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# 1.0 INTRODUCTION TO RECOVERY PLANNING

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“From the most narrow possible point of view, it is in the best interest of mankind to minimize the losses of genetic variations. The reason is simple: they are potential resources. They are the keys to puzzles which we cannot solve, and may provide answers to questions which we have not yet learned to ask.”

U.S. House of Representatives, 1973, when enacting the Endangered Species Act

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## 1.1 THE ENDANGERED SPECIES ACT AND RECOVERY PLANS

The Federal Endangered Species Act (ESA) was enacted by Congress and signed into law December 28, 1973, by President Richard Nixon, and has been amended several times (16 U.S.C. 1531 et seq.). The ESA was established to safeguard the Nation’s natural heritage by conserving species in danger of extinction for the enjoyment and benefit of current and future generations. The intent of Congress in enacting the ESA, as interpreted by the United States Supreme Court, was “to halt and reverse the trend toward species extinction,” “require agencies to afford first priority to the declared national policy of saving endangered species,” and “give endangered species priority over the ‘primary missions’ of Federal agencies” (Tennessee Valley Authority v. Hill, Tennessee Valley Auth. v. Hill 1978).

The National Oceanic and Atmospheric Administration’s (NOAA) National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) (together referred to as the Services) share responsibility for ESA implementation. Generally, USFWS oversees terrestrial and freshwater species, and NMFS manages marine and anadromous species (species that live their adult lives in the ocean but move into freshwater streams to reproduce or spawn, such as salmon). Either on the initiative of the Services or in response to a petition, the Services make a determination on whether a species is endangered or threatened based on ESA Section 4(a)(1) listing factors (16 U.S.C. 1533 (a)(1)).

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These factors are:

- (A) The present or threatened destruction, modification, or curtailment of its habitat or range;
- (B) Overutilization for commercial, recreational, scientific, or educational purposes;
- (C) Disease or predation;
- (D) The inadequacy of existing regulatory mechanisms; or
- (E) Other natural or manmade factors affecting its continued existence.

The ESA defines an endangered species as “any species which is in danger of extinction throughout all or a significant portion of its range...” (16 U.S.C. 1532(6)). A threatened species is defined as “any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range” (16 U.S.C. 1532 (20)). A species or subspecies may be listed as threatened or endangered (*e.g.* salmon Evolutionarily Significant Units (ESU) or steelhead (Distinct Population Segment)). Two policies are used for the delineation of these listed units: the “Policy on Applying the Definition of Species under the ESA to Pacific Salmon” (56 FR 58612) and the “Policy Regarding the Recognition of Distinct Vertebrate Population Segments” (61 FR 4722).

Legal protections under the ESA are triggered once a species is listed, including Section 4(f)(1) which requires a recovery plan be developed and implemented by the Services unless such plan will not promote the species conservation and recovery. Section 4(f)(1)(B) of the ESA specifies that contents of a recovery plan must include, to the maximum extent practicable:<sup>1</sup>

- i. A description of such site-specific management actions as may be necessary to achieve the plan’s goal for the conservation and survival of the species;
- ii. Objective, measurable criteria which, when met, would result in the determination that the species be removed from the list; and

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<sup>1</sup> In 1988 Congress amended the ESA (S. Rep. No. 240, 100<sup>th</sup> Cong., 2d. Sess. 111-32 (1988) adding that: “Section 4(f) of

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- iii. Estimates of the time required and costs to carry out those measures needed to achieve the Plan's goal (of species recovery) and to achieve the intermediate steps toward that goal.

In addition, recovery plan components and their development are guided by other policies and Acts; some reflecting court interpretations of the ESA. Several of these include: (1) the Interim Endangered and Threatened Species Recovery Planning Guidance Version 1.3 (Interim Recovery Guidance) (NMFS 2010a); (2) the 1994 Interagency Policy on Information Standards; and (3) the Data Quality Act of 2002 directing NMFS to "verify and assure the quality of the science used to establish official positions, decisions and actions" (59 FR 24271).

**NMFS (2010a) defines recovery as: "...the process by which listed species and their ecosystems are restored and their future safeguarded to the point that protections under the ESA are no longer needed."**

Plans provide information on: (1) biology, life history and status of the species; (2) threats pertinent to its listing and endangerment; (3) strategies and actions to reverse decline and ameliorate threats; and (4) criteria to measure species responses and threat reductions. They also guide restoration, monitoring and funding activities and can be used by agencies to set priorities for implementation of existing regulations. Federal agencies use recovery plans to fulfill obligations outlined in Section 2(c)(1) and 7(a)(1) of the ESA which require Federal agencies to "utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species." They guide, for example, other ESA work such as section 7(a)(2) consultations on Federal agency activities or development of section 10(a)(1)(B) Habitat Conservation Plans (HCPs). Recovery plans are used by the Services to determine if downlisting or delisting a species is warranted.

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Notwithstanding, for the public recovery plans are guidance documents only and are neither self-implementing nor legally binding.

The Services are required to conduct five-year reviews on the status of the species and its' threats per ESA Section 4(c)(2)) as well as report to Congress every two years on the efforts to develop and implement recovery plans (ESA Section 4(f)(3)). A determination to change the status is made based on the recovery criteria and the same five listing factors that resulted in the initial listing of the species (50 C.F.R. 424.11 (c)).

**WHAT'S IN A RECOVERY PLAN?**

**Site specific actions, objective measurable criteria, and estimates of time and cost designed to provide for long term survival and ultimate delisting of the species.**

## **1.2 RECOVERING PACIFIC SALMON**

For millions of years salmon and steelhead (salmonids) thrived in abundance despite natural fluctuations in the marine and freshwater environments, predation, disease, prolonged droughts, flash floods, uncontrolled wildfires, marine oscillations, volcanic eruptions, and climate change – environmental fluctuations that also currently challenge the human setting. Approximately 37 million people live in California, and the human uses of land and water present increasing challenges to the survival and persistence of salmonids. Human population growth and land use have resulted in adverse impacts to California's salmonid habitats. Many streams lack sufficient water or habitat complexity, and are dammed, channelized, or polluted making it more difficult for salmonids to survive. Other factors such as ocean harvest, bycatch and hatchery practices have also had adverse impacts to salmonid survival. Both natural and human factors have contributed to the decline of west coast salmonids. As a result of these

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declines, 28 Distinct Population Segments (DPS) or Evolutionarily Significant Units (ESU) of salmon and steelhead have been listed by NMFS across the Pacific Northwest.

### **1.3 CALIFORNIA'S RECOVERY DOMAINS**

In 2001, NMFS organized recovery planning for listed salmonids into geographically coherent units called “recovery domains.” Of the 28 salmon ESUs and steelhead DPSs listed under the ESA, ten are entirely within, or partially occur in, California. The NMFS Southwest Region (NMFS SWR) organized these ten populations into four Recovery Domains: (1) Southern Oregon/Northern California Coast; (2) North-Central California Coast (NCCC Domain); (3) California Central Valley; and (4) South-Central/Southern California Coast (Figure 2). The NMFS SWR offices responsible for each recovery domain are located in: (1) Arcata; (2) Santa Rosa; (3) Sacramento; and (4) Long Beach. NMFS SWR has a web page to provide ongoing updates and information to the public about the Federal recovery planning process and can be found at: <http://swr.nmfs.noaa.gov/recovery/index.htm>.

Each recovery domain includes: (1) one or more populations of salmon and steelhead; (2) a Recovery Coordinator responsible for facilitating development of the recovery plan; and (3) a Technical Recovery Team (TRT) led by the NMFS Science Center. While each recovery plan will meet ESA requirements, the process of recovery plan development across the Pacific coast varies based on the unique circumstances of the domain such as species life history, local planning efforts, public interest and coordination, and data availability.

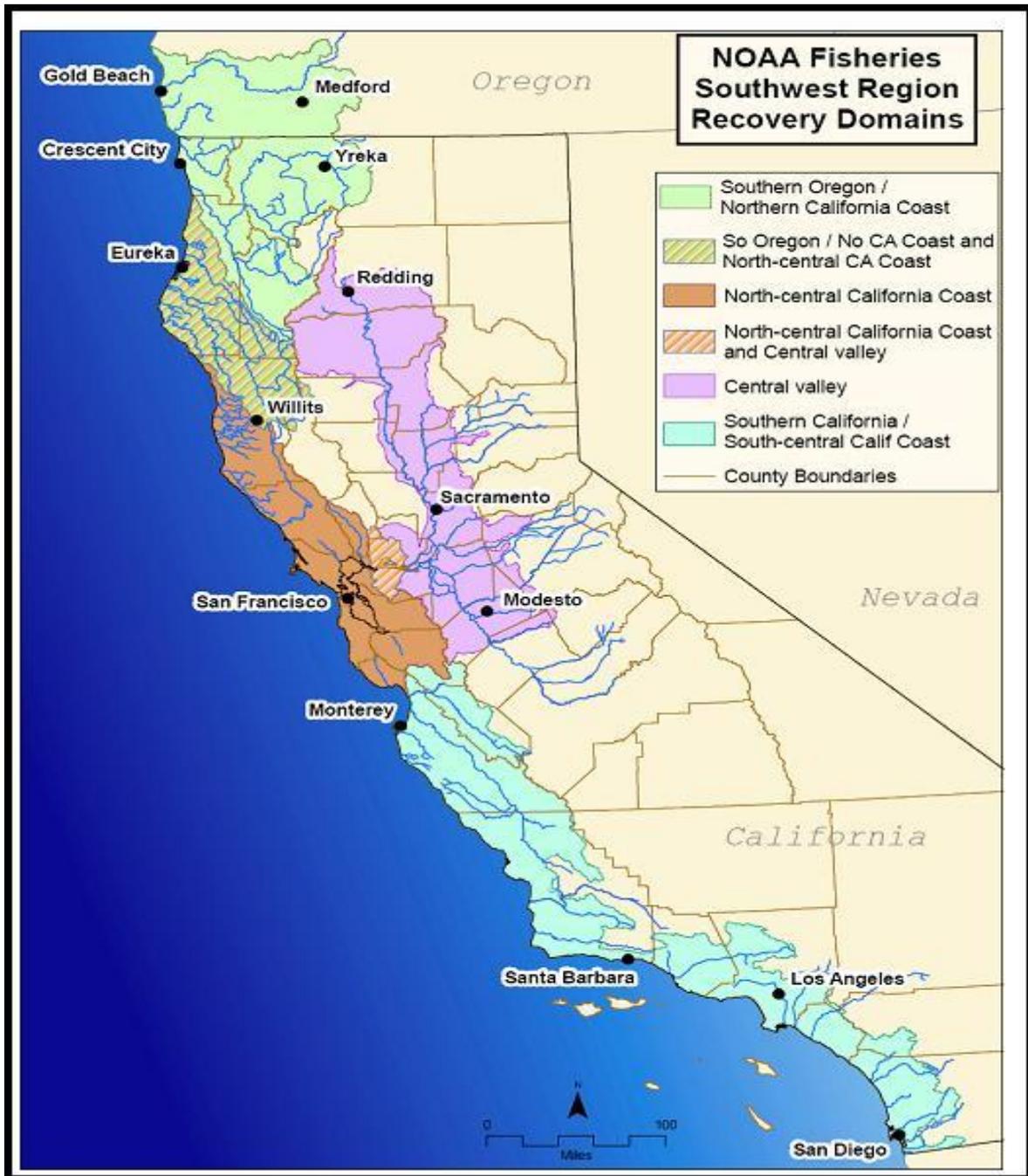


Figure 2: Salmon and Steelhead Recovery Domains in California (with overlapping Domain areas shown with cross-hatching).

The NMFS SWR assembled a team of scientists and experts in 2001, the TRTs, who were tasked to produce technical memoranda outlining the historical population structure (Bjorkstedt *et al.* 2005) and develop biological viability criteria (Spence *et al.* 2008) to be used for the recovery plans. Plan development and finalization is the responsibility of the Protected Resources

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Division (PRD) of NMFS SWR and the specific office associated with the recovery domain; a process led by the Recovery Coordinator. Plan development involves a notice of intent to prepare a recovery plan published in the Federal Register, outreach to secure the best available information, coordination work with stakeholders and other entities, application of the TRT criteria and plan creation.

The NCCC Domain includes the following ESUs and DPSs (Figure 3):

1. Threatened Northern California steelhead DPS (NC steelhead DPS);
2. Threatened California Coastal Chinook salmon ESU (CC Chinook salmon ESU);
3. Threatened Central California Coast steelhead DPS (CCC steelhead DPS); and
4. Endangered Central California Coast coho salmon ESU (CCC coho salmon ESU).

The NCCC Domain is preparing two recovery plans: one for CCC coho salmon and one for the remaining three listed salmonids in the Domain. This is the final recovery plan for the CCC coho salmon ESU. The second plan (*i.e.*, Multispecies Plan) is in preparation for co-manager review by state and Federal agencies sometime in early 2013.



Figure 3: North Central California Coast Recovery Domain

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This recovery plan covers the geographic area associated with the CCC coho salmon (*Oncorhynchus kisutch*) ESU; an area of approximately 4,000 square miles across California's central coast extending from the Punta Gorda in Humboldt County, south to Aptos Creek in Santa Cruz County. The geographic setting includes redwood and oak forestlands, agricultural lands as well as highly urbanized areas of the San Francisco Bay area. The CCC coho salmon ESU includes the San Francisco Bay Estuary and its tributaries (except for the Sacramento-San Joaquin rivers) (Figure 4). Historically coho salmon were present in San Francisco Bay but are now extirpated.

There have been several iterations and reviews of the CCC coho salmon ESU recovery plan since 2007, including reviews by: NMFS staff and general counsel, the Center of Independent Experts (CIE peer reviews), co-managers and the public. The public draft was released in March 2010, and the extensive comments received have been reviewed and incorporated where appropriate. We thank all who invested time to review the plan and submitted their recommendations for plan improvements.

## **1.4 OVERVIEW OF RECOVERY PLAN GOALS**

The final CCC coho salmon recovery plan is intended to foster discussion and information/data exchanges regarding the status of CCC coho salmon, habitat conditions and the types of site specific recovery actions that will facilitate coho salmon recovery. The overarching plan goal is to prevent the extinction of CCC coho salmon and ensure their long-term persistence towards a viable, self-sustaining, and eventually harvestable status (*e.g.*, delisting).

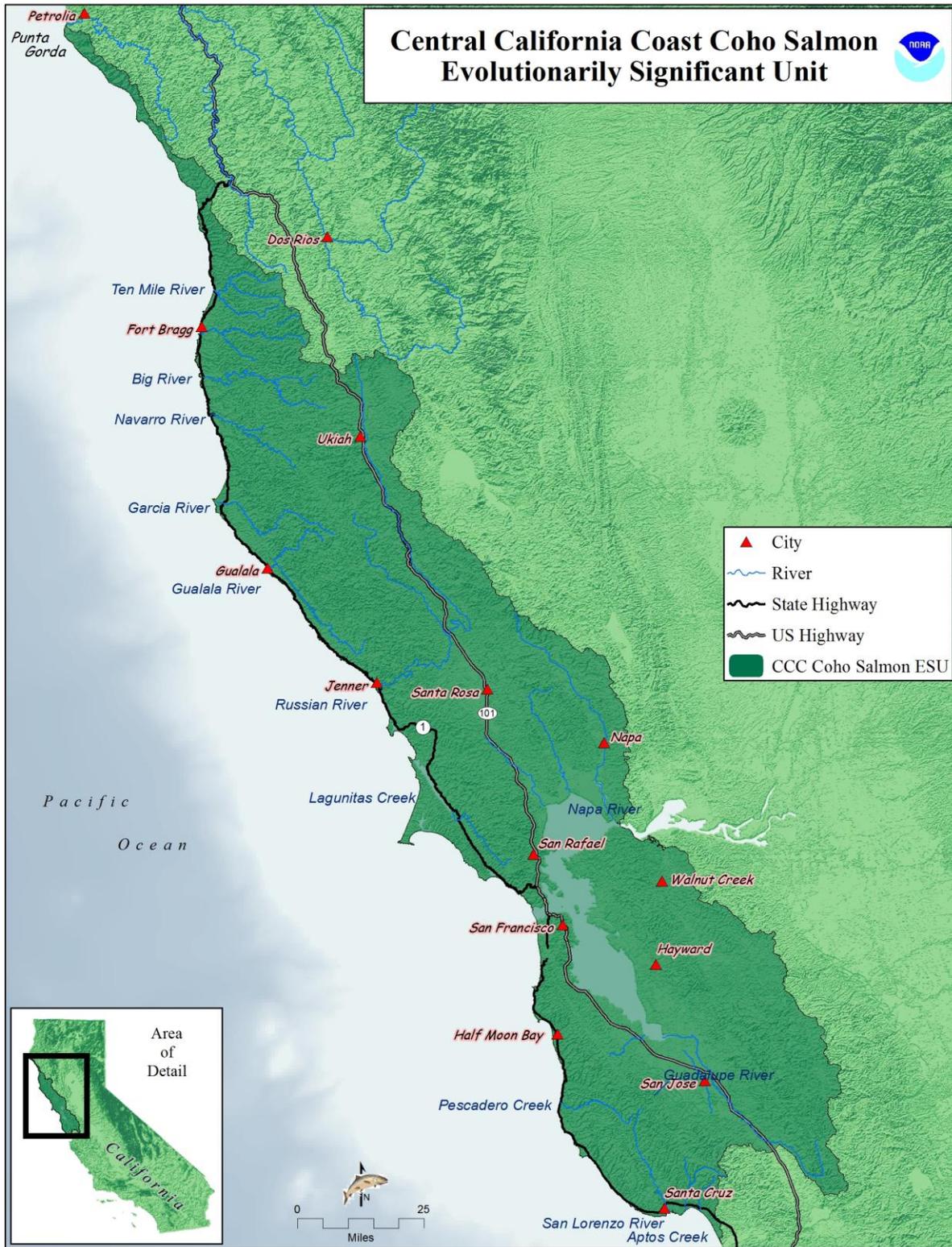


Figure 4: Historical Range of CCC Coho Salmon

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To ensure delisting, it is imperative to:

- ❑ Prevent extinction by protecting existing populations and their habitats;
- ❑ Maintain current distribution of coho salmon and restore their distribution to previously occupied areas essential to their recovery;
- ❑ Increase abundance of coho salmon to viable population levels, including the expression of all life history forms and strategies;
- ❑ Conserve existing genetic diversity and provide opportunities for interchange of genetic material between and within meta populations;
- ❑ Maintain and restore suitable freshwater and estuarine habitat conditions and characteristics for all life history stages so viable populations can be sustained naturally;
- ❑ Ensure all factors that led to the listing of the species have been ameliorated; and
- ❑ Develop and maintain a program of monitoring, research, and evaluation that advances understanding of the complex array of factors associated with coho salmon survival and recovery and which allows for adaptively managing our approach to recovery over time.

## **1.5 RECOVERY PARTNERS & LIFE CYCLE CONSERVATION**

To prevent extinction of CCC coho salmon and shift their trajectory toward recovery, a few basic requirements must be met: clean water, sufficient stream flows, absence of barriers to their migration, suitable habitats and limited harvest. Accomplishing this goal requires confronting the challenges of the expanding human population and modifying land and water uses to assure a healthy and sustainable environment; it will also require public support and collaboration. Many efforts are already underway with considerable time and money dedicated to the cause of saving salmon. However, changing the trajectory from extinction to recovery will require a shift in status quo. An integrated new conservation strategy termed “Life Cycle Conservation” is needed. Scientists have widely used the life cycle concept, but it is rarely applied to guide conservation, restoration and recovery actions. The marginal successes of efforts to save salmon in California are not totally due to lack of resources, rather they are due to a lack of a grand plan. The implementation strategy is to thus chart a course forward using

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this plan to connect the societal system of authorities with salmonid life history requirements to ensure coordinated efforts across freshwater, estuaries and ocean environments.

**“Salmon rely on an interconnected system of forests, oceans, *etc.* Yet human agencies deal with the parts and have subdivided an interconnected system into bureaucracies so separate it all but assures that we’re not likely to solve this problem.”**

**- David Suzuki.**

## **1.6 RECOVERY PLAN ORGANIZATION**

Recovery is the process of restoring listed species and their ecosystems to the point they no longer require the protections of the ESA. A recovery plan serves as a road map for species recovery—it lays out where to go and how to get there. Without a plan to organize, coordinate and prioritize recovery actions, the efforts of the many agencies, non-profit organizations, tribal entities, stakeholders and citizens may be inefficient, ineffective, or misdirected. Focused implementation can ensure limited resources are used effectively.

The recovery plan is organized into three volumes (Volume 1, Volume II, and Volume III). Volume I provides information on background, methods, results, actions, criteria and implementation. Volume II describes recovery actions for the ESU, Diversity Strata, and populations (*e.g.*, watersheds). For each population information is provided on watershed setting, habitat and threat results, and actions required for the populations’ recovery. Volume III contains the appendices which include: (1) the foundational document on population viability developed by the TRT (Spence *et al.* 2008); (2) reports detailing how current conditions and future threats were analyzed; (3) tables used to estimate costs; (4) summary of the habitat data used in the analyses; and (5) a discussion of climate change and marine habitat.