

**GEFSEC Project Tracking System**

***Response Due Date: 02/19/99***

**Correspondence Description**

Addressed to: <i>Mr. Kenneth King</i>	Correspondence Date: 02/09/99
Date Received: 02/10/99	Organization: UNDP
From: Rafael Asenjo	

<b><i>Assigned To: K. Kumari</i></b>
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<b><i>Status: Open</i></b>
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Type: Document
Topic: PDF: RUSSIAN FEDERATION: Conservation Management of Wild Salmonid Diversity in Kamchatka

**Action Instructions**

- For Bilateral meeting
- For information only. No action needed.
- Please handle/respond on behalf of Mr. Kenneth King and provide a copy.
- Please handle/respond on behalf of Mr. Mohamed El-Ashry and provide a copy.
- Please prepare a draft response and return to Program Coordinator
- Please reply directly and provide a copy.
- Please review and/or technical comments



**Special Instructions**

Please prepare Project Review Sheet for the pre-bilateral meeting.

**Information Copies Sent To:**

A. Duda, M. Ramos, H. Acquay, M. Cruz, W. Lusigi, J. Taylor

<b><i>Projects File Room Location:</i></b>
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**United Nations Development Programme**  
GLOBAL ENVIRONMENT FACILITY (GEF)



Memorandum

**To:** Attn: Dr Ken King, Programme Co-ordination, GEF Secretariat  
Mr Lars Vidaeus, GEF World Bank  
Mr Ahmed Djoghlaif, UNEP/GEF  
Mr Rohit Khanna, UNEP/GEF  
Mr Mark Griffith, STAP Secretariat  
Dr Hamdallah Zedan, Executive Secretary CBD (Acting)  
Mr Michael Zammit Cutajar, Executive Secretary UNCCCF, C/O  
Ms Martha Perdomo  
Dr Madhav Gadgil, STAP Chairman  
Dr Christine Padoch STAP, Vice Chairman  
Dr Peter Bridgewater, STAP  
Professor Jose Sarukhan, STAP  
Dr Paola Rossi Pisa, STAP  
Dr Michael Colombier, STAP  
Dr Zhou Dadi, STAP  
Dr Stephen Karekezi, STAP  
Professor Shuzo Nishioka, STAP  
Dr Dennis Andersen, STAP

**From:**  Rafael Asenjo, UNDP/GEF

**Date:** 9<sup>th</sup> February 1999

**Subject:** UNDP's Submission for the 24<sup>th</sup> February Bilateral Discussions

Please find enclosed for your review the proposals listed below, and in submission for the above bilateral:

## **A. Climate Change**

### **Full Projects**

Lebanon: Cross Sectoral Energy Efficiency and Removal of Barriers to ESCO Operation (USD 3, 400,000)

Morocco: Market Development for Solar Water Heaters (USD 2,965,000)

### **PDF's**

Chile: Removing Barriers to Rural Electrification with Renewable Energy (USD 75,200)

Kazakhstan: Capacity Building to reduce Key Barriers to Energy Efficiency in Heat and Hot Water Supply (USD 236,900)

Ukraine: Removing Barriers to Greenhouse Gas Emissions Mitigation Thorough Energy Efficiency in the District Heating System (USD 205,200)

## **B. Biodiversity**

### **PDF's**

Russian Federation: Conservation Management of Wild Salmonid Diversity in Kamchatka (USD 47,500)

Russian Federation: Demonstrating Sustainable Conservation of Biological Diversity in Four Protected Areas on Russia's Kamchatka Peninsula (USD 233,700)

Algeria: Conservation and Sustainable Use of Globally Significant Biodiversity in the Tassili and Hoggar National Parks (USD 180,000)

We look forwards to discussing your comments at the bilateral.

**Global Environment Facility  
Proposal for a PDF Block B Grant**

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**Country:** Russian Federation  
**Focal Area:** Biodiversity  
**Operational Program:** OP #2: Coastal, Marine, and Freshwater Ecosystems  
**Project Title:** Conservation Management of Wild Salmonid Diversity in Kamchatka  
**Block B Funding:** GEF: US\$ 287,000      Block A Grant: 21,000<sup>1</sup>  
UNDP: US\$ 47,500  
Others: US\$ 180,000  
**Total:** US\$ 514,500

**Estimated Full Project:** GEF: US\$5-7 million  
UNDP & others: US\$8-10 million

**Requesting Agency:** United Nations Development Program  
**PDF Duration:** 10 months  
**Council Submission:** Spring 2000

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**Summary: Project Objectives and Description**

1. Russia's Kamchatka peninsula, located in the country's far east, is divided into two sub-regions: the Kamchatka Oblast and the Koryak Autonomous Okrug. Commercial fishing is an economic mainstay in both regions, and salmonid fish comprise a significant proportion of commercial and subsistence catches. Indeed, the peninsula and its hundreds of largely pristine river systems support one of the world's richest salmonid fisheries, with tremendous species and within species diversity expressed in stocks. Given the economic significance of the fishery, its sustainable use management is in Russia's national interest. However, baseline sustainable-use management, in the absence of a GEF project, would manage the fishery for production, not for diversity. Diversity oriented management to conserve the broad array of salmonid diversity at the species and genetic (intraspecific) stock levels will impose incremental learning and management costs relative to those incurred in a wholly production oriented management regime. There is presently little reason for Russia to incur these costs because the resultant benefits are non excludable in supply (global benefits), intangible, diffuse and long-term. In a business-as-usual scenario Russia would assume all the costs of diversity conservation but capture only a portion of the net benefit – clearly a disincentive for management. GEF resources are requested here to develop a project that would add a diversity management overlay to the commercial fishery baseline, thereby conserving globally significant salmonid populations and contributing to the protection of important ecosystems and species at higher trophic levels that prey on migrating salmon.

2. Salmonids encounter a wide array of habitat conditions to which they must adapt in order to survive and reproduce. As a result, salmonid diversity is manifested as phenotypic, life history, and genetic diversity, and in part represents the species' adaptation to this variation in habitat conditions both in space and in time. Habitat conditions vary greatly among watersheds; even within a watershed, conditions vary from headwater

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<sup>1</sup> Note: this Block A grant was used to develop two Block B proposals and a medium-size proposal for Kamchatka.

areas to the lower mainstem reaches (Independent Scientific Group 1996). A targeted GEF intervention at this juncture can cost effectively establish long-term wild fish management programs that would protect salmon and steelhead stocks that still exhibit their full range of genetic and life history diversity.

3. The project would focus on three river systems from which no more than four watersheds would be selected along Kamchatka's sparsely populated western coast to capture the full range of Kamchatka's salmon, steelhead, trout and char diversity (see Annex 2 for a description of the prospective sites). These discrete, manageable areas would be the focus of a comprehensive demonstration program designed to remove the root causes of threats to salmonid diversity, jointly financed by the GEF and other sources. More specifically, the project would: 1) establish an adaptive management approach for the conservation of salmonid diversity and dependent terrestrial biodiversity; 2) establish diversity management principles and criteria to be applied to the baseline fisheries management regime; 3) develop a diversity baseline and monitoring regime to enable the informed management of diversity; 4) involve local stakeholders as partners by establishing multiple-use refuges for salmonids in priority riverine and near-shore marine habitats and enlist local stakeholders as "riverkeepers" or stewards of each river system; 5) engender a paradigm shift from unsustainable to sustainable salmon-based livelihood practices; 6) develop an enabling legal and policy framework for diversity management; and 7) promote education and outreach programs to build upon existing local support for salmonid fish conservation and sustainable-use.

4. Russia has demonstrated a long-term historical commitment to sustainably managing its fishery. However, the severe economic difficulties that Russia is presently experiencing now raise obvious questions about the long-term sustainability of project-inspired activities. There is a "sustainability gap" in government support and capacity to meet new management challenges. Even so, Block A consultations convinced UNDP that Kamchatka's fishery management baseline (as represented by institutions, dedicated people, laws, and policies, and a proud fishery management tradition) is more than substantial enough to warrant international assistance as long as that assistance helps to bridge the gap to long-term sustainability in a responsible way. First, the project would develop a realistic, long-term financing plan for salmon diversity management. This would include establishing linkages with other international institutions and a modest, but sufficient re-investment arrangement to capture some fishery revenue for diversity management. The full project would be designed so that activities would be implemented in phases separated by "sustainability milestones." Project implementation would have to reach these milestones before the project could continue to the next phase.

## **Background**

5. The Kamchatka Peninsula is a global priority for the long-term conservation of wild anadromous salmon and steelhead, trout and char, being home to some of the last remaining healthy assemblages of salmonid fish along the Pacific Rim. An estimated one third of the world's total salmon population spawn in Kamchatka rivers, including all six species of Pacific salmon [chinook, (*Oncorhynchus tshawytscha*), coho (*O. kisutch*), sockeye (*O. nerka*), chum (*O. keta*), pink (*O. gorbuscha*) and masu salmon (*O. masu*)]. These rivers are also important spawning grounds for rainbow trout including Russia's only runs of the endangered, Red Book-listed sea going steelhead trout (*O. mykiss*) and two species of char, Arctic char (*Salvelinus alpinus*) and white spotted char or "kundzha" (*S. leucomanis*), and one species of grayling (*Thymallus arcticus*). In addition to species diversity, there is a tremendous amount of genetic and life history diversity within species and wild populations. Intraspecific genetic diversity occurring within salmon species has been recognized in North America as evolutionarily significant for conservation purposes. In addition to this intraspecific genetic diversity, salmonid species exhibit a high level of life history diversity seen in the different seasonal timing of the salmonid spawning runs in specific rivers, as well as residency time spent in fresh and salt-water, adaptations to up-stream habitat, and the ability to pioneer new waters.

6. Salmon and the nutrients they bring to freshwater and terrestrial ecosystems are the biological

cornerstone of aquatic and terrestrial biodiversity in Kamchatka. In coastal watersheds in the northwestern North America, recent studies have shown that salmon and other anadromous fish are a “keystone species,” bringing biomass and nutrients (nitrogen, phosphorus, carbon and micronutrients) from the sea into freshwater and terrestrial ecosystems.<sup>2</sup> Annual nutrient inputs from migrations of spawning salmon and steelhead support riparian vegetation, aquatic invertebrates, juvenile salmonids and large vertebrates at the top of the food chain. Large vertebrates that depend on salmon in Kamchatka include the world’s largest population of brown bears (5,000-10,000 individuals), over 50% of the global population of the world’s largest eagle, Steller’s sea eagle and 1,800 Steller’s sea lions, a species that has declined 95% worldwide in the last 20 years. Salmonid diversity plays an important contributory role to ecological processes because different species and races<sup>3</sup> migrate at different times and to different locations, providing spatial and temporal variations in food supplies that may be critical to maintaining healthy populations of predators. Clearly, efforts to protect Kamchatka’s biodiversity must include the measures to insure the continued diversity of salmonid fish and health of their freshwater and marine habitat outside of existing protected areas. Any sustainable, long-term biodiversity conservation approach for Kamchatka must seek to maintain this ecological link among healthy salmon and steelhead stocks, healthy terrestrial ecosystems and human communities

#### Global Context:

7. Kamchatka contains the largest system of healthy salmon rivers along the Pacific Rim. Elsewhere, healthy native salmon stocks can only be found in parts of northern Alaska and northern British Columbia, and in scattered river systems from central British Columbia to the northwest United States. However, wild salmon and steelhead stocks along both sides of the Pacific have declined dramatically over the last 100 years from the effects of habitat loss, over fishing, competition from fish hatcheries, and a historical lack of understanding of and expertise in adaptive diversity management. Today, fish hatcheries or aquaculture operations produce most of the world’s salmon and steelhead – activities that are thought to endanger the remaining wild stocks and that may not be ecologically sustainable over the long-term. In Canada, most stocks from central British Columbia to Vancouver Island are in steep decline. Likewise, most stocks of salmon from the West Coast of the United States are threatened and thus legally protected. These pressures have eroded intraspecific diversity, leaving only fragments of once robust populations. History has shown that once salmon and steelhead populations decline to low levels, restoration is expensive and uncertain. Despite the investment of US\$ billions, wild Pacific and Atlantic salmon recovery programs in North America and Europe have shown little success. Kamchatka represents the best remaining opportunity to protect healthy assemblages of salmonid fish before the factors causing salmonid decline are entrenched.

#### **Threats to Salmonid Diversity in Kamchatka**

8. During the GEF-supported Block A consultations, the following threats to Kamchatka’s wild salmon diversity and their socio-economic, capacity related and institutional root causes were identified by stakeholders:

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<sup>2</sup> Over 40 species of mammals and birds in Southeast Alaska forage on salmon eggs, juveniles and adults in freshwater (M.F. Willsonn and K.C. Halupka. 1995) and the growth and reproductive success of young fish have been linked to the biomass of salmon carcasses in the system (M. Bilby *et al.* 1996). Sockeye salmon runs in SE Alaska add up to 170 tons of phosphorous per year to Lake Illiamna (Hartman and Burggner 1972 ) and the number of salmon carcasses carried by brown bears to within 100 meters of streams adds phosphorous to terrestrial systems at a rate of 6.77 kg/ha, equivalent to the application rate of commercial fertilizers for evergreen trees (M. F. Willsonn, *et.al.* 1998).

<sup>3</sup> For example, the steelhead species *O. mykiss* is comprised of sub-groupings called “races” that are defined by the different seasonal timing of their spawning runs (summer steelhead, winter steelhead). These races are comprised of river-specific “stocks” or “aggregate populations” uniquely suited to river-specific conditions.

### Baseline commercial fisheries management:

8. In Kamchatka, as in most parts of the world where salmon occur, commercial salmonid fisheries management has not been concerned with maintaining salmonid diversity in its essential elements. Instead, catch quotas are issued based on underlying concern for maintaining salmonid fish numbers but with no thought as to how these quotas will impact salmonid diversity. This is not unusual for fishery management programs worldwide. Kamchatka fish management agencies are also expanding their fish hatchery program. Hatcheries programs are planned to bolster salmonid numbers, but with little to no thought as to how these programs impact wild populations and their attendant diversity. In North America, hatcheries are controversial, blamed for contributing to the steep decline of native, genetically distinct stocks of salmonids through the combined effects of intraspecific competition, disease transmission, hybridization, out-breeding depression and a range of other effects. However, hatcheries are still a key component in the commercial fishery management regime. In a business as usual scenario, Kamchatka's hatchery expansion program will not include sufficient design and implementation components to make the new hatchery program "diversity friendly."

### Habitat destruction:

9. Although the majority of Kamchatka's watersheds are currently pristine, they do face threats from imminent development activities. The watershed sites under this project are vulnerable to the imminent exploitation of substantial gold, oil and natural gas deposits and secondary and tertiary impacts (roads, pipelines, etc.). Salmonid diversity is tied directly to the integrity of stream, river, estuary and marine ecosystems. Human actions (i.e. habitat destruction and inappropriate development), can constrain or reduce the expression of habitat diversity within and among watersheds, which in turn constrain the expression of salmonid biodiversity, disrupt the integrity of metapopulations, and lower regional salmonid productivity and stability (Independent Scientific Group, 1996). The North East Petroleum Operating Agency plans to lease six oil reserves off Kamchatka's west coast, but no commercial drilling has occurred to date. A natural gas pipeline along the coast is in the feasibility planning stage. This threat was listed as the most serious threat to Kamchatka's salmon fisheries by a working group of Russian fisheries experts assembled in July, 1998 as part of the UNDP/GEF PDF Block A meetings in Petropavlovsk. Kamchatka contains an estimated 1,000 tons of gold and 5,000 tons of silver. Although large-scale industrial gold mining has not begun yet, various US, Canadian and Russian firms plan to mine 30 tons of gold from sites in Kamchatka in the very near future (Newell, J. and E. Wilson, 1996). A present lack of information on the distribution of species and stocks between and within rivers and tributaries and the nature of inter-specific relationships acts as an impediment to sound environmental assessment and regulation of development activity in sensitive areas.

### Over-harvesting of fish at the mouths of rivers:

10. Both subsistence and commercial poachers are at work in rivers, at the mouths of rivers, and in the near-coastal zone. In freshwater habitats where salmon and steelhead stocks gather to spawn, adult fish are poached for their flesh and/or stripped for their caviar. This is already a significant threat and is growing rapidly in the face of insufficient or non-existent stock management. Poachers have been observed gill-netting the endangered steelhead in one of the project sites – the estuaries of the Utholock and Kvachina rivers in the west coast of the Koryak Autonomous Oblast. The dearth of information on spatial and temporal distributions of salmonid populations prevents baseline policing and enforcement functions from being effectively targeted towards relieving pressures in particularly sensitive areas so as to conserve biological diversity.

### **Associated Root Causes**

- In the near-term, management for commercial salmon production need not be concerned with maintaining salmonid diversity.
- Lack of knowledge and awareness. The requirements of diversity management are poorly understood by traditional fishery managers worldwide, only recently having been developed;
- Lack of wild salmon management laws and policies.
- Lack of basic information on species distribution, abundance, and habitat diversity
- A lack of capacity (staff, financial resources, outdated equipment/technology) to monitor river estuaries and freshwater rivers and streams for illegal salmon fishing and enforce laws and regulations.
- Lack of alternative livelihoods for local villages.
- Inadequate controls over industrial/commercial development including improperly defined policies on environmental impact assessments.

### **Project Description**

#### **Geographic Scope**

11. The project will be implemented in four manageable watersheds along the sparsely populated western coastline of the Kamchatka peninsula (refer to Annex 2 for a map and more detailed description of these areas).

#### **Baseline**

##### **Fisheries Management Institutional and Legal Framework: Management for Production**

12. Clearly, it is in Russia's own interest to maintain a sustainable fishery as a long-term economic resource. Russia has "baseline" programs and institutions to do this. This baseline approach places a priority on fish production – on meeting the demands of the market and providing jobs to Russian fishers. Kamchatka's baseline salmon management program is comprised of four main components: research, monitoring, enforcement and artificial production. The goal of the program is to sustain harvest levels in order to meet the demands of the market and provide jobs while ensuring a ready supply of fish resources. This has been done to date by relying upon natural regeneration of fish stocks and focussing most enforcement monies on marine-based programs. New pressures on the resource are forcing Kamchatka to expand its artificial fish propagation program and investment in salmon hatcheries is increasing. Proposals are being considered, supported by Japan, to expand the system of fish hatcheries as a short-term solution.

13. Salmonid fishery management in Kamchatka is conducted through four agencies: Kamchatrybvod (management, enforcement), KamchatNIRO (monitoring and scientific assessment), the Special Marine Inspection Service (enforcement), and the Russian Border Guards (enforcement). Kamchatka's commercially harvested salmon species (chinook, sockeye, chum, coho, masu, and pink salmon) are managed by Kamchatrybvod, the federal department for the protection and reproduction of fish resources and fisheries regulations in the Kamchatka fisheries district. Established in 1947, Kamchatrybvod manages commercial and sportfishing activities and enforces relevant laws in freshwater and marine waters within Kamchatka's 200 mile exclusive economic zone (EEZ). Kamchatrybvod's staff of 630 review the impacts of new development upon fisheries, conduct stock monitoring at about 20 monitoring stations in Kamchatka and Koryak oblasts, and manage five fish hatcheries. Kamchatrybvod also monitors and protects marine mammals (sea otters, walruses), operates three vessels and two helicopters for inspection, 100 trucks, four-wheel drive vehicles, and about 100 outboard motor boats. Funding comes from the federal budget, fines recovered from illegal fishing (60% of

total of each fine), and sport fishing license sales. Kamchatrybvod and the Russian Border Guards have cooperative enforcement agreements and joint programs with the US Coast Guard.

14. KamchatNIRO is a federally funded fisheries research institute that provides stock assessments by species for each harvest area as a unit (not by individual stock). They conduct basic research, and aerial monitoring of the spawning grounds. KamchatNIRO also does studies on marine mammals, applied fisheries research to develop new fisheries, basic biological research to aid in artificial propagation, research on metapopulation structure, and research regarding predator-prey relationships during high seas migrations. Both KamchatNIRO and Kamchatrybvod maintain salmon monitoring stations (6 and 10 respectively), where information is gathered regarding smolt out migrations and estimates of adult returns, spawning red counts, and information on water flow and quality.

15. The Special Marine Inspection Service works under the Ministry of Environmental Protection, and is responsible for protecting marine waters from pollution and enforcing fisheries regulations (fisheries responsibilities overlap with those of Kamchatrybvod). Both Kamchatrybvod and the Environmental Protection Committees of the Kamchatka and Koryak Autonomous regions enforce regulations preventing development within one kilometer of each side of salmon bearing streams. However, while one kilometer is adequate for habitat protection, the buffer zone law is frequently ignored, especially in regard to the building of human settlements along rivers. Furthermore, a campaign by the mining industry to reduce the width of streamside buffers may weaken the regulations protecting salmon habitat in the future.

16. Kamchatka's commercial fishing industry comprises 80% of Kamchatka's economic output and 25% of Russia's total fisheries harvest. In the Koryak Autonomous Region, salmon support over 8,000 indigenous Itelmen and Koryak people. However, the optimum production option from a business perspective in the short to medium term is not wild stock management. Given this fact, the global benefits of diversity management are not incidental to the domestic benefits of managing for production.<sup>4</sup>

#### Diversity management

17. While no diversity management program would be undertaken in a baseline scenario, experts from Kamchatka, Moscow and other cities in Russia have been studying the diversity of salmonid species and their ecology for four decades. Moscow State University and the Wild Salmon Center, in cooperation with the Kamchatka and Koryak governments, have been undertaking field research on the ecology of the endangered steelhead trout in western Kamchatka for the past four years.

#### Oil exploration/gold mining/pollution control:

18. The Koryak Environmental Protection Committee has taken a position against off shore oil drilling, and the participants in the conference "Biodiversity Conservation in the Russian Far East: Priority Territories and Strategies for their Protection" passed a resolution calling for a "moratorium on exploration and development of oil and gas the continental shelf of the Okhotsk, Bering and Chukchi seas until ecologically appropriate extraction technologies are applied." Kamchatka's Environmental Protection Law requires that environmental impact assessments be conducted prior to any development activities taking place, and this law is regularly enforced. Companies are then required to report water and air quality figures to the Government on a biweekly basis. This law was applied to recent mineral exploration activities on the peninsula.

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<sup>4</sup> From a business perspective it is optimal to manage for a sustainable supply of salmon (although this rarely happens). However, this "production oriented management" is quite different from a management regime that emphasizes diversity management. One can manage for production and still harm or diminish levels of diversity and in fact, this is the "business-as-usual" approach to salmonid fishery management.

### Sustainable Livelihood Support:

19. Due to the economic difficulties in Kamchatka, more people are being forced to illegally take fish or other wildlife for consumptive and productive purposes. In a business as usual scenario very little support for sustainable livelihoods in these coastal villages would be forthcoming. A nascent ecotourism business is growing in Kamchatka and sport fishing is one of the biggest attractions. This industry would continue to grow as much as possible, given a current lack of capital and supportive laws and policies, and provide a slightly increased number of jobs for local stakeholders. Two of the local villages have Soviet-era fish processing plants which would remain shut down, due to lack of resources and marketing expertise.

### **GEF Alternative**

20. A GEF project would top-up this production-oriented baseline program with a co-financed sustainable development baseline and a GEF incremental wild salmon diversity conservation demonstration program.

**Sustainable Development Baseline** (co-funding would be secured for these components under the GEF project):

### Fisheries management / Environmental management

21. Significant co-financing would support the strengthening of salmonid fisheries management activities such as enforcement and monitoring in identified hotspots within the four target areas. This would include training of key staff, the provision of necessary equipment, and the improvement of necessary infrastructure. Significant co-funding would be secured to strengthen environmental management activities in these four areas. EIA procedures would be strengthened and enforced and inter-sectoral links established between the pollution control efforts and the diversity conservation efforts. These needs would be specified by the Block B preparation activities and co-financing secured for implementation under the full project.

### Alternative livelihoods

22. The project would leverage co-financing to bolster the sustainable development baseline in order to build constituencies for sustainable-use and maintenance of diversity in the four project site areas. Currently, few sustainable development alternatives exist in Kamchatka. There is a widespread lack of information and knowledge on how to pursue more sustainable livelihoods. The project would enable stakeholders to develop sustainable, and value added local salmon-based economic development as an alternative to illegal poaching of salmon. This would include: 1) a co-financed micro-credit facility to assist eco-entrepreneurs in developing alternative livelihoods; 2) assistance with developing a biodiversity-friendly ecotourism industry (sport fishing, wildlife watching) in Kamchatka; and 3) marketing and other business-oriented assistance for local, small-scale salmon processing activities. Interventions would be targeted at those communities likely to face the greatest opportunity costs from institution of the diversity management program.

### **Incremental Conservation Activities**

23. Further discussions will be held and refinements made during project preparation activities under the Block B implementation phase. The following list describes important components of the wild salmonid conservation program to be developed and implemented under the full project.

- a. *Establish an adaptive management approach:* An adaptive management approach would be developed to link monitoring and evaluation with decision making, targeted research, law and policy development,

awareness programs, and to create linkages with other sectors. An adaptive management approach would be established to empower stakeholders in Kamchatka to adequately conserve salmonid diversity, and all dependent terrestrial diversity as well (e.g. sea eagles, bears, riparian vegetation). The project would facilitate the transfer of ideas among Russian scientists and the best salmonid/productive landscape management expertise from other parts of the world. Modeling is an important tool for this approach.

b. *Establish special salmonid refuges to conserve priority riverine and near-shore marine habitats.* Experience in other parts of the world has shown that the best insurance policy for wild salmon is to permanently protect their habitats from inappropriate human impacts. Kamchatka offers the best remaining opportunity in the world to establish permanent refuges for salmonid fish. The project would establish salmon refuges in the near-shore, estuarine, and riverine areas of four priority river systems. Refuges would be multiple-use special management zones where local stakeholders would be crucial management partners. Refuges would be designed to protect key spawning, rearing, and staging areas for salmonid fish and other marine species from habitat destruction and over fishing. Innovative, cost-effective management and enforcement programs for refuges would be developed. Local stakeholders would be enlisted as “riverkeepers” and as partners in protecting the diversity of these streams, with a focus on vulnerable areas.

c. *Enable stakeholders to monitor salmon intraspecific stock health in priority watersheds.* The project would develop a salmonid diversity monitoring and information management program. The purpose of the program would be to establish measurable, monitorable salmonid escapement goals for each of the priority watersheds. The program would develop diversity management principles and criteria that can be applied under the baseline fisheries management regime to realize escapement goals. As described, the existing baseline of information on salmonid diversity is inadequate for effective decision-making with respect to the development of effective management/planning programs. Gaps in biological knowledge (baseline data) exist for the project’s four river systems. A biodiversity monitoring and information management program will be established by the project to support the “managing for diversity” regime linking terrestrial and marine systems to be developed under this project.

More specifically, activities would determine core habitat and population areas, annual returning run sizes (escapement levels) for each salmon species necessary for stock health, watershed nutrient loading, and numbers necessary to sustain populations of brown bears, Steller’s sea eagles and other salmon-dependent species. The project would assist in the development of a international index rivers program among Russian and it’s other North Pacific neighboring agencies. Such a monitoring and information management program would also provide training to enable stakeholders to increase the capacity of Kamchatka organizations to prevent poaching of returning adult salmon, steelhead and char in selected near-shore marine, estuarine, and freshwater areas.

d. *Build conservation awareness and advocacy.* Conservation and sustainable use awareness is going to be very important to the future sustainability and success of efforts to conserve and sustainably utilize Kamchatka’s biological diversity. If awareness is insufficient, then there will be no constituency for conservation. The project would raise awareness at different levels of civil society, from local communities (schools and other groups) to regional and national government officials. The project would develop education and outreach programs to build upon existing regional support for salmonid diversity conservation and sustainable development. School children would be involved in applied learning programs in the field. Existing NGO capacity for this sort of work would be utilized and strengthened. NGO strengthening would be co-funded in part by the Rockefeller Brothers Fund and Columbia University would also support this project through its own programme of community participation in the region.

e. *Financing for diversity management:* Sustained funding for biodiversity conservation does not exist. Conservation efforts are currently plagued by lack of financing and, given the difficulties Russia is

experiencing in transitioning to a market based economy, the situation will probably not improve in the short to medium-term. Therefore this problem will need to be addressed in a new and innovative fashion. Given the significant value of the baseline fisheries exploitation and natural resource development activities, it is feasible that a long-term “re-investment” initiative could be developed to channel profits back into conservation. The project would coordinate funding among the various institutions to maximize the conservation impacts. GEF funding would be requested to support the development of the mechanism.

f. *The law and policy framework would be strengthened and expanded* to achieve the purpose of a wild salmon diversity conservation program. Management policies and protocols for hatchery/wild fish interaction and guidelines for hatchery operations would be developed and demonstrated. Legislation and policy addressing industrial and commercial development would be reviewed so as to advise on amendments or additions to improve environmental impact assessments to regulate potentially harmful development. Salmonid harvest and management regulation enforcement would be strengthened to support the maintenance of diversity. A regional near-shore marine and freshwater aquatic diversity conservation framework would be developed for the Kamchatka peninsula to aid in planning for a sustainable future. The project would enable regional and national environmental law and policy experts to strengthen their capacities through international study tours and other exposure to international expertise and management initiatives.

### **Global Benefits and Incremental Costs**

24. The full project would generate a number of global benefits. Conservation of salmonid species and within-species populations would contribute to the conservation of a range of increasingly threatened fauna, including charismatic species such as the Brown Bear, Stellar’s Sea Eagle and marine mammals, plus other species that depend on nutrient transfers engendered by wild salmon runs. The project would thus reduce the risk of human-induced ecological perturbation in a globally significant ecosystem, safeguarding direct and indirect use values and existence values for salmon, other wildlife and wildlands/ waters. There is also an option value that derives from maintaining diverse and robust salmonid stocks to hedge against the risk of disease or other stresses to the global salmon fishery. At a global level, in-breeding in salmonid fish nurseries is gradually eroding the genetic quality of stocks, making them more vulnerable to exogenous impact. The loss of inter and intra-specific diversity in wild stocks would foreclose the ability to expand the gene pool of nursery stocks through selective breeding, thus amplifying risk to the industry. Finally, it should be noted that although information exists on the mechanics of diversity management in North America, a management paradigm geared to the special social, economic and institutional landscape of Kamchatka is lacking. The project would demonstrate diversity management mechanisms that could later be replicated for salmonids and other species elsewhere in the Russian Federation—thus generating additional global benefits over time.

25. The afore-mentioned benefits are non pecuniary, uncertain and diffuse and therefore not internalised in the cost-benefit calculus of decision making in baseline fish stock management. These benefits are partly incidental to national baseline obligations, hence the need to secure co-financing to supplement the existing baseline. But GEF investments are warranted to compensate for the cost of complementary conservation activities needed to protect diversity in its various manifestations. The GEF Alternative to be developed under this Block B would be designed as a “package” of activities and outputs – some of them incremental and some of them not. Those activities and outputs that can be justified wholly in the national interest would be financed from non-GEF resources. GEF funding would be sought to finance incremental activities eligible for financing under GEF’s Coastal, Marine and Freshwater Ecosystems Operational Program.

### **Eligibility**

26. The Russian government ratified the Convention on Biological Diversity (CBD) in 1995. Russia is a recipient of UNDP technical assistance and as such is eligible for GEF funding.

### **National Level Support**

27. The Government of Russia has identified Kamchatka's biodiversity as a top priority for conservation action in its national biodiversity action plan. Integrated watershed management figure at the top of those priorities. The joint Russia-American effort to identify sustainable development possibilities identified Kamchatka as a prime spot for the development of integrated conservation and development partnerships. Representatives of eight arctic countries, including Russia signed the "Declaration on the Protection of the Arctic Environment" in 1991. The Declaration adopted the Arctic Environmental Protection Strategy (AEPS), and identified habitat conservation as an area of special attention. The Kamchatka Peninsula and surrounding marine areas are one of the most spectacular and pristine natural areas in the world. Industrialization has hardly touched this 1,500 kilometer long peninsula, which ranks near the top of any list of globally important palearctic or nearctic bioregions. Other international publications recognize the global significance of Kamchatka's biological resources. Kamchatka is one of the priority areas identified under WWF's Global 200 initiative. Significant areas of the peninsula have been declared World Heritage Sites and it is expected that other areas will be nominated for inscription.

*S. S. S.*

### **Justification for PDF Grant**

28. A number of activities have helped to develop the consensus and information base necessary to proceed with the development of this project. A Friends of the Earth-Japan/IUCN-supported conference in Siberia recently listed hotspots areas of interest in the Kamchatka peninsula. In July 1998 a GEF PDF A supported a stakeholder's meeting in Petropavlovsk which undertook a threats analysis exercise for biodiversity. This analysis helped to identify the threats and root causes to a number of biodiversity issues including salmonid stocks. PDF-B resources are needed now to develop a logical framework and a baseline/incremental cost approach, to provide time to ensure that a sufficient cross-section of local stakeholders in Kamchatka is able to provide input to the project development process, to clarify threats to biodiversity and their root causes, to gather additional, relevant socio-economic information, and develop a strategic approach for successful project implementation. Block B activities would also ensure the complementarity of this project with that of the GEF Kamchatka protected areas Block B.

### **Description of Proposed PDF Block B Activities & Expected Outputs**

29. PDF resources would be used to undertake the following activities:

- a) Establish Block B stakeholder steering committee and an independent scientific review committee
- b) Conduct a more site-specific analysis of the threats to biodiversity and their root causes of the impact of legal and illegal near-shore, estuarine and in-river salmon, caviar extraction and steelhead fishing.
- c) Conduct stocktaking and assessment of existing information as a part of each analysis.
- d) Conduct stakeholder workshops/socio-economic appraisals in and around priority sites.
- e) Conduct the following work (assessments, studies, consultations) to guide development of full project:
  - Using available data, map salmon and steelhead biogeographic zones, metapopulation structure and migration routes to determine priority watersheds and marine areas for future salmon and steelhead habitat protection. Assess overlap between priority salmon watersheds and existing and proposed refuges and develop GIS maps of potential refuges.
  - Assess environmental management needs and project requirements to meet the needs (co-funded).
  - Assess and recommend specific, viable sustainable salmon business opportunities.
  - Assess Steelhead refuge requirements

- Assess staff and infrastructure training and capacity-building requirements.
  - Conduct aggressive effort to raise the necessary co-financing from public and private sources.
  - Assess financing mechanisms.
  - Assess what is required to achieve the necessary level of collaboration.
  - Conduct detailed assessment of law and policy framework, and develop specific recommendations for how to establish an adaptive program for salmonid landscape diversity management.
  - Assess most strategic public-awareness and educational activities for possible project support
  - Clarify related livelihood-related threats and assessment of how project can best help and conduct aggressive co-financing effort.
  - Assess specific needs and requirements for coalition building
  - Assess how to best preserve and maintain indigenous peoples' knowledge
  - Assess specific approaches for project to take in improving data management and utilization.
- f) Using information gathered from the Block A consultation, community workshops/socio-economic appraisals, develop the logical framework for the project.
- g) Focus and refine the priority activities needed to address root causes, (i.e. program development, institutional strengthening) in order to include them in the project brief.
- h) Finalize the quantification and analysis of the "business as usual" baseline.
- i) Building upon the baseline analysis, estimate the global benefits to be derived from this project.
- j) Determine the incremental costs of achieving global benefits over the baseline scenario
- k) Building on the logical framework and other materials prepare draft project document for review by steering committee and potential co-funders. More specifically:
- build "sustainability milestones" into the project's workplan and implementation schedules. Sustainability milestones include: newly adopted revised laws and policies; developed and adopted sustainable financing mechanisms; completed information management system;
  - design project activities, their scope and duration.
  - build-in a monitoring and evaluation program needed to measure project impact, progress towards achieving global benefits; and
  - finalize the mechanisms for effective stakeholder participation and determine economic instruments to sustain biodiversity conservation and the equitable distribution of benefits.
  - determining the technical and managerial skills needed for the effective implementation and sustainability of the projects outputs and activities
- l) Hold a Steering Committee meeting to consider previously circulated project document outline. Comments will be received from co-funders and other stakeholders as well.
- m) Discussions with co-funders will be held on the project brief and final co-funding arrangements.
- n) Revise and finalize project document.

### **Expected Outputs**

30. The primary output of this Block B project will be a full project brief with co-funding secured for non-incremental activities. The following outputs are necessary in order to produce the project brief:

#### Assessments & Recommendations:

- i. An analysis of the threats to biodiversity and root causes as they relate to each watershed.

- ii. A report on field verification surveys including maps of priority river systems.
- iii. A socioeconomic survey of the local communities in around each of the watersheds and an analysis of developing effective collaboration among the communities, fishermen, and Government.
- iv. Recommendations on how the project can best promote the preservation and maintenance of indigenous communities' knowledge and practices relevant to conservation of salmonid diversity.
- v. Steelhead refuge assessment
- vi. Environmental management needs assessment and project requirements to meet them (co-funded).
- vii. Substantiative and budgetary assessment of capacity-building (staff and infrastructure) requirements.
- viii. Recommended long-term financing mechanism(s)
- ix. Agreement with various donors on at least US\$ 5 million in co-financing arrangements.
- x. A detailed assessment and analysis identifying gaps in fishery management law and policy framework; recommendations of necessary elements of an adaptive management approach.
- xi. Recommendations for most cost-effective and strategic public-awareness and educational activities
- xii. Complete programmatic recommendations for a project-supported program to support the development of alternative sustainable fishery livelihoods
- xiii. Assessment of needs and requirements for coalition building
- xiv. Assessment of specific approaches for project to take in improving data management and utilization.

Project Document Formulation:

- A clear logical framework (project planning matrix) along with an incremental cost analysis matrix.
- A fully-defined baseline (i.e. fisheries resources management strategies and programs, ongoing conservation efforts) and incremental cost analysis.
- Quantified budgets for the lifetime of project: salmonid diversity management programs, species management, development-related activities in communities in each watershed.
- a project institutional framework/implementation mechanism, including the program for monitoring and evaluation, stakeholder participation, and gender equality.

**Output-based Block B Budget (US\$)**

<b>Item</b>	<b>GEF</b>	<b>UNDP</b>	<b>Co-fund</b>
Stakeholder consultations/local travel	73,000	10,500	20,000 <sup>1</sup>
Stocktaking & Assessment of existing information on salmonid stocks	12,000		
Field verification surveys including maps of four priority river systems and subsequent report and threat/root cause analysis for watersheds	22,000		110,000 <sup>1</sup>
Socioeconomic survey and analysis	15,000		
Recommendations on how to 'preserve and maintain indigenous peoples' salmonid management knowledge	14,000		
Analysis of Steelhead refuge requirements	10,000		10,000 <sup>1</sup>
Environmental management needs assessment		12,000	
A law and policy gap analysis of existing fishery management regime as well as an adaptive management prescription based upon this analysis	15,000		
Co-funding agreement with donors / long-term financing mechanisms recommendation.	15,000	14,000	
NGO participation facilitator/public involvement recommendations			10,000 <sup>2</sup>
Complete programmatic recommendations for developing alternative livelihoods (i.e. sport fishing and small-scale fish processing)	8,000	11,000	30,000 <sup>1</sup>
Economic analysis to further clarify global benefits	20,000		
Preparation of full GEF project brief (Expert time, travel, etc...)	42,000		
Expert review of final project brief	4,000		
Verbal interpretation/document translation	20,000		
Monitoring & Evaluation	9,000		
Project Administration	8,000		
<b>Total:</b>	<b>287,000</b>	<b>47,500</b>	<b>180,000</b>

1-Wild Salmon Center

2-RBF (Rockefeller Brothers Fund) co-funding support for NGO facilitation

**Implementation Arrangements and Workplan**

31. The PDF-financed activities will be carried out by a GEF Project Coordinator supervising a project team of Russian consultants. The Project Coordinator will work closely with an 11-member Steering Committee comprised of representatives from principle stakeholders from the federal and regional levels: the Ministry of Environmental Protection and Natural Resources (Special Marine Inspection Service); Kamchatrybod, KamchatNIRO, the, Moscow State University, the Kamchatka Oblast Committee for Nature

Protection (KOCNP) and the Koryak Autonomous Region Committee for Nature Protection; Kamchatka Institute of Ecology; two NGO representatives; and two local community leaders.

32. The Steering Committee will provide guidance to project development activities. It will serve as the primary vehicle for substantive stakeholder input, and review and approve the different iterations of the project brief as it is developed over the course of the Block B process. The GEF Project Coordinator will be responsible for overseeing the project team's work and he/she will be ultimately responsible for the final production of a GEF project brief (with the assistance of a GEF project development expert). The Project Coordinator will provide expert input in his/her area of expertise, coordinate all expert surveys, analyses, and assessments necessary to project development, and organize all consultations and meetings.

33. Following the request from the July 1998 stakeholders meeting conducted under the PDF-A in Kamchatka, a technical advisory group of academic and government salmonid experts will also be created to assist the project team and advise the Steering Committee in the technical development of the project brief. The advisory group will comprise five members, each representing technical organizations with experience in managing salmon populations: Moscow State University (1), Kamchatrybvod (1), one from KamchatNIRO (1), the regional NGO community (1), and an international NGO (1). This group will serve to provide continuity from the stakeholder involvement at the PDF-A level through to the final Project document and into the project implementation.

**Workplan**

Activity	Month	1	2	3	4	5	6	7	8	9	10
Establish Steering Committee and technical group/steering group meeting/recruitment of expert consultants.		x									
Stakeholder/issue analysis and consultations.		x	x								
Stocktaking and Assessment			x								
Preparations of assessments/recommendations				x	x	x	x				
Finalization of sites.							x				
Threat/root cause verification; Logical framework for the project established (problem, objectives, outputs, activities)							x	x			
Preliminary determination of project activities								x			
GEF project brief drafted. Baseline information gathered/incremental cost calculated									x		
Steering committee meeting to review draft project									x		
Project brief finalized, approved by government and submitted to UNDP-GEF for further processing										x	x

2/10/99

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Unofficial translation

State Committee for Environmental Protection  
of the Russian Federation

05.02.99  
# 01-17/29-24

Mr. Philippe Elghouayel  
UNDP Resident Representative  
in the Russian Federation

Dear Mr. Elghouayel,

The State Committee for Environmental Protection of the Russian Federation thoroughly considered the proposed GEF PDF Block B "Wild Salmonid Diversity Conservation and Management on the Kamchatka Peninsula: A "Cornerstone Species" Conservation approach".

Acknowledging the unique value of the areas of salmonid species spawning in the Kamchatka peninsula as well as the importance of its conservation, the Committee approves the GEF / UNDP initiatives aimed at the achievement of the above mentioned goal.

The State Committee for Environmental Protection of Russia agrees with the UNDP project proposal. The Committee considers it feasible to implement this project with necessary logistic support of the UNDP Ecocentre and is ready to participate actively in the project realization.

Sincerely yours,

V.I. Danilov-Danilian  
Chairman



**ГОСУДАРСТВЕННЫЙ КОМИТЕТ  
РОССИЙСКОЙ ФЕДЕРАЦИИ ПО ОХРАНЕ  
ОКРУЖАЮЩЕЙ СРЕДЫ**

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**STATE COMMITTEE OF THE  
RUSSIAN FEDERATION FOR  
ENVIRONMENTAL PROTECTION**

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8283

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05.02.99 № ОI-17/29-24

Постоянному представителю ПРООН в  
Российской Федерации г-ну Филиппу  
Эльгуазелю

Уважаемый господин Эльгуазель!  
Госкомэкология России внимательно рассмотрел предложение по разработке проекта ГЭФ "Сохранение и управление запасами лососевых рыб на Камчатском полуострове".

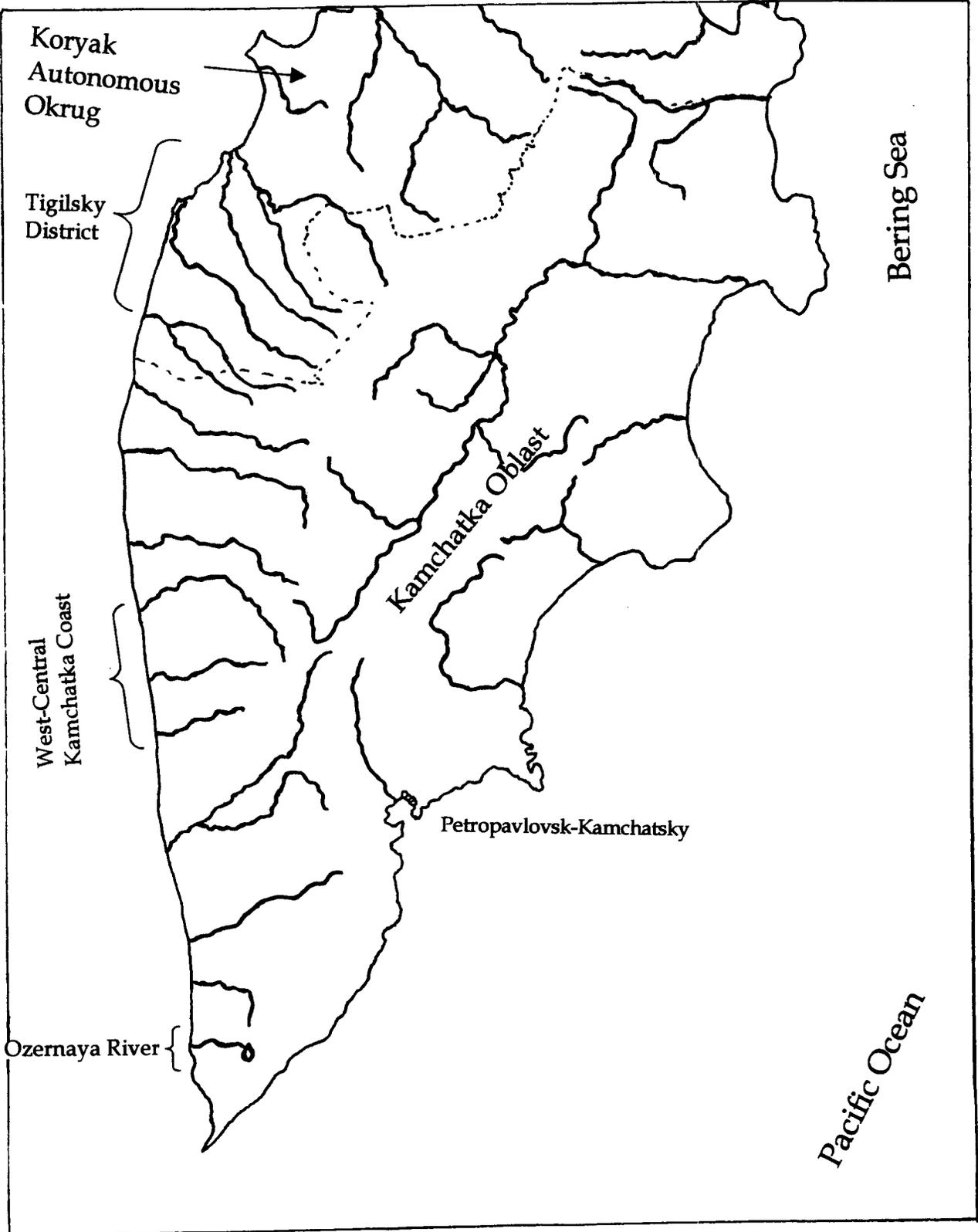
Принимая во внимание уникальность мест нерестилища лососевых на Камчатском полуострове и важность задачи их сохранения, Госкомитет приветствует инициативы ГЭФ и ПРООН, направленные на достижение этих целей.

Госкомэкология России поддерживает предложение ПРООН по разработке данного проекта, считает целесообразным его реализацию в рамках деятельности ЭкоЦентра ПРООН и готов принять активное участие в этой работе.

С уважением,  
Председатель

В.И. Данилов-Данильян

Annex 2 Map: a preliminary indication of Kamchatka peninsula river systems where a GEF salmonid diversity conservation project would focus.



1: 400,000

### Annex 3: Site Descriptions.

1. An effective program to conserve Kamchatka's salmonid diversity should include the protection of a series of geographically dispersed sites that capture the full range of salmon, steelhead, trout and char diversity. Below are descriptions of three river system complexes from which no more than four watersheds would be selected as sites for the project. Because salmon conservation must be done within an ecosystem context, each site is defined as the entire watershed and adjacent near-shore marine area. The river system complexes, ranging from the Ozernaya (1,100 km<sup>2</sup>) in the south to the three watersheds in the Tigil District (2,800 km<sup>2</sup>) in the north, have been chosen in part because of their manageability for a project this size. Box 1 lists the criteria to be used in making the final selection.

**Box 1: Site Selection Criteria**

- Total global benefit/level of diversity/uniqueness
- Willingness of stakeholders to participate
- Demonstration value
- Manageability/cost-effectiveness
- Likelihood of success/size of threats

2. Kamchatka's western slope contains habitat for all species of Pacific salmon, including Russia's strongest remaining endangered steelhead stocks. Although the western coast of the peninsula has only a few small fishing villages, the area faces imminent threats from in-river and near-shore over-harvesting of salmonids, proposed gas and oil development, and gold mining in salmon watersheds. The northwestern coastal region offers the opportunity for the project to collaborate with native Itel'men and Koryak groups dependent in large part on salmon stocks. Together with priority aquatic diversity areas in the Tigilsky District of the Koryak Autonomous Region and the Central Kamchatka Coast, these projects would capture the full range of salmon, steelhead and trout diversity of the western Kamchatka Peninsula.

3. The rivers of western Kamchatka are globally significant sites for aquatic diversity conservation, containing the populations of all the species of salmonids described earlier in this section. The rivers in this region are not included within Kamchatka's system of existing or proposed protected areas.

#### A. Ozernaya River – Southwest Kamchatka Coast, Kamchatka Oblast

4. The Ozernaya River is the outlet for Kurilsky Lake, a spawning and rearing habitat for 1.2 million sockeye salmon. Sustainable management of this watershed is crucial for the long-term viability of Kamchatka's largest sockeye population. Kurilsky lake is included in the South Kamchatsky zakaznik, which is a component of Kamchatka's World Heritage Site complex. Over 100 Kamchatka brown bears gather on the shores of Kurilsky Lake and the Ozernaya River each summer to feed on the returning salmon.

5. At the mouth of the Ozernaya River are the fishing villages of Ozernovsky and Zaporozhie with a combined population of 1,500 people. The villages used to be reliant upon a state-supported fish processing plant. The plant has closed and with the economic changes, people are living on traditional small-scale agriculture, subsistence hunting, fishing and gathering of forest products. The river and the near shore area around the mouth of the river, have suffered from salmon poaching operations. In 1997 and 1998, observers recorded several poaching camps and salmon nets along the river, and the arrival and departure of MI8 helicopters, suspected of carrying large quantities of caviar to Petropavlovsk-Kamchatsky. Again, isolation and

*inland  
river  
ecosystem  
→ watershed*

inaccessibility work against effective management procedures.

### **B. West-Central Kamchatka Coast, Kamchatka Oblast**

6. Regional and international experts have identified this region as containing globally significant aquatic and terrestrial diversity that is not included within Kamchatka's current system of existing and proposed protected areas. This region includes the Utka, Kihchik, and Opala rivers. These rivers contain the greatest known diversity of salmon, trout and char species, and remain almost completely free of major human disturbances. These rivers also are known to contain some unique intraspecific and life-history diversity. Further identification of specific sites for GEF intervention would be determined through consultations with Kamchatka experts in the PDF Block B phase of project development.

7. The only human population centers in this are two villages located near the mouth of the Bolshoya River, Ust-Bolsheretsk and Ostrovskan, with a combined population of approximately 2,000 people. Both are fishing villages, with Ust-Bolsheretsk having been the fish processing center for Kamchatka's western coast. Sport fishing is just beginning to grow in this area, given the close proximity of dozens of salmon rivers. It is relatively easy to reach this part of Kamchatka from the capital city, Petropavlovsk-Kamchatsky. As a result, these rivers have suffered from increasing pressure from commercially organized poaching of salmon in and around mouths of the rivers. Oil and natural gas exploration is imminent in the near-shore coastal waters offshore from these watersheds, providing a challenge to minimize the potential impact from these activities through, for example, the strengthening of protective laws and policies.

### **C. Tigilsky District, Koryak Autonomous Region.**

8. Globally significant rivers in the Koryak Autonomous Region's Tigilsky District are the Utkholok, the Kvachina-Snotalvayam and the Tigil rivers in western (D. Pavlov, pers. com. 1998). These rivers contain high salmonid species diversity, including Russia's strongest stocks of the endangered steelhead trout, unusual levels of intraspecific polymorphism within trout species, and at least two forms of "relict" trout (*Oncorhynchus ssp.*) discovered in 1995 and 1996, which may represent new species. Because only a fraction of the rivers and streams in this rich area have been inventoried, there is a strong possibility that other new forms of salmonid fish may be discovered (D. Pavlov, pers. com. 1998). The rivers in this region are globally significant sites for aquatic diversity conservation but are not included within Kamchatka's system of existing or proposed protected areas. The Koryak Environmental Protection Committee, Kamchatrybvod, and Moscow State University have proposed the creation of the Koryak Steelhead Zakaznik – the world's first steelhead refuge.

9. There are four villages along this 300 kilometer stretch of Kamchatka coastline. The villages of Korvan, Sedanka, Tigil and Ust-Khairosovo. Korvan and Sedanka, with approximately 1,000 people between them, are located near the Utkholok and Kvachina-Snotalvayam rivers. The villages are largely inhabited by Koryak indigenous people struggling to forge a new lifestyle now that state support has stopped. The people in these villages live on traditional small-scale agriculture and subsistence hunting and fishing. Tigil is a former administrative center located 30 kilometers from the coastline on the Tigil River. Ust-Khairosovo is a fishing village of approximately 2,000 people with a healthy commercial fishing industry located approximately 50 km from the Utkholok river. People in these villages as well as an estimated 1,000 Itel'men people in the camps scattered around the countryside live a largely subsistence life-style supported by small-scale farming, fishing, and hunting.

10. Although these watersheds are currently pristine, they are vulnerable to future oil, gas, and gold development, as well as continued illegal fishing. The rivers in the Tigilsky District have been the focus of a cooperative program among the Moscow State University, Kamchatrybvod, the Oregon Department of Fish

and Wildlife, the Washington Department of Fish and Wildlife, and the Wild Salmon Center. The cooperative program is gathering baseline information on stock status, distribution and ecology, the development of wild fish management programs and the development of catch and release sportfishing as to generate economic development opportunities for local communities. In Alaska, sportfishing generates US\$ billions annually, with little negative impact on fish stocks. This activity could provide alternatives to less sustainable activities such as caviar poaching.