NORTHWEST ENVIRONMENTAL DEFENSE CENTER

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March 31, 2003

Re: USDC National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA) Proposed Regulations Governing the Taking and Importing of Marine Mammals; Eastern North Pacific Southern Resident Killer Whales

Dear Mr. Griffin:

We are submitting these comments on behalf of the Northwest Environmental Defense Center (NEDC) in response to the proposed regulations designating the Southern Resident Stock of killer whales (Southern Resident *Orcinus Orca*) as depleted under the Marine Mammal Protection Act (MMPA).

Southern Resident *Orcinus Orca* should be immediately listed as depleted under the MMPA. However, NEDC has serious concerns with the designation of Southern Resident *Orcinus Orca* as merely depleted under the MMPA rather than endangered under the Endangered Species Act (ESA), because both the courts and Congress have reduced the effectiveness of the MMPA. Both allow liberal allowances for the taking of marine mammals, and courts often decline to impose MMPA criminal sanctions. Though the provisions of the MMPA will not prevent the depletion of the Southern Resident *Orcinus Orca,* depleted status under the MMPA is the minimum protection required.

NEDC is a non-profit, public interest organization dedicated to preserving, protecting, and improving the natural environment in the Pacific Northwest. NEDC is based in Portland, Oregon, and has been working since 1969 to protect the environment and natural resources of the Pacific Northwest by providing legal support to individuals and grassroots organizations with environmental concerns and engaging in litigation independently or in conjunction with other environmental groups. NEDC's membership consists of a Board of practicing attorneys and law students along with local citizens interested in the shared goal of protecting the environment

through legal means. The members of NEDC derive educational, scientific, aesthetic, recreational, spiritual, and other benefits from the protection of our nation's biodiversity.

I. SOUTHERN RESIDENTS ARE A "DEPLETED" STOCK UNDER THE MMPA.

A. The Southern Resident *Orcinus Orca* population is declining at a rate of 12.8%, And is far below its Optimal Sustainable Population (OSP).

The NOAA and NMFS recognize that the current population size meets the statutory definition of a depleted stock. Fed. Reg. 4747, 4749 (January 30, 2003). The current population of Southern Resident *Orcinus Orca* is unsustainable. Based on the low numbers of individuals that presently exist, and a Population Viability Analysis conducted by the Center for Biological Diversity (CBD), Southern Resident *Orcinus Orca* is in danger of extinction. CBD, *Petition to List the Southern Resident Killer Whale as an Endangered Species under the Endangered Species Act.* <http://www.nwr.noaa.gov/mmammals/whales/srkwpetn.pdf> (accessed March 20, 2003). At low numbers, populations become susceptible to genetic, demographic, and environmental disturbances. The population of Southern Resident *Orcinus Orca* has been steadily decreasing since 1996, and at present there are only 29 individuals of breeding age. *Id.* The combination of low numbers and unstable conditions threaten Southern Resident *Orcinus Orca,* and make their continued existence precarious.

B. The population of Southern Resident *Orcinus Orca* was historically larger than the current population.

Though the true historical abundance of Southern Resident *Orcinus Orca* is unknown, there is evidence that the Southern Resident *Orcinus Orca* population significantly exceeded that of today. Information obtained from the first census taken in 1974 and from capture operations, revealed that there were at least 100 individuals in the mid-1960's. According to NMFS Review, however, it is possible that the historic population was as great as 200. NMFS, *Status Review for* Southern Resident *Killer Whales* <www.nwr.noaa.gov-mmamals/whales/srkwrevu/> (Accessed March 20, 2003). This estimate is based on the large amount of genetic diversity of the Southern Resident *Orcinus Orca* Stock in relation to their current population size. In fact, Southern Resident *Orcinus Orca* has comparable genetic diversity to the Northern Stock, whose population is 2/3 greater. This suggests a larger Southern Resident *Orcinus Orca* Stock population existed at one time. Also, historic numbers of prey (Chinook salmon), in relation to current numbers, suggest that a population of 200 whales could have been sustained in the past. In recent times, however, the population has continued to decrease. Between 1967 and 1973, takings of Southern Resident *Orcinus Orca* for public display led to the capture of 34 individuals. Since 1996, the population has gone from 97 to 79 individuals, and it continues to decline. *Id.*

The Southern Resident *Orcinus Orca* population is particularly susceptible to extinction due to decreased genetic variability. When the effective population of a species falls below 500 individuals, it suffers a loss of genetic variability through the loss of rare alleles known as genetic drift. As the population decreases, genetic diversity decreases at an increasing rate because mutation cannot keep up with the loss of diversity through genetic drift. At 79, the

population of Southern Resident *Orcinus Orca* is extremely susceptible to decreased genetic variability. Furthermore, when a population falls below 50 individuals, it becomes susceptible to inbreeding depression due to an increased frequency of deleterious alleles. With only 29 individuals of breeding age, Southern Resident *Orcinus Orca*'s effective population size is 29, and therefore dangerously susceptible to both genetic drift and inbreeding depression.

According to The CBD's Population Viability Analysis, Southern Resident *Orcinus Orca* is in danger of total extinction. The Vortex algorithm, which takes into account the killer whale's skewed sex ratio, inbreeding, and lowered fecundity due to low population levels, resulted in a 64% chance of extinction for Orcinus in the next 300 years. When the possibility of a catastrophe such as an oil spill was factored in, the chance of extinction rose to 79.5%. *Id.* Since the Vortex algorithm is more precise than past methods of prediction, and conservative assumptions were used to eliminate exaggeration, this is a reliable statistic that shows the extinction of Southern Resident *Orcinus Orca* to be more likely than not.

Finally, there are several attributes to the decline in the Southern Resident *Orcinus Orca* Stock's population that make it alarming and further threaten the sustainability of the species. First, there has been an inexplicable increase in mortality of young males that is contributing to a continued decrease in productivity. Second, the Northern Resident Stock population, the most comparable population to the Southern Resident Stock (Southern Resident *Orcinus Orca),* is stable. *Id.* This suggests that the instability of the Southern Resident Stock population is not a natural population cycle, but an unstable trend toward extinction caused by unfavorable environmental conditions. The foregoing analysis shows that Southern Resident *Orcinus Orca* is not only depleted, but in danger of extinction as well. At minimum, they must be afforded depleted status under the MMPA immediately.

II. SOUTHERN RESIDENT *ORCINUS ORCA* MUST BE DESIGNATED "ENDANGERED" UNDER THE ESA BECAUSE THE MMPA DOES NOT PROVIDE ADEQUATE PROTECTION.

Southern Resident *Orcinus Orca* must be designated "endangered" under the ESA, because "depleted" status pursuant to the MMPA does not provide adequate protection from the factors threatening their survival. Furthermore, Southern Resident *Orcinus Orca* meets all of the criteria under the ESA because they are a "distinct population segment," and are experiencing habitat destruction, over-utilization, disease, and numerous other environmental threats. The current regulatory mechanism available to whales pursuant to the MMPA does not address these dangers, and is therefore inadequate.

A. Southern Resident *Orcinus Orca* constitute a distinct population segment of the global killer whale species, and are properly categorized as a 'species' under the ESA.

The ESA provides protection for endangered "species," and broadly defines the term to include sub-species and distinct population segments. In order to be a distinct population segment, a species must be "discrete" and "significant." Southern Resident *Orcinus Orca* is both: It is a discrete population because they are markedly separate from other populations in behavioral, ecological, physiological, and physical characteristics. Southern Resident *Orcinus Orca* are significant because they persist in an ecological setting that is unique to killer whales,

and the loss of the Southern Resident *Orcinus Orca* population would result in a gap in the remaining taxa. Finally, Southern Resident *Orcinus Orca* is a genetically unique species. *Id.* NMFS, as well as the scientific community have acknowledged that *Southern Resident Orcinus Orca* is a "distinct population segment," therefore, they are eligible for protection under the Endangered Species Act (ESA). *Id.*

B. Southern Resident *Orcinus Orca* qualifies as endangered under the ESA, and the Secretary's determination not to list the whales as endangered under ESA was not in accordance with the law.

1. The Agency improperly applied the law and facts to the statutorily prescribed five-factor test.

The determination to list is made by a statutorily prescribed five-factor test. 16 U.S.C. § 1533(a)(1). A species is "endangered" when it is in "danger of extinction throughout all or a significant part of its range," and it is "threatened" when it is "likely to become an endangered species within the foreseeable future." 16 U.S.C. §§ 1532(6), (20), 1533(c).. 16 U.S.C. § 1533(a)(1). The Secretary *must* list a species as endangered or threatened under the ESA if "*any* of § 1533(a)(1)'s five factors are sufficiently implicated." *Southwest Center for Biological Diversity v. Babbitt,* 215 F.3d 58, 60 (D.C.C. 2000)(emphasis added). Southern Resident *Orcinus Orca* is experiencing not just one, but all 5 factors that threaten the survival of a species, and therefore must be designated endangered. The current regulatory mechanism available to whales pursuant to the MMPA does not address these factors, and is therefore inadequate. "Depleted" status pursuant to the MMPA does not provide adequate protection from the factors threatening their survival.

a. The whale's habitat and range are presently being chemically modified.

The habitat of Southern Resident *Orcinus Orca* is being modified. As a result, the whales are experiencing increased toxicity of their waters and depletion of their food source. Cherry Point, located on the banks of Puget Sound, houses an ARCO Products Company oil refinery that is currently expanding their operations to include a second pier. Development of the second pier will encroach on herring habitat and increase tanker traffic. Cherry Point supports the largest herring population in Washington state, and herrings are a vital food source for the Chinook Salmon. Since Chinook Salmon are a vital food source for Southern Resident *Orcinus Orca,* the expansion at Cherry Point threatens to endanger a critical habitat for the whales. Furthermore, dam creation and logging have deteriorated Chinook Salmon spawning grounds and have been identified as major contributors to recent Salmon stock extinctions. Destruction of Chinook salmon habitats severely alter the habitat of Southern Resident *Orcinus Orca,* and threaten their survival. CBD, <www.biologicaldiversity.org/swcbd/species/orca>.

Southern Resident *Orcinus Orca* carry toxic concentrations of organochlorines. According to the EPA, Puget Sound contains at least sixteen Superfund sites. These sites are the result of industrial operations, and they are sources for organochlorines including PBCs and DDT. Blubber samples taken from Southern Resident *Orcinus Orca* showed higher concentrations of organochlorines than Northern Resident Stock whales and other marine mammals from other areas. This is most likely the result of the whale's close proximity to the sources of pollution. Also, Southern Resident *Orcinus Orca*

consume high concentrations of organochlorines that accumulate in their prey, the Chinook salmon of Puget Sound. *Id.*

Exposure to PCBs threatens the survival of Southern Resident *Orcinus Orca*. Liver tumors, increased risk of mortality, alteration of enzyme systems, failure to reach estrus, poor survivorship of young, and cancer promotion have been shown in mammals exposed to PCBs. *Id.* Moreover, concentrations of organochlorines in *Southern Resident Orcinus Orca* exceed recognized adverse effects thresholds, making the whales especially vulnerable. Habitat destruction is depleting the Southern Residents food source and increasing the toxicity of their surroundings.

b. The whales and their habitat are being overutilized for commercial purposes.

Southern Resident *Orcinus Orca* is negatively impacted by overutilization. In the 1960s, 34 individuals were taken for public display and another 12 were killed during capture attempts. Consequently, the sex and age ratios of the whales are skewed. A gap in the amount of females of reproductive age, and insufficient numbers of males contribute to the population decline.

Today, the whale watching industry threatens *Southern Resident Orcinus Orca*. In summer months it is common for groups of killer whales to be accompanied by 10-20 boats while they travel. High boat activity has been implicated in decreasing daylight rest time for the whales, as well as in interfering with successful feeding attempts. Furthermore, noise from both licensed and unlicensed whale watching boats are at levels close to the critical point for causing permanent hearing loss in Southern Resident *Orcinus Orca*. *Id.*

c. The whales are subject to disease and human predation.

Disease affects the Southern Resident *Orcinus Orca* population and should be considered when evaluating the viability of the species. Endoparasites including cestodes, nematodes, and trematodes have been recorded in killer whales as have barnacles and cyamid ectoparasites. *Id.*

Mortality due to disease has not been reported for killer whales, but biotoxins have contributed to large-scale die-offs in other cetatceans. Furthermore, in recent years there have been large-scale mortality events due to viral infections in marine mammal populations. Finally, low numbers of Southern Resident *Orcinus Orca* make them increasingly susceptible to disease. While the precise effect of disease on Southern Resident *Orcinus Orca* is unknown, the frequency and magnitude of die-offs that occur in marine mammal populations due to biotoxins require that it be considered in the conservation planning of killer whales. *Id.*

d. The existing regulatory mechanism, listing Southern Resident *Orcinus Orca* as depleted under the MMPA, is inadequate to prevent the species' extinction.

Southern Resident *Orcinus Orca* is properly categorized as both depleted under the MMPA and endangered under the ESA. MMPA protection is better than no protection, but is still inadequate to prevent the extinction of Southern Resident *Orcinus Orca*. The MMPA "maintains primarily a narrow focus and has not achieved the goal of full protection of marine mammals." Susan C. Alker, *The Marine Mammal Protection Act: Refocusing the Approach to Conservation*, 44 UCLA L. Rev. 527, 533 (December 1996). The MMPA doesn't protect against toxins or habitat destruction; the MMPA

allows more harms than the ESA, as well as excessive takings. The MMPA has never fully required protection of marine habitat in addition to protection of marine mammals themselves, and a "viable method for doing so has never been offered." The ESA's habitat conservation planning approach suggests one method for working toward such broad-based protection. *Id.* at 529.

The MMPA definition of 'take' lacks critical acts which are prohibited by the ESA: 'harm', 'pursue', 'shoot', 'wound', 'trap' and 'collect' are all conspicuously absent from 16 § 1352(13). (Verbs present in 16 U.S.C. § 1532(19)). The MMPA instead defines a broader definition for 'harass,' including any

> act of pursuit, torment, or annoyance which has the potential to injure a marine mammal or marine mammal stock in the wild; or has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering. 16 U.S.C. § 1362(18)(A).

This definition, though short of the comprehensive ESA protection Southern Resident *Orcinus Orca* needs, represents the minimum protection that must be granted. The inadequacy of an MMPA listing is evidenced by the large numbers of incidental takes of Southern Resident *Orcinus Orca*: incidental take of nontarget species during commercial fishing, is a significant problem in living marine resource conservation.

Although Congress passed the MMPA with the intent to protect marine mammals, courts have reduced the effectiveness of the statute. See *United States v. Hayashi*, 5 F.3d 1278 (9th Cir. 1993)(finding fisherman Hayashi, who shot at porpoises, innocent because shooting at the mammals was not considered a taking under the MMPA). Congress also has threatened to undermine the MMPA's ability to protect marine mammal populations in both domestic situations and interactions with other nations. In particular, liberal allowances for the taking of marine mammals, sanctioned by both the courts and Congress, continue to work against the act's protective intent. Randy Kurtz, *The Taking of Marine Mammals Under the Marine Mammal Protection Act: Domestic and International Implications,* 14 J. Energy Nat. Resources & Envtl. L. 395, 395 (1994). Congress itself has acted to restrict the effect of the MMPA. Although the MMPA maintains criminal sanctions against unauthorized takings, Congress incorporated several possible legal takings into the MMPA, such as takings through permits. *Id.* at 401. If the courts decline to impose these criminal sanctions and continue liberal authorization of takings, the MMPA will not prevent the depletion of these populations. In the absence of stricter interpretations of the MMPA by courts, other means will be needed to provide the positive impact on marine species populations intended by passage of the MMPA. *Id.* at 407.

The MMPA prohibits taking and importing marine mammals unless a permit is issued for the purposes of public display, native subsistence, or scientific research. If those permits continue to be liberally granted, protection is nullified. Exemptions to these restrictions are made for specimens taken on or before December 21, 1972, further weakening the MMPA regulations. These pre-Act exemptions don't apply to marine mammals listed under the ESA. NMFS needs to reevaluate its decision not to list Southern Resident *Orcinus Orca* under the ESA, because protection solely under the MMPA is extremely inadequate. The ESA prohibits both "incidental" and "intentional" takings, 16 USC § 1538, and requires all federal agencies to use their authorities in furtherance of the ESA. The MMPA does not require federal agencies to consult with the NMFS or the FWS concerning the impacts of their actions on marine mammals. Memorandum from the U.S. Navy, Maritime Sustainability Issues and Action Plan 12, § 2 (2001)(cited in Paul C. Kiamos, *National Security and*

Wildlife Protection: Maintaining an Effective Balance, 8 Envtl. L. 457 (June 2002)). Southern Resident *Orcinus Orca* needs full ESA protection.

e. Other natural and manmade factors affect the whale's continued existence and hasten its extinction.

The Agency failed to afford appropriate weight to the effects of strandings, oil spills, commercial fishing takings, effects of pollutants, ship strikes, noise, and urban runoff on Southern Resident *Orcinus Orca*. Reduced food resources, residual effects on age and sex structure due to captures in the 1960s and 70s, behavioral changes associated with increased whale watching disturbances, and increased levels of toxic contaminants. NMFS, <www.nwr.noaa.gov-mmamals/whales/srkwrevu/>. Further, concentrations of organochlorides exceed acceptable levels, and lower levels in other marine species have had harmful effects. *Id.*

Since the 1970s, oil spills in the world's oceans have been relatively common, and have had devastating effects on killer whales. The long-term effects of oil spills are demonstrated in Alaska, the site of the Exxon Valdez oil spill. Here, the AB resident pod has suffered the loss of three females and four juvenile males. Inhalation of hydrocarbons from oil contaminated waters causes inflammation of mucous membranes, lung congestion, and pneumonia in killer whales. Volatile hydrocarbons accumulate in the brain and liver and can cause neurological disorders and liver disease. Also, oil spills contaminate the food source of killer whales. *Id.*

Since the deaths of AB pod individuals, the population has experienced a social breakdown as well as an increased mortality rate. One matrilineal pod has left the group and joined another, a phenomenon never seen before in killer whales. The disruption of their social structure has led to reduced fecundity. Consequently, the AB pod population has not recovered to its pre-spill numbers. As Southern Resident *Orcinus Orca* inhabit the most urbanized environment of any killer whale population, a catastrophic oil spill is plausible, and must be considered. *Id.*

Factors threatening Southern Resident *Orcinus Orca* including Chinook salmon depletion, organochlorine toxicity, disease, and possible catastrophe cannot be considered in isolation. Instead the factors are interrelated and must be addressed together. The synergistic effect of these factors contribute to high possibility of extinction for Southern Resident *Orcinus Orca*, and require the designation of endangered under the ESA as a minimum protective measure.

2. The Secretary's determination not to list the whales as endangered under ESA was not in accordance with the law.

On June 7, 2002, the NMFS determined an ESA listing for the whales was not warranted. Clearly, NMFS needs to reevaluate this decision, because protection solely under the MMPA is extremely inadequate. The Secretary's determination not to list the whales as endangered was "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." *Cook Inlet Beluga Whale v. Daley*, 156 F.Supp.2d 16, 16 (D.D.C. 2001). The agency did not adequately explain its decision. It did not base its decision on facts in the record, and failed to consider all relevant factors. In failing in these three areas, it rendered its decision one not in accordance with the law. *National Park and Conservation Ass'n v. Stanton*, 54 F.Supp.2d 7, 11 (D.D.C.1999). Endangered status is required for Southern Resident *Orcinus Orca.*

III. The Agency failed to utilize the best commercial and scientific data available.

An agency may not disregard "scientifically superior evidence." *Las Vegas v. Lujan,* 891 F.2d 927, 933 (D.C.C.1989). Evidence can be inconclusive and yet lean in favor of an endangered status. *Southwest Center For Biological Diversity v. Norton***,** WL 1733618, 9 (D.D.C.,2002). The *Petition to List the Southern Resident Killer Whale (Southern Resident Orcinus Orca) as an Endangered Species under the Endangered Species Act* as applied to the five-factor test above, establishes the possibility of extinction of Southern Resident *Orcinus Orca* well within the next 200 years. This evidence is not inconclusive, leans in favor of endangered status, and may not be arbitrarily disregarded.

The legislative history of the ESA contains ample expressions of Congressional intent that preventive action to protect species be taken sooner rather than later. *See, e.g., Leg. Hist.* at 204 (H.R.Rep. No. 412, 93d Cong., 1st Sess. 5 (1973) ("[i]n the past, little action was taken until the situation became critical and the species was dangerously close to total extinction. This legislation provides us with the means of preventive action.") (remarks of Rep. Clausen); *Id.* at 205 ("[i]n approving this legislation, we will be giving authority for the inclusion of those species which ... might be threatened by extinction in the near future. Such foresight will help avoid the regrettable plight of repairing damages already incurred. By heeding the warnings of possible extinction today, we will prevent tomorrow's crisis") (remarks of Rep. Gilman); *id.* at 144 ("[S]heer self-interest impels us to be cautious," and "the institutionalization of that caution lies at the heart of the [ESA]"). *Defenders of Wildlife v. Babbitt***,** 958 F.Supp. 670, 680 (D.D.C.,1997). The agency must act in time to prevent the extinction of Southern Resident *Orcinus Orca.*

The FWS itself has taken the position that it need not, and must not, wait for conclusive evidence in order to list a species. *Id.* Recently, the FWS decided to list the California red-legged frog, even though many aspects of the species' status were "not completely understood", because "a significant delay in listing a species due to large, long-term biological or ecological research efforts could compromise the survival of the [species]." 61 Fed.Reg. 25813, 24817 (May 23, 1996). Despite the lack of population data prior to 1974, the available data suggests a high probability of extinction. Southern Resident *Orcinus Orca* must be listed as endangered under the ESA.

Even if the Agency erroneously finds the *Petition* from the Center for Biological Diversity fails to establish absolutely conclusive evidence of imminent extinction, this opinion does not justify its finding that ESA listing is not warranted. *Defenders of Wildlife v. Babbitt*, 958 F.Supp. 670, 679 (D.D.C. 1997). Because the agency applied the wrong legal standard, in clear violation of the plain wording of the statute as well as the case law, its decision not to list Southern Resident *Orcinus Orca* must be set aside. *Id.* at 681.

IV. The Agency acted arbitrarily and capriciously in rejecting the views of its own experts: Southern Resident *Orcinus Orca* satisfies all five statutory criteria for listing a species as endangered or threatened.

The failure of the agency, despite the views of its own experts (the Center for Biological Diversity), to list Southern Resident *Orcinus Orca* as endangered rather than simply depleted under the MMPA, establishes the arbitrary and capricious nature of the agency's decision-making. *See Public Citizen, Inc. v. FAA*, 988 F.2d 186, 197 (D.C.Cir.1993) ("The requirement that agency action not be arbitrary and capricious includes a requirement that the agency adequately explain its result"); *Carlton v. Babbitt*, 900 F.Supp. 526, 533 (D.D.C.1995) (FWS must adequately explain its listing decision

under the ESA based upon statutorily prescribed factors); *Fund for Animals v. Babbitt*, 903 F.Supp. 96, 113 (FWS must articulate a rational reason for its decision).

The two population viability analyses (PVA) conducted by the CBD indicate a 100% chance of extinction within 200 years. One PVA estimated a 36-100% chance of extinction with the next 300 years, the other a 33-100% chance of extinction in 100 years and a 100% chance of extinction in 300 years. NMFS, <www.nwr.noaa.gov-mmamals/whales/srkwrevu/>, citing CBD *Petition*. These statistics alone demand ESA listing. *Southwest Center for Biological Diversity*, 215 F.3d at 60. Combined with the five-factor test assessed above, the need to re-evaluate the ESA listing is clear. Until such re-evaluation is performed, depleted status under the MMPA must be afforded; depleted status at minimum is essential to provide some protection to Southern Resident *Orcinus Orca* until they may be listed as endangered.

V. Conclusion

Because Southern Resident *Orcinus Orca* is in danger of extinction throughout a significant part--possibly all--of its range and is likely to become extinct within the foreseeable future, the ESA requires the agency list the whale as endangered. In the interim, Southern Resident *Orcinus Orca* requires MMPA protection under the depleted categorization. Additionally, the Secretary must abide by the provisions of the MMPA upon listing, which includes submitting a conservation plan within one year that is similar in structure and form to that required under the ESA.

The proper application of the scientific data to the five-factor statutory test for listing a species under the ESA shows that the Agency must list the whale as endangered under the ESA.

Thank you for allowing NEDC to comment on this important issue. Please keep us informed on the progress of this project. If you have any questions, please contact us at zbayham@lclark.edu or jferrell@lclark.edu.

Sincerely,

Zoe Bayham and Jess Ferrell,
NEDC Members