effort in Cook Inlet During 1957. *Special Management Study 56-2*. U.S. Department of the Interior, United States Fish and Wildlife Service, Bureau of Commercial Fisheries Administration of Alaska Commercial Fisheries. Anchorage.**

This early study examines fishing methods and regulations in place during the early 1950s, and describes efforts to reduce high harvest levels following the introduction of then new and relatively highly efficient gear. The report's findings suggest that weekly limits placed on access led to uneven harvest. Because the red salmon run in total is comprised of numerous relatively small runs and individuals do not mix homogeneously as they move towards their spawning grounds, and weekly limits did not account for geographic variability, some spawning tributaries were under harvested while others were over-harvested. The report suggested that in order to remedy the uneven harvest, drift gillnet licensing levels should be maintained and beach gear be reduced by one-third.

**McLaughlin, Shirley. 2003. "Newfoundland and Labrador's Fishing and Petroleum Industries Launch 'One Ocean.'" *Ocean Resources Magazine*. January 6. Available online at [www.oceanresources.com/backissues](http://www.oceanresources.com/backissues)>.**

McLaughlin asserts that by recognizing a need to discuss and address issues of mutual concern, Newfoundland and Labrador's fishing and petroleum industries now share more than just a common marine environment. The newly formed inter-industry organization *One Ocean* provides a forum to enhance communications and information exchange between these two regionally important industries. Inspired by similar liaison models developed by other jurisdictions such as those operating in the North Sea and Norway, *One Ocean* will assist both industries in understanding each other's operations and activities so that they can work safely and efficiently together.

The organization will also work to solve conflicts, identify potential problems, and provide an independent expert analysis of key issues. The advisory board consists of seven representatives from each industry, including members of the Fish, Food and Allied Workers, which has more than 20,000 members in Newfoundland and Labrador; the Fisheries Association of Newfoundland and Labrador, an industry trade association accounting for about 80 percent of the province's seafood production and sales; and the Canadian Association of Petroleum Producers, the official voice of Canada's upstream oil and natural gas industry, which represents more than 140 member companies and works closely with members, governments, and stakeholders to analyze key oil and gas issues.

**Meacham, Charles P. and John H. Clark. 1994. Pacific Salmon management – the view from Alaska. *Alaska Fishery Research Bulletin* 1 (1): 76- 80.**

Meacham and Clark argue that since Alaska's constitution, unique among the fifty states, mandates the management and protection of the state's natural resources, the state has a responsibility to prevent over utilization, destruction, or neglect of its fishery resources. The paper outlines the state of Alaska's fisheries prior to statehood, and how Alaska has recovered its fisheries since it entered the Union. The Cook Inlet salmon fisheries are described. The article compares Alaska's approach to conservation with that of the Pacific Northwest.

**Minerals Management Service, U.S. Department of the Interior. 2002. Cook Inlet Planning Area Oil and Gas Lease Sales 191 and 199: Draft Environmental Impact Statement. U.S. Department of the Interior, Minerals Management Service, Alaska OCS Region, OCS EIS/EA MMS 2002-065, December 2002, Volume I (Executive Summary, Sections I through VI).**

Cook Inlet OCS Lease Sales 191 and 199 are scheduled for 2004 and 2006, respectively. A Draft Environmental Impact Statement (DEIS) was completed by MMS Alaska COS Region in 2002 in advance of those sales. The Cook Inlet Lease Sale Area 191 is scheduled for lease in 2004, and Lease Sale Area 199 is scheduled for lease in 2006. Together, the planning area consists of 2.5 million acres in 517 whole or partial lease blocks. The area is located seaward of the State of Alaska submerged lands boundary in Cook Inlet and extends from three to 30 miles from the coast in water depths from 30 feet to more than 650 feet.

The scoping process associated with the Cook Inlet EIS process elicited citizen's comments about the upcoming lease sales and potential future oil and gas industry activities in Lower Cook Inlet. Drift gillnet fishermen attending scoping meetings voiced perspectives about the potential effects of oil and gas industry activities on their fishing operations in Lower Cook Inlet. Concerns related primarily to the chance for oil spills, navigational challenges, reduced fishing time, and reduced fishing grounds. Additional sections of the report of relevance to the present study include consideration of: (1) cumulative effects; (2) fisheries resources; (3) economy; (4) commercial fishing; (5) sociocultural systems; (6) recreation, tourism, and visual resources; (7) sportfishing; and (8) environmental justice.

**Molotch H., J. Woolley and T. Jori. 1996. Growing firms in declining fields: unanticipated impacts of oil development. *Society and Natural Resources*. 11(2):137-156.**

This study of offshore oil development in the Santa Barbara Channel found that many local oil-related firms adapted to declines in the oil industry by diversifying into other realms, thus forestalling their expected demise. The article describes instances of how such adaptation occurs. Firms' success at self-transformation alters the type of environmental impacts caused by the oil industry's coming to the region. This can mitigate the boom-bust cycle often associated with extractive industries, but can also set into motion other long-term consequences. The

authors argue that environmental assessment of industrial projects is incomplete unless they consider how the support industry firms themselves evolve and adapt over time.

**Nadel, Jane Hurwitz. 1988. *Changing Waters: a Cross-cultural Survey of Petroleum Development Impacts on Artisanal Fishing Communities*. In *Identidad y Transformacion de las Americas*, pp. 106-112. Ediciones Uniandes. Bogota.**

This chapter surveys the current literature on conflicts between offshore oil development and fishing communities. The author argues that these conflicts are inevitable. Their outcome hinges on the following key variables: fishing technology, fishery ecology, petroleum geology, and the degree of political consciousness and mobilization in the involved fishing communities. Nadel points out that representatives of fishing-dependent communities are often ineffective in articulating their side of the conflict. It is argued that in order for fishing communities to be recognized and compensated for the impacts of development, such communities and their leaders must make allies with more powerful agencies and entities in the broader society.

**Northern Economics. 1994. *Commercial Fishing Industry of the Gulf of Alaska*. Minerals Management Service, Alaska Outer Continental Shelf Region. MMS Study TR-159. Anchorage.**

This study was completed to provide the Minerals Management Service with updated information concerning the contribution of the fishing industry at the community level throughout the various MMS OCS regions and sub-regions. The study recognized that commercial fishing was of paramount importance to the Gulf of Alaska, and its most “volatile” industry. Gulf communities examined in the report included: Cordova, Homer, Kenai, King Cove, Kodiak, Seward, Unalaska/Dutch Harbor, and Yakutat. The report determined that, with the exception of low value of fish species, there are no new fisheries to exploit within the region and competition for remaining stocks will only increase in the near future. This is particularly significant given that the report also finds that the fishing industry sustains the lives of local residents by providing employment and income, creating municipal revenues, providing justification for state funding of capital projects, and providing a user base for service charge revenues to support maintenance costs and amortization of infrastructure.

**Norwegian Petroleum Directorate. 1997. *Opprydding av havbunnen i Nordsjoeen 1996* [Clean-Up of the Sea Bed in the North Sea 1996]. Oljedirektoratet, Stavanger (Norway).**

The Norwegian Protectorate argues that petroleum activities in the North Sea have resulted in gear entanglement conflicts with fishermen due to oil industry littering of the seabed. A clean-up operation undertaken in 1996 and paid for by the state is described. The clean-up area, 1,000 kilometers offshore Karmoey, was mapped by side-scan sonar. Select targets were then identified and eventually removed. Of the 59 targets examined, 11 were removed and dumped onshore. At one point a chain cable of 9 tons was removed from the seabed. The report also briefly discusses a related compensation agreement with Norwegian fishermen.

**O'Connor, Oonagh. 2000. "The Hidden Costs of Offshore Oil." *Watershed Sentinel*, 10(2). Available online at <<http://www.rfu.org/wss.htm>>.**

O'Connor asserts that exploration and development of offshore oil and gas have been prohibited on the west coast of Canada for almost 30 years largely because of potentially deleterious environmental and economic effects. Now, downturns in the British Columbia economy appear to be making the industry more attractive. Various preliminary efforts have been undertaken in order to find out more about the experiences of communities where offshore oil and gas exploration and production are occurring. O'Connor briefly reviews some of these, noting various potential problems and comparing the study region to others around the world.

**Olomola A. S. 1998. Sources and resolution of conflicts in Nigerian artisanal fisheries. *Society and Natural Resources* 11(2):121-135.**

The increasing dependence on fisheries as a source of livelihood in the maritime states of Nigeria has been associated with intensive management of available resources and an upsurge of contestation of ownership and use rights. In the Ondo and Rivers States, infringements on the rights of ownership and violation of resource management rules have been the major sources of conflict associated with the artisanal fisheries. It has been possible to resolve the emerging conflicts through non-adjudicatory approaches such as negotiation, mediation and arbitration. In effecting these approaches, the organization of conflict resolution is seen as informal and the operational rules are clear, reconciliatory, and easily comprehensible. The strength and resilience of the approaches ostensibly lie in the cohesiveness of the social, kinship, linguistic, and cultural interconnections among the owners and users of the fishing grounds. Usually, the resolution of conflict is accomplished speedily and openly, and the process is relatively inexpensive.

**Parravano, Peitro. 1999. "Organizing Globally and Acting Locally: The World Forum of Fish Harvesters and Fishworkers." *Fishermen's News* (Pacific Coast Federation of Fishermen's Associations). September. Available online at <<http://www.pcffa.org>>.**

The author recounts the founding history of the World Forum of Fish Harvesters and Fishworkers (WFF). This organization was established in 1997 in response to the perceived need within the fishing industry to organize across national boundaries to address issues of pollution, habitat destruction, and short-sighted fishing practices, and to foster sustainable fishing on a global scale. Interactions with the international petroleum industry figure prominently in the discussion.

**Peters, A. F, ed. (1974). *Impact of Offshore Oil Operations*. Applied Science Publishers, Ltd. Essex, United Kingdom.**

This is a now fairly dated edited volume of proceedings from an Institute of Petroleum conference. Chapters address different aspects of the impacts of offshore drilling in the North Sea, and reflect much optimism. Community impacts are discussed in passing but are advanced as largely positive aspects of modernization and development of rural economies. There is some discussion of the need for the government to involve itself in fishery protection around offshore development sites (pp. 60-61).

**Priyono, B. E. 1996. *Integrated Management Plan (IMP): The Case of Riau Province, District of Bengkalis*. In E. Duursama (ed.), *Proceedings of the Conference on Coastal Change, Bordenmer*. Intergovernmental Oceanographic Commission Report, No. 105, Suppl. Paris: UNESCO.**

This study of the Indonesian district of Bengkalis, including the Riau province, describes conflicts between coastal resource user groups, such as those surrounding putative degradation of water quality associated with paper-pulp-plywood industries, deterioration of sanctuary areas from mangrove cutting and pollution, and water quality issues associated with offshore oil drilling. The author recommends greater collaboration and coordination efforts among the various cognizant government agencies and affected communities as a means to resolve conflicts and preserve and protect the region's marine environment.

**Proschaska, F., M. Roessler, and D. Tabb. 1981. *Assessment of Space and Use Conflicts between the Fishing and Oil Industries*. Vols. 1–5. Final Report to the Minerals Management Service. Contract Nos.: BLM: CT9-26, MMS: 14-12-0001-29167. Centaur Associates, Inc. Washington, D.C.**

With increasing oil and gas activities on the OCS during this period, the Bureau of Land Management supported a comprehensive survey to assess the manner in and degree to which oil and gas operations conflict with fishing activities. The objectives of the study were to: (1) to review historical conflicts between OCS oil and fishing industries, (2) to identify potential and ongoing fishing gear type versus oil structure conflicts, (3) to develop a predictive catch loss model due to space loss by OCS oil structures, and (4) to assess the ability of particular harbors to accommodate oil support vessels and staging operations. The geographic scope of the study included the Atlantic, Gulf of Mexico, and California OCS lease sale regions.

The researchers found that otter trawls, bottom dredges, and purse seines were most likely to entangle with structures. Submerged wellheads, pipelines, and other subsea structures were most hazardous for these gear types. Structure-related debris and activities caused more problems to fishermen than the actual oil structures. Most significant projected catch losses were related to otter trawl fisheries in the North Atlantic, Mid-Atlantic, and eastern Gulf of Mexico regions.

**Reggio Jr., Villere, and Rick Kasprzak. 1991. Rigs to Reefs: Fuel for Fisheries Enhancement through Cooperation. In Colleen S. Benner and Robert W. Middleton (eds.), *Fisheries and Oil Development on the Continental Shelf*, pgs. 9-17. American Fisheries Society Symposium 11. Bethesda, MD.**

This paper focuses on one component of offshore petroleum development, the production platform, and attempts to demonstrate how knowledge, understanding, and cooperation are benefiting fish, fishermen, and the petroleum industry in the Gulf Region. By engaging the public and private sectors, MMS opened a new level of cooperation and advancement. The creation of REEFS Task Force (Recreation, Environmental Enhancement and Fishing in the Sea) in 1983 and its work culminated in the National Fishing Enhancement Act of 1984. The artificial reef plan that followed cited oil and gas structures as potential artificial reef material.

The Louisiana Artificial Reef Initiative (LARI) of 1985 is cited as a working model for rigs to reefs programs for individual states. Louisiana set up an Artificial Reef Trust Fund, asking the oil companies to donate half of the savings gained by using the rigs to reefs program. At a savings of nearly \$1 million per structure, this allows for generous donations. The interest is then used for operational costs. Benefits appear in every sector, from the private oil companies to the public and private fishing industries. The authors stress government-to-private sector cooperation and coordination “consistent with existing authorities and responsibilities”.

**Richards, John B., and Carolynn S. Culver. 1990. Offshore: Communications in a Crowded Sea (Video). Marine Science Institute, University of California, Santa Barbara.**

This 30-minute VHS video describes conflicts between commercial fishing vessels and seismic survey vessels operating in association with offshore oil exploration off the California coast. The piece examines the philosophies and perspectives of workers in both industries and reviews ways in which conflicts have been eased through communication, education, mediation, and research. The video was developed for planners and decision makers in both government and industry.

**Seventeenth Coast Guard District. Fishing Vessel Safety. 1997. *Federal Requirements for Commercial Fishing Industry Vessels*. October. Juneau, Alaska.**

This pamphlet outlines vessel requirements for safely operating fishing vessels within the waters of Alaska. It also outlines applicable federal laws and stability requirements for commercial vessels.

**Seydlitz, Ruth, P. Jenkins, S. Hampton. (1995). Economic impacts of energy development. *Society and Natural Resources* 8(4):321-337.**

This article examines the economic impacts of offshore petroleum extraction and production on communities in Louisiana. The study extends previous work concerning the economic impacts of energy development by including all phases of petroleum development, by accounting for the

degree and type of involvement of the community in petroleum production, by using analysis of variance to determine the effect of the rate and direction of change in as well as level of petroleum activity, and by using time-series regression to examine the effect of year-to-year changes in activity on year-to-year changes in various economic sectors. The findings show an initial improvement in economic conditions, followed by serious economic decline. The authors suggest that the communities should seek to diversify involvement in petroleum production, and also identify mitigation programs to effect during the boom and decline in petroleum activity.

**Spence, Hal. 2003. "Federal Lease Sales in Cook Inlet Win Kenai Assembly Approval." *Morris News Service-Alaska*. February 19. Available online at <[http://www.oilandgasreporter.com/stories/021803/ind\\_20030218010.shtml](http://www.oilandgasreporter.com/stories/021803/ind_20030218010.shtml)>.**

A resolution supporting proposed OCS Lease Sales 191 and 199 (scheduled for 2004 and 2006), was adopted by the Kenai Peninsula Borough Assembly on February 4, 2003. During these proceedings, the assembly added amendments intended to reinforce its position that specific steps be taken to mitigate potential effects of Lower Cook Inlet oil and gas exploration and development on the region's environment and economy prior to that activity.

By the author's account, some public testimony opposed the sale, and recommended modifications may not have gone far enough to reassure opponents of the sales that Lower Cook Inlet and Kachemak Bay will not be significantly affected by a potential future oil spill or the effects of pollution associated with oil production. The article also reviews provisions of an agreement reached in 2001 among the Kenai Peninsula and Kodiak Island Boroughs that specified a ban on offshore loading of tankers and called for specific plans to minimize and avoid conflicts between development activities and commercial fishing gear.

**Springer, Susan Woodward. 1997. *Seldovia, Alaska: An Historical Portrait of Life in Herring Bay*. Blue Willow, Inc.: Littleton, Colorado.**

This book describes the history of the small village of Seldovia in the Kachemak Bay region of Cook Inlet, contrasting life in the once thriving seaport, before the devastating earthquake of 1964, to its quiet existence today. The book describes the village's ancient history, its Native Influence, and Russian Culture. Of particular interest, Springer details the history of the salmon industry and various fishing methods employed in the region, and local fishing traditions associated with the salmon, herring, halibut, cod, and crab fisheries.

**State of Alaska, Division of Oil and Gas, Department of Natural Resources. 1999. *Cook Inlet Areawide 1999 Oil and Gas Lease Sale: Final Finding of the Director*. January 20. Anchorage.**

This report describes commercial salmon fishing areas in Cook Inlet, and potential conflicts between fish harvesting and oil and gas industry activities in the Lease Sale area. Central to the issue is the tightly controlled commercial fishing "corridor" and the need for coordination among



various users of the zone. The report describes activities associated with exploration, development, and production of oil and gas reserves in the region and potential effects on fisheries harvest areas, and notes that commercial fishers have expressed concern that the presence of oil and gas industry activities could interfere with fishing operations and inadvertently alter the distribution of returning fish among harvesting areas and vessels.

Offshore platforms were noted as creating a potential obstacle to drift gillnet fishing, and semi-submersible drill rigs and anchoring systems were said to have the potential to incur loss of fishing space or impede access to the water column, especially given the current one-mile buffer around platforms in the Inlet. Other areas of potential interaction include possible gear loss, and dispersal of herring or salmon by seismic testing. According to the report, the greatest potential threat to commercial fishing is a large oil spill, with both gear and catch at risk. The report asserts that an oil spill could pose a threat to juvenile salmon and future runs if these were present in the surface portions of the water column at the time of a spill. Perceptions of tainted seafood are also described as a potential topical area of effect.

The report proposes various mitigation measures or regulatory provisions that could serve to minimize effects on commercial fishing in the region: (1) Restrict lease-related use when it is necessary to prevent unreasonable conflicts with local subsistence harvests and commercial fishing operations; (2) Offshore pipelines could be located and constructed to prevent obstructions to marine navigation and fishing operations; (3) Require lessees to implement oil spill prevention, control, and countermeasures plans; and (4) Prohibit use of explosives for seismic activities with a velocity of greater than 3,000 feet per second in marine waters.

**Supreme Court of the State of Alaska. 1994. Appellant/Cross-Appellee, v. United Cook Inlet Drift Association, Kenai Peninsula Sportsman's Association, Ronald Cox, Timothy Moore, and Henry Wojtusik, Appellees, Ninilchik Traditional Council, Appellee/Cross-Appellant. Supreme Court Nos. S-4966/4967. Superior Court No. 3KN-91-596 CI. February 18. Available online at <<http://touchngo.com/sp/html/sp-4054.htm>>. Anchorage.**

This appeal brought about by the Ninilchik Traditional Council contested the policy invalidating the Boards of Fisheries and Game's declaration that all Alaskans were eligible subsistence users of the fisheries. The Council contested the order on the grounds that it adversely affected the lifestyle and culture of its members. The Superior Court decision was reversed in this decision.

**Supreme Court of the State of Alaska. 1996. Niniichik Traditional Council, Alaska Center for the Environment, Greenpeace, Trustees for Alaska, Kenai Peninsula, Fisherman's Association, Inited Cook Inlet Drift Association, Appellants/Cross-Appellees, v. Harry Noah, Commissioner, State of Alaska, Department of Natural Resources, James Eason, Director, Division of Oil and Gas, State of Alaska, Resources, and State of Alaska, Department of Natural Resources, Appellees/Cross-Appellants. Supreme Court No. S-6683/6733. Superior Court No. 3KN-93-1174 CI. December 27. Anchorage.**

This appeal from the Superior Court of the State of Alaska, Third Judicial District, Kenai, opposes the decision of the Department of Natural Resources to Oil and Gas Lease Sale 78. The area in question is quite large, nearly 403,000 acres of submerged land and tidelands in the Upper Cook Inlet and uplands on the Kenai Peninsula and in the lower Susitna Valley” (p.2). Although the Department of Natural Resources determined that the sale was consistent with the Coastal Management Program and in the best interest of the State, the litigants challenged the validity of the Department’s findings in Superior Court. The Supreme Court affirmed part of the Superior Court’s findings, but it reversed other parts in its decision.

**Susskind, Lawrence, and Scott McCreary. 1985. Techniques for resolving coastal resource management disputes through negotiation.” *Journal of the American Planning Association*, 51(3), 365–374.**

The authors argue that many disputes involving coastal resources would be better resolved through negotiation than through legislative or judicial processes. For example, in the overhaul of the tideland licensing process in Massachusetts in the early 1980s, the legislative process was effectively supplemented by facilitated, face-to-face dialogue among the contending parties. In disputes between developers and the California State Coastal Conservancy, teams of scientists and citizen panels produced land-use alternatives that would allow development while protecting natural resources. The article also reviews the success of The Mediation Institute which helped the oil and fishing industries reach consensus on various issues. Conflicts between local and state governments over development along the Columbia Estuary were also favorably resolved in workshop sessions sponsored by the Mediation Institute. According to the authors, these examples suggest that face-to-face negotiation can serve to obviate extensive and expensive adjudicatory processes common in modern society.

**Tunseth, Matthew. 2003. “Fish board wants residents to be heard Fish and Game special meeting will allow board members to listen to comments.” *Peninsula Clarion*. March 9. Available online at [www.peninsulaclarion.com/stories/030903/new\\_03090002.shtml](http://www.peninsulaclarion.com/stories/030903/new_03090002.shtml).**

This news article alerted Kenai communities about an opportunity to voice their opinions concerning the early-run Kenai king salmon during a special meeting of the Kenai-Soldotna Fish and Game Advisory Committee. The special meeting was scheduled to address local concerns since the regular meeting, held in Anchorage, would not include local residents.

**Peninsula Clarion (editorial). 2002. "Fishing Groups' Request for Restraining Order Against Fish and Game Denied Judge Rules in Favor of State." July 10. Available online at [www.peninsulaclarion.com/stories/071002/new\\_0710020002.shtml](http://www.peninsulaclarion.com/stories/071002/new_0710020002.shtml).**

The requests of two commercial fishermen to obtain a restraining order against the Alaska Department of Fish and Game are outlined in this article. The request had been denied since the fishermen could not show irreparable harm would result from its salmon resource management policies. Although the request was denied, Judge Harold Brown acknowledged that the fishermen had raised serious questions concerning the validity of the escapement goals advocated and enforced by ADF&G.

**University of Alaska, Coastal Marine Institute. 2001. An Economic Assessment of the Sport Fisheries for Halibut, and Chinook and Coho Salmon in Lower and Central Cook Inlet. Prepared for the U.S. Department of the Interior, Minerals Management Service, Alaska OCS Region, Environmental Studies Unit. OCS Study MMS 2000-061, Anchorage.**

The overall objective of the Minerals Management Service-sponsored study was to address the concern that potential lease-related activities associated with the Cook Inlet lease sales (191 & 199) might affect the productivity of local fisheries, the quality of recreational opportunities, or the demand for tourism-related services. The study was to "develop a predictive model of participation rate changes that can be linked to a regional input-output model to estimate net benefits to sport fishers and the regional economic impact of marine sportfishing on the Kenai Peninsula economy."

The authors rely on modifications to the standard IMPLAN I-O model, intended to address the unique characteristics of the Kenai Peninsula fishing industry, in order to generate five alternative impact scenarios resulting from three decreases associated with oil and gas activities and two increases from baseline mean catch per fishing vessel trip. The study concludes that the sport fishing industry is particularly sensitive to even marginal reductions in expected salmon and halibut catch, and that, for example, a 10 percent decrease in expected catch could be expected to result in a 23 percent reduction in net benefits to sport fishermen – and a concomitant \$2.5 million decrease in direct, indirect, and induced output expenditures in the Kenai Peninsula region, and loss of 72 jobs.

**Woodell, George, Craig J. Forsyth, and Robert Gramling. 1996. "Technological Change, Resource Management and Conflict: Commercial Shrimping in Louisiana." *Sociological Spectrum* 16(4): 437-472.**

This article discusses how the interaction of boom/bust economic cycles, environmental protection policy, and ecological degradation contributes to conflict among small-scale commercial shrimpers in coastal Louisiana. The authors argue that competition among shrimpers is exacerbated by threats to the ecosystem on which they depend, but which shrimpers do not fully perceive. Analysis of interview reveals that shrimpers rarely if ever blamed offshore oil rigs for estuary degradation, and usually cited declines in the oil industry and environmental

regulations (specifically turtle exclusion device requirements) for their difficulties. In times of decline in oil, workers turned to shrimping as an alternative livelihood. During boom times, shrimpers could not compete for dock access. The long-standing and generally positive local perceptions of the oil industry mitigated potential conflicts between shrimpers and oil interests, and intensified conflicts between shrimpers.

## **Appendix B: Social Network Methods, Hypotheses, and Results**

This appendix describes in further detail the social network methodology used for this project. It presents the rationale for the work, the revealed network itself, and summary analysis of social, political, and geographic factors and relationships relevant to network analysis in this case.

### **Objectives**

The intent of our social network methodology was manifold. Through it we sought to: (1) generate valid depiction of a social network of peer-identified expert drift gillnetters, (2) identify key nodes of social relationships; that is, participants nominated by peers most frequently, (3) identify the effects of geographic and political orientations on the peer-nomination process and the distribution of nominees across the region, (4) conduct interviews and mapping exercises with persons in representative nodal positions in the network, and (5) identify persons with reputations as expert drifters for subsequent in-depth discussion of perspectives on mitigation, and for participation in group meetings.

### **Background and Rationale**

The data resulting from our social network methods and associated achieved status inquiries were entered in a binary matrix of 149 rows and 149 columns. That is, we contacted 149 drift gillnet fishery participants to reach closure in determining a network of peer-recognized experts. Rows and columns in the matrix are labeled with the names of nominated participants. Cells in the matrix are entered with value one (1) where row participant  $i$  nominates column participants  $j$ , and no value (zero) is entered where nomination does not occur. In technical terms, this constitutes an adjacency matrix that is asymmetric with directed ties (the ties travel from the source row to the receiver column).

Such a matrix reveals, in mathematical terms, whether there is a path or social tie from one fishery participant to another. A value of one represents the presence of a path, a zero the lack of a path. This simple method serves as a means for organizing and analyzing data about many relationships, and for identifying relationships across multiple groups of actors. As noted by Hanneman (2003:73), the utility of social network analysis lies in its ability to reveal important patterns of social organization and the variable positions of social status held by the individuals constituting societies:

Differences among individuals in terms of how connected they are can be extremely consequential for understanding their attributes and behavior. More connections often mean that individuals are exposed to more, and more diverse information. Highly connected individuals may be more influential, and may be more influenced by others . . . [Well]-connected populations may be better able to mobilize their resources, and may be better able to bring multiple and diverse perspectives to bear to solve problems. In between the individual and the whole population, there is another level of analysis -- that of "composition." Some populations may be composed of individuals alike in the extent to which they are connected. Other populations may display sharp differences, with a

small elite of central and highly connected persons, and larger masses of persons with fewer connections. Differences in connections can tell us a good bit about the stratification order of social groups.

Use of social network-based sampling in this case enables both identification of highly knowledgeable individuals and examination of patterns of attributes across groups of fishery participants.

## **Hypothesis-Testing**

Based on understanding of social organizational aspects of marine fisheries around the country, it was expected that groups or cliques of participants would interact closely with each other and therefore that analysis of the network revealed through this research would reveal distinct clusters of social relationships (with peer nominations of expertise used as a proxy to indicate those relationships). Given reports of differences in environmental and political perspectives between communities in northern and southern portions of the Kenai Peninsula, it was surmised that social interaction and sharing of ideas would occur with greater frequency within than between fishery participants resident in these sub-regions, and thus hypothesized that clustering in the network would relate in part to place of residence. It was also hypothesized that clustering would occur in association with membership in UCIDA. These suppositions are expressed here as null hypotheses: (1) there would be no discernible clustering associated with residence, and (2) there would be no discernible clustering associated with affiliation with UCIDA.

## **Findings of the Sampling and Network Studies**

Regarding depiction of the networks, those persons who exhibit the greatest number of social ties with other participants and who are nominated with frequency are positioned centrally in the graphic by the analytical software (via a centrality measure). Those exhibiting the most tenuous linkage to the larger group and who receive few nominations are positioned on its margins.

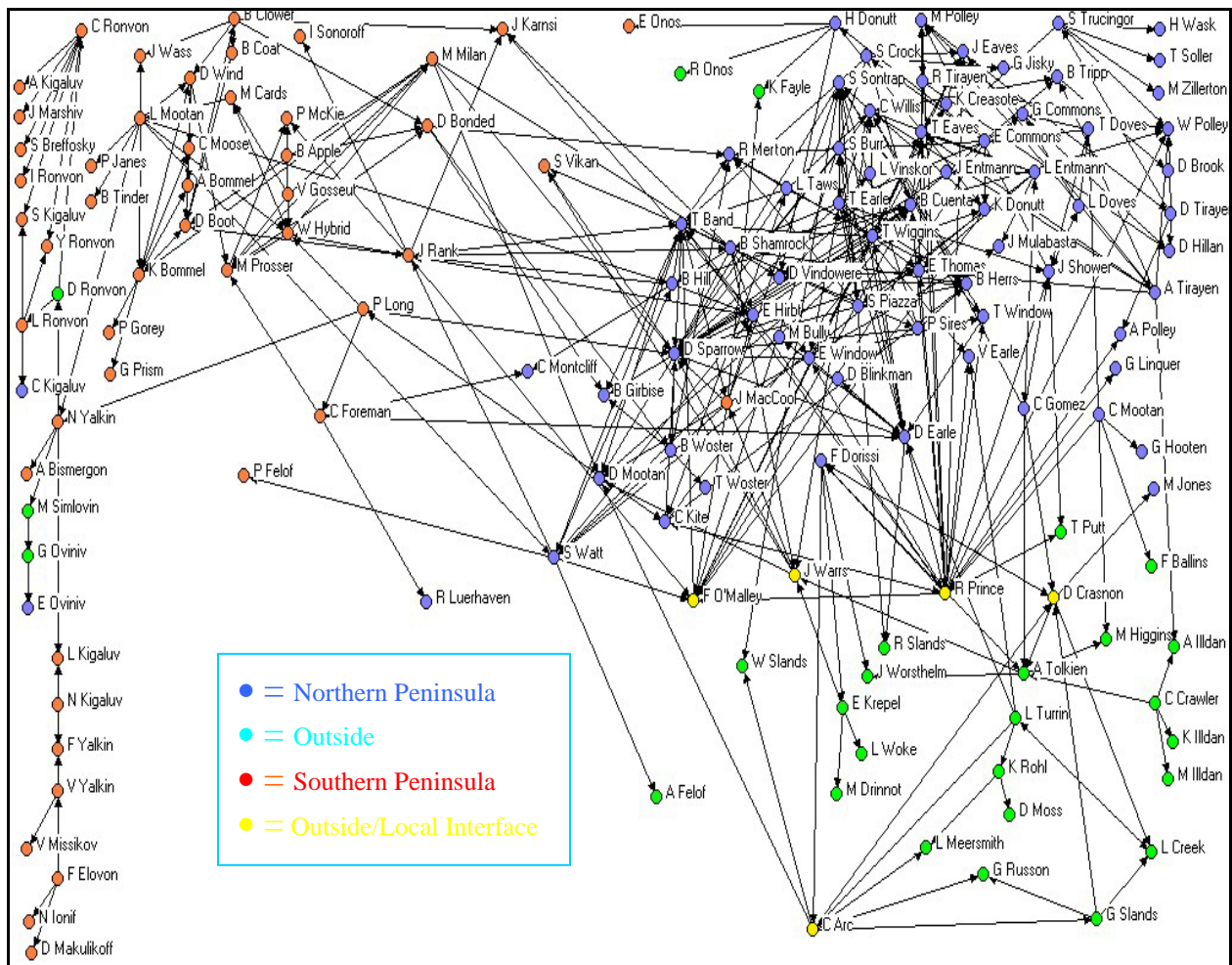
The network derived from our work with drift gillnetters to enable examination of social ties based on place of residence is depicted as Figure A-1 below. In the figure, the blue oval symbol indicates persons residing north of and including Ninilchik, orange indicates drift gillnetters residing south of Ninilchik, and green denotes drifters residing outside of Alaska, primarily Oregon and Washington. The persons symbolized by the yellow ovals are either dual residents with social ties within and outside Alaska, or Alaska residents who have revealed strong relationships with persons living in other states.

The structure of the revealed network visibly (mathematically) disproves null hypothesis one. Thus, we accept the research hypothesis that clustering of social relations based on peer judgment of expertise does occur in association with sub-region of residence.

While the network depicts real data about revealed relationships and testaments to status, all names presented are pseudonyms. As depicted in the figures, within-residence group nomination is extensive, while external relationships or nominations are relatively infrequent. There are

often strong social connections between fishery participants residing in the Pacific Northwest and participants residing in the northern portions of the Kenai Peninsula, but there are few direct relationships between the out-of-state group and participants residing in the southern Peninsula. Also of note with regard to the social organization of the fishery is the outlying position (the left-hand side of the depiction) and weakly connected network of drift gillnetters of Russian heritage involved in the study.

Measures of centrality indicate the network is not highly concentrated and the majority of the actors do not reveal characteristics of influence or prominence.<sup>24</sup> Rather, the data indicate a network of loosely connected subgroups and a few highly respected and well-integrated actors. With a couple of key exceptions, those key actors are centralized in the relatively tightly connected cluster comprised of fishery participants resident in the northern part of the Kenai Peninsula.



**Figure A-1 Network of Kenai Peninsula Drift Gillnet Fishery Participants by Area of Residence**

<sup>24</sup> Freeman's Degree Centrality Measures indicate out-degree centralization of 10.6 percent, and in-degree centralization of 14 percent.

We are also able to reject the null hypothesis that clustering will not occur in association with UCIDA affiliation. Figure A-2 clearly indicates that the majority of the centrally- positioned actors in the overall network are UCIDA members. Moreover, while there is some degree of affiliation with the fishing organization across the entire network, most of the centrally positioned participants, i.e., the persons most frequently nominated as experts and exhibiting social ties with the greatest number of other participants, are members of UCIDA. Finally, it is not unusual for drift gillnet permit holders residing outside of Alaska to be affiliated with UCIDA. While membership in UCIDA does not guarantee parity of perspective between individual and official position on any given issue, it is clearly an important coalescing and representative social institution for fishery participants.

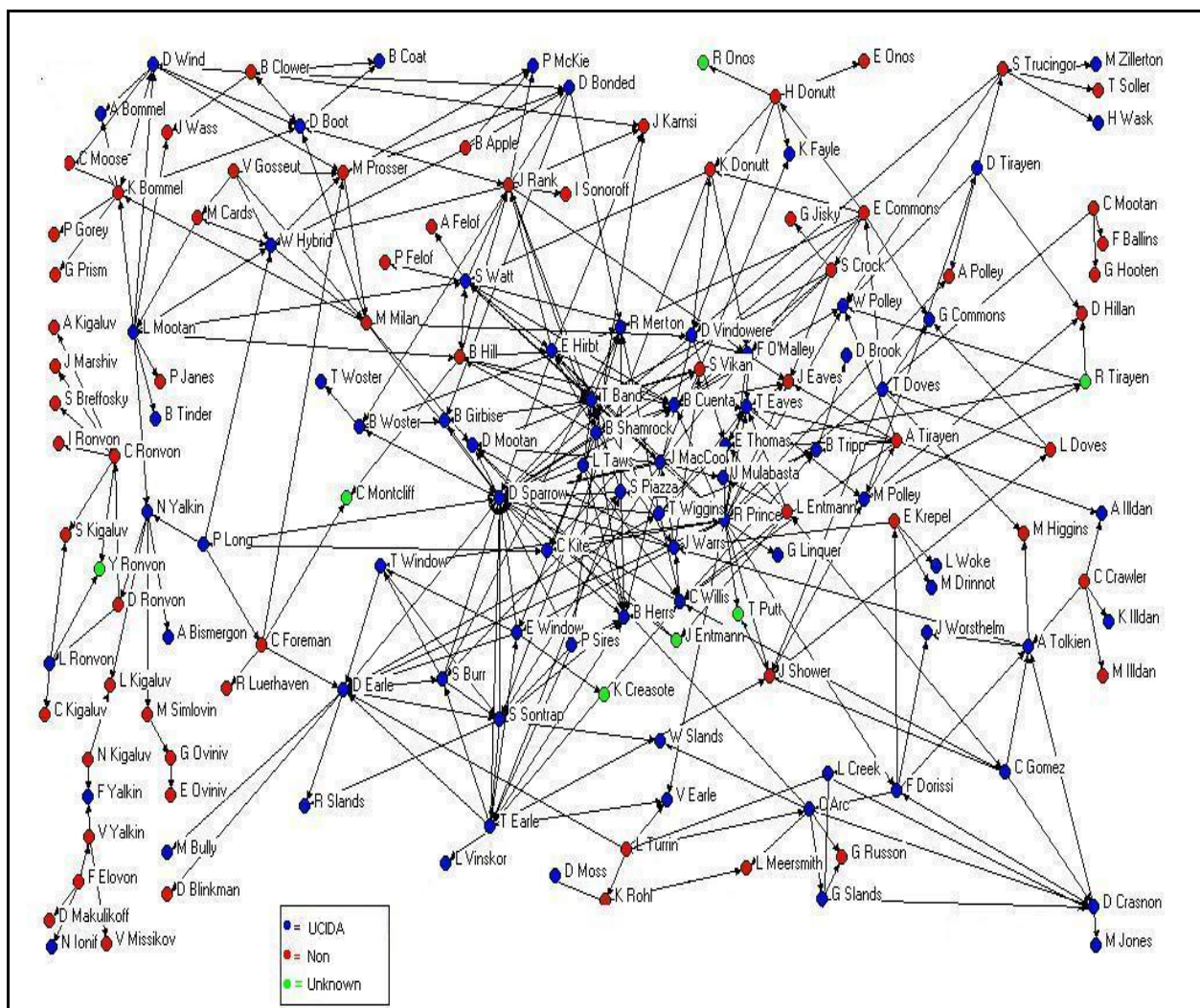


Figure A-2 Drift Gillnet Fishery Network by UCIDA Affiliation



**Appendix C: 2003 Upper Cook Inlet Season ADF&G Emergency Orders**

<b>Order</b>	<b>Date</b>	<b>Action</b>	<b>Reason</b>
1	26-Jun	Extended set gillnetting in the Kasilof Section on Thursday, June 26 from 7:00 pm until 7:00 pm on June 27. Drift gillnetting was opened in the Kasilof Section on Thu, June 26 from 7:00 pm to 12:00 midnight, and Fri, Jun 27 from 5:00 am to 7:00 pm.	To reduce the escapement rate of Kasilof River sockeye salmon.
2	27-Jun	Extended set gillnetting in the Kasilof Section of the Upper Subdistrict on Friday June 27, 2003 from 7:00 p.m. until 7:00 p.m. on Saturday June 28, 2003. Drift gillnetting was opened in the Kasilof Section on Friday June 27, 2003 from 7:00 p.m. to 12:00 Midnight and on Saturday June 28, 2003 from 5:00 a.m. to 7:00 p.m..	To reduce the escapement rate of Kasilof River sockeye salmon.
3	30-Jun	Extended set gillnetting in that portion of the Western Subdistrict of the Central District south of the latitude of Redoubt Point from 7:00 p.m. on Monday, June 30 until further notice.	To increase the exploitation rate on Crescent River sockeye salmon.
4	30-Jun	Extended set gillnetting in the Kasilof Section of the Upper Subdistrict on Monday, June 30 from 7:00 p.m. until 9:00 p.m. Drift gillnetting was opened in the Kasilof Section of the Upper Subdistrict on Monday, June 30 from 7:00 p.m. until 9:00 p.m..	To reduce the escapement rate of Kasilof River sockeye salmon.
5	3-Jul	Extended set gillnetting in the Kasilof Section of the Upper Subdistrict on Thursday, July 3 from 7:00 p.m. until 11:00 p.m on Friday, July 4. Drift gillnetting was opened in the Kasilof Section on Thursday, July 3 from 7:00 p.m. until 11:00 p.m. and on Friday, July 4 from 5:00 a.m. until 11:00 p.m	To reduce the escapement rate of Kasilof River sockeye salmon.
6	4-Jul	Extended set gillnetting in the Kasilof Section of the Upper Subdistrict on Friday, July 4 from 11:00 p.m.until 5:00 p.m on Saturday, July 6. Drift gillnetting was opened in the Kasilof Section on Saturday, July 5 from 5:00 a.m. until 5:00 p.m.	To reduce the escapement rate of Kasilof River sockeye salmon.
7	9-Jul	Opened set gillnetting in that portion of the Kasilof Section of the Upper Subdistrict within 1/2 mile of the mean high tide mark on the Kenai Peninsula shoreline on Wednesday, July 9 from 7:00 a.m until 3:00 p.m.	To reduce the escapement rate of Kasilof River sockeye salmon.

Order	Date	-continued-	
		Action	Reason
8	10-Jul	Closed commercial salmon fishing with drift gillnets in all areas of the Central District of Upper Cook Inlet, except in the Kenai and Kasilof Sections of the Upper Subdistrict, on Thursday, July 10 from 7:00 a.m. to 7:00 p.m.	To reduce the exploitation rate on Susitna River sockeye salmon.
9	12-Jul	Opened set gillnetting in that portion of the Kasilof Section of the Upper Subdistrict within ½ mile of the mean high tide mark on the Kenai Peninsula shoreline on Saturday, July 12 from 7:00 a.m. until 11:00 p.m..	To reduce the escapement rate of Kasilof River sockeye salmon.
10	14-Jul	Closed drift gillnetting in all areas of the Central District, except in the Kenai and Kasilof sections and that portion of the Central District south of 60 <sup>0</sup> 27.10 minutes N. Latitude, which is the latitude of the Blanchard line, on Monday, July 14 from 7:00 a.m. to 7:00 p.m.	To reduce the exploitation rate on Susitna River sockeye salmon.
11	14-Jul	Extended set gillnetting in the Kenai, Kasilof and East Forelands Sections of the Upper Subdistrict on Monday, July 14 from 7:00 p.m. until 9:00 p.m. Drift gillnetting was opened in the Kenai and Kasilof Sections on Monday, July 14 from 7:00 p.m. to 9:00 p.m..	To reduce the escapement rate of Kenai and Kasilof River sockeye salmon.
12	16-Jul	Opened set gillnetting in that portion of the Kasilof Section of the Upper Subdistrict within ½ mile of the mean high tide mark on the Kenai Peninsula shoreline on Wednesday, July 16 from 8:00 a.m. until 8:00 p.m..	To reduce the escapement rate of Kasilof River sockeye salmon.
13	16-Jul	Extended set gillnetting in that portion of the Kasilof Section of the Upper Subdistrict within ½ mile of the mean high tide mark on the Kenai Peninsula shoreline on Wednesday, July 16 from 8:00 p.m. until 7:00 a.m. on Thursday, July 17.	To reduce the escapement rate of Kasilof River sockeye salmon.
14	17-Jul	Extended set gillnetting in the Kenai, Kasilof and East Forelands sections of the Upper Subdistrict on Thursday, July 17 from 7:00 p.m. until 10:00 p.m. Drift gillnetting was opened in the Kenai and Kasilof Sections on Thursday, July 17 from 7:00 p.m. until 10:00 p.m..	To reduce the escapement rate of Kenai and Kasilof River sockeye salmon.

Order	Date	-continued-	
		Action	Reason
15	18-Jul	Emergency Order Number 2S-15-03 opens set gillnetting in the Kenai, Kasilof and East Forelands sections of the Upper Subdistrict on Friday July 18 from 2:00 p.m. until 12:00 midnight. Drift gillnetting was opened in the Kenai and Kasilof Sections of the Upper Subdistrict on Friday July 18 from 2:00 p.m. until 12:00 midnight.	To reduce the escapement rate of Kenai and Kasilof River sockeye salmon.
16	19-Jul	Emergency Order Number 2S-16-03 opens set gillnetting in the Kenai, Kasilof and East Forelands Sections of the Upper Subdistrict on Saturday, July 19, from 3:00 p.m. until 12:00 midnight. Drift gillnetting was opened in the Kenai and Kasilof Sections of the Upper Subdistrict on Saturday, July 19, from 3:00 p.m. until 12:00 midnight.	To reduce the escapement rate of Kenai and Kasilof River sockeye salmon.
17	20-Jul	Extended set gillnetting in the Kenai, Kasilof and East Forelands Sections of the Upper Subdistrict from midnight on Saturday, July 19 until 5:00 p.m. on Sunday, July 20. Drift gillnetting was opened in the Kenai and Kasilof Sections of the Upper Subdistrict on Sunday, July 20 from 5:00 a.m. until 5:00 p.m..	To reduce the escapement rate of Kenai and Kasilof River sockeye salmon.
18	21-Jul	Extended set gillnetting in the Kenai, Kasilof and East Forelands Sections of the Upper Subdistrict from 7:00 p.m. on Monday, July 21 until 12:00 midnight. Drift gillnetting was opened in the Kenai and Kasilof Sections of the Upper Subdistrict from 7:00 p.m. until 11:00 p.m. on Monday, July 21	To reduce the escapement rate of Kenai and Kasilof River sockeye salmon.
19	23-Jul	Opened set gillnetting in the Kenai, Kasilof and East Forelands Sections of the Upper Subdistrict on Wednesday, July 23, from 7:00 a.m. until 9:00 p.m. Drift gillnetting was opened in the Kenai and Kasilof Sections of the Upper Subdistrict on Wednesday, July 23, from 7:00 a.m. until 12:00 midnight.	To reduce the escapement rate of Kenai and Kasilof River sockeye salmon.
20	23-Jul	Extended set gillnetting in the Kenai, Kasilof and East Forelands Sections of the Upper Subdistrict from 9:00 p.m. on Wednesday, July 23 until 7:00 a.m. on Thursday, July 24. Set gillnetting was opened in the Kenai, Kasilof and East Forelands Sections of the Upper Subdistrict on Friday, July 25 from 7:00 a.m. to 7:00 p.m. Drift gillnetting was opened in the Central District on Friday, July 25 from 7:00 a.m. until 7:00 p.m..	To reduce the escapement rate of Kenai and Kasilof River sockeye salmon.

Order	Date	-continued-	
		Action	Reason
21	24-Jul	Closed drift gillnetting in all areas of the Central District, except in the following four areas: (1) that portion of the Central District south of 60° 20.43' N. lat., (2) in the Kenai and (3) Kasilof sections of the Upper Subdistrict, and (4) that portion of the Central District enclosed by the following five points: 60° 20.43' N. lat., 151° 54.83' W. long.; 60° 34.00' N. lat., 151° 41.75' W. long.; 60° 34.00' N. lat., 151° 25.93' W. long.; 60° 27.10' N. lat., 151° 25.50' W. long.; 60° 20.43' N. lat., 151° 28.55' W. long. on Thursday, July 24 from 7:00 a.m. until 7:00 p.m..	To reduce the exploitation rate of Northern District coho salmon while also allowing fishing in an area that would reduce the escapement rate of Kenai and Kasilof River sockeye salmon.
22	26-Jul	Opened drift gillnetting in the seaward portion of the Kenai and Kasilof Sections of the Upper Subdistrict on Saturday, July 26 from 5:00 a.m. until 11:00 p.m. Those waters located within one mile of the mean high tide mark north of the Kenai River and within one and one half miles of the mean high tide mark south of the Kenai River remain closed to drift gillnets and set gillnets during this period.	To reduce the escapement rate of Kenai and Kasilof River sockeye salmon.
23	27-Jul	Opened set gillnetting in the Kenai, Kasilof and East Forelands Sections of the Upper Subdistrict on Sunday, July 27 from 7:00 a.m. until 7:00 p.m. Drift gillnetting was opened in the Kenai and Kasilof sections of the Upper Subdistrict on Sunday, July 27 from 7:00 a.m. until 7:00 p.m..	To reduce the escapement rate of Kenai and Kasilof River sockeye salmon.
24	28-Jul	Closed drift gillnetting in all areas of the Central District on Monday, July 28 from 7:00 a.m. until 7:00 p.m, except in the following four areas, which are open: (1) that portion of the Central District south of 60° 20.43' N. lat., (2) in the Kenai and (3) Kasilof sections of the Upper Subdistrict, and (4) that portion of the Central District enclosed by the following five points:	To reduce the exploitation rate of Northern District coho salmon while also allowing fishing in an area that would reduce the escapement rate of Kenai and Kasilof River sockeye salmon.

Order	Date	-continued-	
		Action	Reason
25	29-Jul	Opened set gillnetting in the Kenai, Kasilof and East Forelands Sections of the Upper Subdistrict on Tuesday, July 29, from 8:00 a.m. until 8:00 p.m. Drift gillnetting was opened in the Kenai and Kasilof Sections of the Upper Subdistrict on Tuesday, July 29, from 5:00 a.m. until 11:00 p.m., except from 5:00 a.m. to 8:00 a.m. and from 8:00 p.m. to 11:00 p.m. those waters within one mile of the mean high tide mark north of the Kenai River and within one and one half miles of the mean high tide mark south of the Kenai River were closed to drift gillnets.	To reduce the escapement rate of Kenai and Kasilof River sockeye salmon.
26	30-Jul	Opened set gillnetting in the Kenai, Kasilof and East Forelands Sections of the Upper Subdistrict on Wednesday, July 30, from 9:00 a.m. until 9:00 p.m. Drift gillnetting was opened in the Kenai and Kasilof Sections of the Upper Subdistrict on Wednesday, July 30, from 5:00 a.m. until 11:00 p.m., except from 5:00 a.m. to 9:00 a.m. and from 9:00 p.m. to 11:00 p.m. those waters within one mile of the mean high tide mark north of the Kenai River and within one and one half miles of the mean high tide mark south of the Kenai River were closed to drift gillnets.	To reduce the escapement rate of Kenai and Kasilof River sockeye salmon.
27	31-Jul	Opened drift gillnetting in the seaward portion of the Kenai and Kasilof sections of the Upper Subdistrict on Thursday, July 31, from 7:00 p.m. until 11:00 p.m., and on Friday, August 1, from 5:00 a.m. to 11:00 p.m., except that those waters within one mile of the mean high tide mark north of the Kenai River and within one and one half miles of the mean high tide mark south of the Kenai River were closed to drift gillnets.	To reduce the escapement rate of Kenai and Kasilof River sockeye salmon.
28	1-Aug	Rescinded Emergency Order Number 3 effective at 7:00 p.m. on Friday, August 1. Fishing in the Western Subdistrict South of Redoubt Point closed at 7:00 p.m. on Friday, August 1, and returned to the regular fishing schedule on Mondays and Thursdays from 7:00 a.m. to 7:00 p.m..	To reduce the exploitation rate on coho salmon in the Western Subdistrict.

Order	Date	-continued-	
		Action	Reason
29	2-Aug	Opened drift gillnetting in the seaward portion of the Kenai and Kasilof Sections of the Upper Subdistrict on Saturday, August 2, from 5:00 a.m. to 11:00 p.m., except that those waters within one mile of the mean high tide mark north of the Kenai River and within one and one half miles of the mean high tide mark south of the Kenai River were closed to drift gillnets.	To reduce the escapement rate of Kenai and Kasilof River sockeye salmon.
30	3-Aug	Opened set gillnetting in the Kalgin Island Subdistrict of the Central District on Sunday, August 3 from 6:00 a.m. to 6:00 p.m..	To reduce the escapement rate of Packers Lake sockeye salmon.
31	3-Aug	Opened set gillnetting in the Kenai, Kasilof and East Forelands Sections of the Upper Subdistrict from 7:00 a.m. on Sunday, August 3 until 7:00 a.m. on Monday August 4. Drift gillnetting was opened in the Kenai and Kasilof Sections of the Upper Subdistrict on Sunday, August 3 from 5:00 a.m. until 11:00 p.m., except from 5:00 a.m. to 7:00 a.m. and from 7:00 p.m. to 11:00 p.m. those waters within one mile of the mean high tide mark north of the Kenai River and within one and one half miles of the mean high tide mark south of the Kenai River were closed to drift gillnets. Drift gillnetting was opened in the Kenai and Kasilof sections of the Upper Subdistrict on Monday, August 4 from 5:00 a.m. to 7:00 a.m..	To reduce the escapement rate of Kenai and Kasilof River sockeye salmon.
32	4-Aug	Opened drift gillnetting in the seaward portion of the Kenai and Kasilof Sections of the Upper Subdistrict on Monday, August 4 from 7:00 p.m. until 11:00 p.m., and Tuesday, August 5, from 6:00 a.m. to 11:00 p.m., except that those waters within one mile of the mean high tide mark north of the Kenai River and within one and one half miles of the mean high tide mark south of the Kenai River were closed to drift gillnets during this time period.	To reduce the escapement rate of Kenai and Kasilof River sockeye salmon.
33	6-Aug	Opened drift gillnetting in the seaward portion of the Kenai and Kasilof Sections of the Upper Subdistrict on Wednesday, August 6, from 6:00 a.m. until 11:00 p.m., and on Thursday, August 7, from 6:00 a.m. to 7:00 a.m., except that those waters within one mile of the mean high tide mark north of the Kenai River and within one and one half miles of the mean high tide mark south of the Kenai River were closed to drift gillnets during this time period.	To reduce the escapement rate of Kenai and Kasilof River sockeye salmon.

## **Appendix D: Regulatory Framework Relevant to the Drift Gillnet and Oil/Gas Industry Interface on Cook Inlet**

This appendix summarizes aspects the legislative and regulatory frame that guides oil and gas activities on the OCS as these affect or may affect fishing activities. The discussion is not exhaustive of the entire relevant system of laws, rules, and agencies, but rather focuses on those that are either overarching in effect or are directly relevant to the context of the current project.

The Outer Continental Shelf Lands Act of 1953 (OCSLA) defines the Outer Continental Shelf (OCS) as all submerged lands lying seaward of state coastal waters (three miles offshore) which are under U.S. jurisdiction (ending at the 200-mile boundary with international waters). Numerous amendments to the original Act of relevance to the current study were incorporated in the Outer Continental Shelf Lands Act Amendments of 1978 (P.L. 95-372):

Title II of these amendments provides for the cancellation of leases or permits if continued activity is likely to cause serious harm to life, including fish and other aquatic life. It also stipulates that economic, social, and environmental values of the renewable and nonrenewable resources are to be considered in management of the OCS.

The timing and location of leasing activities are to be based on several factors, including the relative environmental sensitivity and marine productivity of different areas of the OCS. An environmental studies program is authorized and the Secretary is required to study any region included in a lease sale in order to assess and manage environmental impacts on the OCS.

Title III of these amendments established an Offshore Oil Spill Pollution Compensation Fund to be financed by a tax on oil obtained from the OCS and stipulated the damages for which claims could be made against the fund.

Title IV of the amendments established a Fishermen's Contingency Fund to compensate fishermen for damages of fishing gear by materials, equipment, tools, containers, or other items associated with oil and gas exploration.

Title V amended the 1972 Coastal Zone Management Act to authorize grants to coastal states under a Coastal Energy Impact Program.

Amendments enacted in 1984 provided for changes to certain administrative provisions in the Fishermen's Contingency Fund.

Under the OCSLA and its regulations, private industry is responsible for the safety of its employees and the workplace environment on the OCS. The Act states that each lease or permit holder within the lease or permit area on the OCS shall ensure, "all places of employment ... are maintained in compliance with workplace safety and health regulations of this part, and, in addition, free from recognized hazards" (OCSLA, 33 CFR Sections 142. 1(a) (b)). The private

sector must monitor and report safety violations and accidents. Safety *oversight* is governed by a complex regulatory structure that involves several federal agencies. The OCSLA gives primary offshore safety responsibilities to the Coast Guard and MMS.

In the case of floating facilities, the Coast Guard is the lead agency for personnel protection, and enforcement of most workplace safety regulations. The USCG also assumes lead investigating authority for death and injuries, damages, and failures of propulsion, auxiliary, emergency, and other safety-related systems. MMS is the lead agency for evaluation of fixed facilities and associated damage assessment. It also oversees investigation of fires and explosions, pollution, and failure of or damage to these facilities. MMS bears responsibility for enforcing safety regulations for all drilling and production activities.

A Memorandum of Understanding between the Coast Guard and MMS enables the agencies to share some responsibilities in this regime. Both have responsibilities for reviewing the design and construction of offshore facilities. Each also addresses regulations associated with training drills and emergency procedures on such facilities, and has provisions for conducting scheduled and unannounced inspections to ensure compliance.

A distinction is made between offshore facilities that are fixed on the seafloor or floating. Agency responsibility depends on this distinction. Some facilities require both MMS and Coast Guard approval, including structures that convert from floating during transit to fixed when on site. Jurisdiction in some situations is even more complicated. For instance, the surface portion and legs of the tension leg platform are approved by the Coast Guard, while the approval process for the ocean floor foundation is the responsibility of MMS.

As of 1985, the need for post-installation inspections of the legs or underwater portion of the floating structure of the tension leg platform had not been determined. Regular docking inspections are the general rule for other floating structures certified by the USCG such as mobile drilling units and ships.

MMS depends largely on third-parties to verify designs and inspections during fabrication. Approved verifiers are paid by the construction or operating company, but report to the responsible agency on whether the facility meets regulatory requirements.

Other federal agencies also have jurisdiction over certain aspects of offshore safety. A Memorandum of Understanding exists between the Occupational Safety and Health Administration (OSHA) and the USCG. This states that the Occupational Safety and Health Act (which is enforced by OSHA) applies to offshore working conditions, but “does not apply to working conditions with respect to which the Coast Guard or other Federal agencies exercise statutory authority to prescribe or enforce standards affecting occupational safety and health.” In state waters, OSHA enforces standards (Texas and Florida out to 9 miles). California and Alaska are the exception; these states administer federally approved safety and health programs. Title 18 of the Alaska Statutes states that, “(T)he Department of Labor and Workforce Development shall . . . establish and enforce occupational safety and health standards that prescribe requirements for safe and healthful working conditions for all employment, including state and local government



employment, and the requirements are to be at least as effective as those requirements adopted by the United States Secretary of Labor under 29 U.S.C. 655.

Separate offshore inspections are not conducted by OSHA, but the agency is notified when USCG inspectors detect violations of OSHA standards. Data is shared by the two agencies: the USCG reports results of accident investigations to OSHA, and OSHA reports all worker safety and health complaints to the USCG. OSHA jurisdiction includes vessels in navigable, territorial waters that have not been inspected by the USCG.

The National Institute of Occupational Safety and Health (NIOSH) investigates work-related injury or illness. The Institute has sponsored research on diving hazards and on identifying the causal factors that lead to injuries on drilling rigs, and has developed an extensive data base of commercial fishing accidents in Alaska. The Department of Labor, Bureau of Labor Statistics is also responsible for collecting and reporting statistics for work-related injury and illness.

## **Appendix E: A Review of Archival Materials Reporting Industrial Accidents on Cook Inlet from 1960 to 2003**

This appendix draws on archival materials to provide a brief historical overview of maritime accidents occurring in the Cook Inlet region. The overview is based primarily on news articles, with limited contributions from unpublished secondary source materials. In-person discussions with U.S. Coast Guard personnel served to validate some of the news stories.

There have been ten industrial accidents of sufficient scope for popular news reporting since offshore industrial activities began in 1960. Three major collisions with petroleum industry structures have been reported, though our primary source interviews suggest that numerous minor incidents have gone unreported over the years.

The two most significant accidents were the 1987 grounding of the *Glacier Bay* that spilled between 33,000 and 85,000 gallons of crude into Cook Inlet, and the December 1987 fire on the Steelhead platform. That blaze remained out of control for almost a week.

All of the incidents discussed occurred in state waters and so the regulatory framework addressing these events is slightly different from that surrounding accidents potentially occurring in federal jurisdiction waters. Various Alaska agencies are involved in the investigation, prevention, and mitigation of industrial accidents occurring in state waters. Appendix C of this report describes the regulatory framework and agencies that would be involved in accidents on the OCS.

### **Collisions**

There have been two documented collisions involving vessels and drilling structure on Cook Inlet. The latest occurred on September 9, 1997 when a tug pulling a barge bound for Seattle collided with Platform C roughly five miles offshore Nikiski. According to Coast Guard Lt. Cmdr. Spencer Wood (Anchorage Daily News (ADN) 1997b:A1), "(I)t [the tug] slammed into the leg (of the platform) and stopped there, like a car running into a telephone pole." The two platform employees who were on watch at the time reportedly thought the platform movement was the result of an earthquake. There were no injuries aboard the platform, and the crew of the tug suffered only minor injuries. The platform was brightly lit and visibility was five to 11 miles. Damage to the platform was minimal and no oil was spilled (ADN 1997a:C1). The Chief Mate of the tugboat was charged the next day with misconduct and negligence. The Coast Guard found no evidence of equipment failure on the tug.

A collision between an oil industry vessel and a platform occurred in August 1993. Approximately 13,000 gallons of diesel fuel was spilled when a spill response boat chartered by Arco collided with the leg of a drilling rig (ADN 1993b:A1).

On January 25, 1997 the barge *Oregon*, owned by Crowley Maritime Services, loaded with 12,500 tons of fertilizer and 1,600 gallons of diesel fuel, collided with the tug towing it from a

Unocal facility near Nikiski. The barge capsized, but the hatch covers remained closed and the spill was minimal (Schultz 2003).

### **Platform Fires and Accidents**

The King Salmon platform fire broke out April 20<sup>th</sup>, 2002 when a stream of natural gas ignited while workers were pulling two miles of well tubing. The platform is located in Trading Bay, about 55 miles southwest of Anchorage. Four contract workers were injured; three were released from hospital within a day of the incident. The fourth employee was flown to Seattle for treatment of burns to his face and hands. The fire was extinguished within 45 minutes. Safety regulators investigating the accident shut down the facility and it remained closed for 13 days (Alaska Journal of Commerce 2002, and ADN 2002b:E1). This was the first serious blaze on an Inlet platform since the 1987 Steelhead Platform blowout that burned uncontrolled for a week.

On the 20<sup>th</sup> of December in 1987, a platform owned by Marathon Oil and Unocal caught fire when a crew was setting protective casing in a partially completed well. According to regulators from the Alaska Oil and Gas Commission (ADN 1987b:A1), gas unexpectedly rushed through the well where the crews were unable to properly vent the gas away from the rig. The gas caught fire several hours later when a spark lit a huge plume of gas that engulfed the northwest corner of the platform. At the time of ignition, crews were trying to plug the hole by pumping heavy drill muds into it (ADN 1987a:B1). The blaze was intense and the steel drilling rig that had been working the well weakened and collapsed (ADN 1987b). Forty-nine workers evacuated in life pods but there were no serious injuries. The firm of Boots & Coots was called in to fight the fire and cap the well. The well burned out of control for most of a week and was visible in Anchorage. Eventually the fire extinguished itself (ADN 1987a). Six months later the platform experienced two more well blowouts and evacuations (ADN, 1988b:B3, 1988a:A1) while workers tried to repair the damage from the previous blowout.

Two *Granite Point* platform workers were injured in an accident in September of 1997. A broken leg and other injuries were suffered by two workers with Nabors Drilling. Nabors Drilling is a platform refurbishing contractor hired by UNOCAL, the platform's operator and part-owner (ADN 1997a: D1).

An oil spill response worker died from a head injury while moving equipment from Nikiski Bay to Seldovia for the winter (ADN 2002b). The accident occurred as the crew was weighing anchor and a cable unspooled and struck the worker in the head. The accident was investigated by the Coast Guard and OSHA.

### **Oil Spills**

Cook Inlet environmental interest group *Cook Inlet Keeper* (CIK) reported in early 2002 that oil and gas pipeline leaks in the region were increasing and averaged one per week (Petroleum News 2002). That assertion is disputed, however, and Unocal Alaska's operations manager argued that, "Cook Inlet pipelines have about a [much] better safety record than the national

average.” Morell argued that leaks have occurred, but the largest spills have occurred due to external damage. The CIK claim is made in the report *Lurking Below*, written by Lois Epstein, an engineer and pipeline safety advocate active in the region. Epstein asserts that numerous pipelines in the region are not subject to federal regulation because they are “gathering lines,” which transport oil from wells to tank farms and other collection points (Seattle Post-Intelligencer 2002).

CIRCAC representatives reported in 1998 that no environmental damage was expected from a 100-gallon crude oil spill that occurred at the Steelhead platform in February that year (ADN 1998:B3). The spill occurred while the crew was discharging treated seawater. CIRCAC staff reported that most of the crude was recovered.

Diesel fuel spilled into Cook Inlet in August 1993 when a spill-response vessel working for Arco collided with a leg of the platform *Gilbert Rowe* (ADN 1993b:A1). The *Sun Tide*, one of several boats hired to hover close by two drilling operations, was maneuvering under the rig the collision occurred. The boat was pinned there by tidal currents for two hours while a ruptured fuel tank emptied 13,000 gallons of diesel into the Inlet (ADN 1993a:B1). The Coast Guard charged the first mate of the *Sun Tide* with negligence. A similar accident occurred in 1991 when the *Atlantic Seahorse* collided with an Arco rig and spilled 4,000 gallons of diesel.

The first accident to significantly disrupt the Cook Inlet drift fishery (and other fisheries in the region) occurred in July of 1987 when the Standard Oil Company-chartered tanker *Glacier Bay* ran aground five miles south of the Kenai River during the height of the drift season. The first articles published about this incident reported that within ten days following the event, the tanker had leaked 125,000 gallons of crude oil (ADN 1987d). A 1993 article asserts that between 33,000 to 85,000 gallons of crude was spilled (ADN 1993a). Our interview work in the region suggests that the *Glacier Bay* spill had significant effects on that summer’s drift gillnet harvest and, in conjunction with the effects of the *Exxon Valdez* spill, has led to lingering feelings of uncertainty about oil industry activity in the Cook Inlet among members of the drift gillnet fleet.

Prior to the *Glacier Bay* spill, many area fishermen reportedly felt they had an unwritten compact with the industry in which possible efforts would be made to contain and minimize damage from an in-season spill (ADN 1987d:A1). The responsible parties in this case reportedly seemed unwilling to take full measures to contain the spill and the Coast Guard took over on the seventh day. Within 18 hours of response, the Coast Guard had 20 boats and barges at work recovering oil. Coast Guard Captain Rene Roussel said at the time:

“I don’t trust any of the scientific data that’s been offered to me. The experts said the oil would disappear. It didn’t. The experts said the inlet would quickly flush itself. It didn’t.” He said that the next time it happened, “my reaction will be, let’s go get it.”

Another large spill in Cook Inlet occurred in 1976 when approximately 300,000 gallons of jet fuel spilled into the Inlet. This incident did not involve either commercial fishers or the petroleum industry.

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## **Appendix F:**

### **-A Drift Gillnet Career-**

#### **Introduction**

This appendix provides a brief oral history of a drift gillnet career as told by an elderly resident of the Kenai Peninsula. The informant had retired from drift fishing some years prior, but retained a deep interest in and knowledge of the fleet and its current status. The material is intended to provide additional insight into the history and workings of drift gillnetting on Cook Inlet. The story is one of the numerous research components that informed the description and analyses developed in the main body of the report.

#### **Childhood**

I was raised by my grandmother. My birth language was Aleut and Russian, and I didn't learn English until I was six or seven. The teacher prohibited us from speaking other languages and we had to learn English. School was in all English and at home we spoke Aleut and Russian. The teacher was from the States and there was no bilingual program at that time like there is now. I grew up in Ninilchik. After I was 16, I was an orphan. I decided to take off when I was 17 and worked my way to Seattle on a fishing boat.

#### **The War**

When I got to Seattle I started high school at the YMCA on 4<sup>th</sup> and Madison. The War was going on, and I decided to join the Merchant Marines. I was shipped to the South Pacific for nine months and 27 days. After my first trip I was given 30 days off and I got on a tanker that was headed for Anchorage and Cook Inlet. I was able to point out the landmarks to the captain.

Next I joined the Air Force and got training in Scottville and then went on to New Jersey. Then I was shipped off to France, Germany, Rome and Naples. Finally I was stationed in Casablanca for 16 months and was it ever hot there! The temperatures got up to 106 degrees and I had a hard time getting used to it. After my duty, I wrote a letter requesting to be sent to Alaska to be discharged and instead I was sent to Great Falls, Montana and that was where I was discharged. I was paid and given per diem to go back to Alaska. I started to get into fishing in '47.

#### **Set Net Fishing**

As a youngster, I started commercial fishing at Kalifornsky on a set net site. I was raised by a family of fishermen. Fishing was our main source of income, that and cannery work. I bought

my first fishing license for \$2. I was involved in fishing for about five years before I left when I was 16. Before I left, I was familiar with trap fishing, set netting, and seining.

In '47, I came back and set netted. At that time the season was open from May 25 and closed when the cannery ran out of can or didn't want any more fish. Back then on the 20<sup>th</sup> of August we would still be fishing 5½ days a week. We did a lot of fishing back then.

Back then commercial fishing was an industry and not a part time occupation like it is now. People would invest more and plan more because of the length of time you had to fish. You started fishing the last of May and continued until hunting season.

I started set netting after the service. When I got back into it they still had the same five a.m. opening Monday through Saturday. People fished all over the place back then. The Copper River people would arrive in Cook Inlet to fish after their early season was finished.

### **The Early Drift Gillnet Fleet**

The drift fleet started in the late 40s and early 50s. Squeaky Anderson started it. The drift fleet was mobile. There were no gear restrictions then. People fished with 200-fathom nets and 60 meshes deep. Now you are restricted to 150 fathoms and 45 meshes deep.

### **Education**

While I was set netting, I went back and forth between fishing and school. I still had to finish high school and then I started University of Washington. During that time I fell in love and brought the little lady up to Alaska, and she accepted it real well.

Schooling for me was important but after a while I got frustrated with school. The classes didn't move fast enough for me and I wasn't being challenged. I became frustrated with all the ridiculous requirements. I spoke Russian and took Russian classes and had to sneak into the more advanced classes. Finally I quit the university.

After we had a little girl, we decided to go to Alaska for the winter and fish. But we first needed a base. So we homesteaded acres in Kasilof and had children. All my kids have college degrees. This year my wife and I celebrated our 53rd wedding anniversary.

### **Fishing Regulations**

Soon there was an influx of fishermen showing up in Cook Inlet from Copper River, Southeast, and Prince William Sound. Then Fish and Game and the state decided they needed stronger regulations. So they started regulating the Inlet. The first cut was Monday, Wednesday, and Friday 24-hour periods.



Then, since the fish cycle changes from one year to the next, they cut us down to three days a week for three 12-hour periods. I'll give Fish and Game credit. They were trying to manage our fish biologically. Over escapement is more harmful than under escapement.

For example, if you have a small garden and you throw a bunch of seeds into the ground, those seeds turn into plants. But unless you thin the plants, nothing can grow. The simple fact is that you get a better return if you thin out the plants rather than allow them all to grow. But that is just common sense.

## **Other Work**

I sold my set net site and started drifting in the 50's. Because of the fluctuation of fish, massive amounts of gear that you need, and then their cutting of time, fishing seemed like a poor occupation to rely on to feed a family. So I had to find a steady job to help the family. I was good at electrical work because I'd learned about it in the Army. So I became a journeyman lineman during the winter months. I was in the International Brotherhood of Linemen for 33 years.

I always took my summers off for fishing and worked all over Alaska. I worked out on the [Aleutian] chain all the way north of Nome. We were the first workers at the North Slope. After they established oil, we were the first union up there building power lines.

## **Drifting**

I started drifting mostly because of the time requirements required for set net fishing. Set net fishing took a lot of time. So I got a boat. On a boat you have everything ready before you launch for the season. I had a big 36-foot trailer and a 36-foot *Roberts* boat. I'd bring it home next to my shop and when it was spring I'd get the gear together and I'd be ready to launch in May.

Most all of my children helped me on the boat. My wife didn't help much. Both boys helped out and the girls helped on the boat and worked at the cannery.

When I first stated out, I leased a boat from Columbia Ward. We also beach fished for Libby. After a few years, I bought my own boat and then another boat that I used for 25 years. Eventually my legs gave out after climbing poles for so many years. When I was a lineman, we didn't have bucket trucks. They came out after my legs gave out.

## **Native Fishermen/Non-Resident Set Netters & Drifters**

Mostly it was the Natives or part-Natives that were involved in set netting. They were there first and then the other people got in. May 1<sup>st</sup> the season started, and we king fished with king nets that were eight-inch mesh, which was allowed at that time. The families used to move down to

the beach, and they'd live in tents. At that time it was mostly residents who were set netters and they also built hand traps.

There was a lot of work involved in building hand traps. After the war, the homesteaders came in and there were more non-residents showing up. You couldn't make any money homesteading and the homesteaders would buy into set nets or buy into the commercial fleet when it was easier to get into drifting.

Generally, more non-residents got into drifting because locals had set nets and traps. Owning a boat like myself meant you could stay wherever until the season started. The cannery stored your boat and gear for you. The good thing about drifting is that you could show up a week before the season and in a week be ready to fish.

Set nets and traps took a lot more time. You could only build traps on the big minus tides. You also had to drive anchors for your set net buoys.

The traps were staked out when the tide went out. This would start happening about a month or so before fishing started. It was hard work. M.S. is my cousin in Ninilchik, and he can tell you a lot about hand traps. But it was more convenient for me to work on a boat and fish rather than set net or trap.

I bought my last boat from LaConner, Washington in '74. It took me 12 days to bring up. I took it to Seattle's Ward's Cove and took off from Lake Union to Kasilof in 12 days.

The older generation had grandfathers and fathers who had beach sites. If you were a young guy, and you wanted a boat so you could make a living drifting.

## **Changes**

I don't know exactly when the guides came in. I had a friend at Fish and Game, and he was against setting up sports guiding. He'd seen it set up in Idaho. The pressure was too great on the rivers just like what we are facing now. The Kenai River is small and there are only so many fish it can handle and every year. We have more pressure all the time and everyone feels like they've got to get their share and if the sports guys don't get their share then they blame it on the commercial fishery.

Everything these days is high speed. Boats are fast and time is short. Everything has to be mechanically perfect. Today things are more cut throat because you only have a limited time to fish and make money. Everyone is in a big frenzy and everyone is in a big hurry to make money. The leisure time fishing is long gone. Friendship ceases when there are fish. Used to be that you'd pull up beside another boat to chat. Now you've got GPS and plotters and everything is geared for speed.

Now it is dangerous to take a family out to fish. Today you have to be careful because everything is so much faster. One reason fishing is dangerous is speed and another thing too is the time for fishing is preset regardless of weather.

It used to be that you could make a living only fishing. Then the homesteaders and people started migrating to Alaska and that was when the competition came in and our time started getting cut to three days a week, 12 hours a day.

In the '70s a red was worth more than a barrel of oil. We were getting \$2 a pound for reds.

Setnetting used to be a family operation. You had several family members with a number of permits. People could make a good living from their family's set netting operation.

### **Platforms**

The Inlet has strong tides. I used to fish close to the platforms but I've never gotten tangled in a platform. The strongest tides are near the platforms. You have to be able to anticipate where the tide is going to take you.

I don't think it is a hazard to put a platform in the lower Inlet because the current isn't as strong there. I don't have much concern if they put them there.

You look out for things like platforms. You've got to be on duty all the time. This is where you need experience and this is where I've got 60 or so years.

### **Drift Gillnet Vacations**

Because of the demand for subsistence fishing with dipnetting, the quota on the Kenai River gets cut back for us in terms of our fishing time.

The commercial fishing industry impacts natives in terms of you see a lot of professionals involved in the fishery now. They have other jobs other than fishing. They take their vacations and go fishing. Now because of the demand on fish is cut down you can't make a living unless you have another job. People fish during their paid vacations and if they don't make money they are able to write off the season.

### **Geography**

We used to go to Harriet Point and to Readout Bay to fish for kings around the 20<sup>th</sup> of May. We'd start on the 25<sup>th</sup> of May and go until about the 20<sup>th</sup> of June and then we'd go across and go to the beach for Reds, to Kalifornsky beach. The peak was about the first week in June.

We'd mostly see the reds in the middle rip and east rip. Middle rip and up the Susitna, and we'd travel along east side.

Dogs were up Crescent Creek and that is where they would form in different schools. Kings go west.

### **Migration of Salmon**

There has been a change in the humpies. The 1964 earthquake sunk and disrupted a lot of the beds. I remember the pinks coming the second week of August, and they used to be thick.

I drifted alone off Humpy Point and for two weeks picked humpies 24 hours a day. One year I got 17,000 humpies. I made my last set August 18 and quit for the season because I wanted to go moose hunting. After awhile, the canneries would stop taking the fish.

There is no change in the red run except for the regulations.

Humpies go into the Kasilof and Salamatof and up into Turnagain Arm. Generally it is about the second week of August that is the peak. Late in the season we used to go chum fishing and that was pure profit. It was the same with the humpies. The humpies paid for the bills and were pure profit. The kings and the early reds would get you out of the hole and the humpies and chum would be your profit.

## **Appendix G: Drift Gillnet Interview Protocol**

- Personal History of Drift Gillnet Operations and Local Residence
- Other Work Undertaken (type and for which part of year(s))
- Knowledge of Salmon Migration and Abundance Patterns
- Preferred Fishing Areas (and rationale)
- Experience with and Negotiation of Dangerous Situations (other vessels, underwater obstructions, weather, currents).
- Beginners versus Experienced Drift Gillnetters and Implications for Interactions
- Prior gear entanglement experience
- Various Other Challenges Encountered (operational, market, competition)
- Changes in Operational Strategies over Time (vessel, gear, at-sea tactics)
- Social and Economic Changes in Community and Region (including number of friends and family involved and/or no longer involved in drift gillnetting; competing fisheries; other opportunities)
- Most Important Factors Affecting Drift Gillnet Operations and Way of Life
- Experience with Oil and Gas Industry (vessels, platforms, in community, other)
- Potential for Operational Changes Should Limited Industry Occur on the OCS (type of changes, where, why)
- Preferred Options for Mitigating the Effects of Such Changes
- Long-term Collaborative Strategies between the Industries

### **The Department of the Interior Mission**

As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

### **The Minerals Management Service Mission**

As a bureau of the Department of the Interior, the Minerals Management Service's (MMS) primary responsibilities are to manage the mineral resources located on the Nation's Outer Continental Shelf (OCS), collect revenue from the Federal OCS and onshore Federal and Indian lands, and distribute those revenues.

Moreover, in working to meet its responsibilities, the Offshore Minerals Management Program administers the OCS competitive lease program and oversees the safe and environmentally sound exploration and production of our Nation's offshore natural gas, oil, and other mineral resources. The MMS Royalty Management Program meets its responsibilities by ensuring the efficient, timely, and accurate collection and disbursement of revenues from mineral leasing and production due to Indian tribes and allottees, States, and the U.S. Treasury.

The MMS strives to fulfill its responsibilities through the general guiding principles of: (1) being responsive to the public's concerns and interests by maintaining a dialogue with all potentially affected parties and (2) carrying out its programs with an emphasis on working to enhance the quality of life for all Americans by lending MMS assistance and expertise to economic development and environmental protection.