No. 07-1239

In the Supreme Court of the United States

DONALD C. WINTER, SECRETARY OF THE NAVY *ET AL.*,
PETITIONERS

v.

NATURAL RESOURCES DEFENSE COUNCIL, INC. *ET AL.*,
RESPONDENTS

ON WRIT OF CERTIORARI TO THE
UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

BRIEF FOR THE ECOLOGICAL SOCIETY OF AMERICA AS *AMICUS CURIAE* IN SUPPORT OF RESPONDENTS

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INTRODUCTION AND INTERESTS OF *AMICUS CURIAE*

In the case below, the district court and the Ninth Circuit both determined that the U.S. Navy had likely violated the National Environmental Policy Act (NEPA) by failing to issue an environmental impact statement for its ongoing training exercises off the Southern California coast. The courts agreed with the Navy's own environmental assessment that its use of mid-frequency active sonar would irreparably harm various whale species. On that basis, the district court issued—and the Ninth Circuit affirmed—a carefully tailored injunction that allowed the training exercises to continue using appropriate mitigation measures while the Navy conducted its environmental impact statement. Because the Ninth Circuit's decision is based on sound science and policy, it should be affirmed.

The Ecological Society of America (ESA) is an organization of over 10,000 scientists founded in 1915 to promote ecological science by improving communication among ecologists, raising the public's level of awareness of the importance of ecological science, increasing the resources available for the conduct of ecological science, and ensuring the appropriate use of ecological science in environmental decisionmaking by enhancing communication between the ecological community and policy-makers.[1] Ecology is the scien-

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[1] The parties have consented to the filing of this brief. Under Rule 37.6, ESA states that no counsel for a party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than *Amicus*, its members, or its counsel made a monetary contribution to preparation or submission of this brief.

tific discipline that is concerned with the relationships between organisms and their past, present, and future environments. ESA has published a suite of publications, from peer-reviewed journals to newsletters, fact sheets and teaching resources, among them the scientific journal *Ecology*, since 1920. ESA's Aquatic Ecology Section is its largest section.

As a scientific organization engaged in a range of scientific disciplines relating to the ecology of our planet and devoted to the study and effective management of ocean ecosystems and of the species that inhabit them, ESA has grave concerns about the health, survival, and sustainability of marine mammal species in the face of human activity, including the Navy's use of mid-frequency active (MFA) sonar during training programs. ESA's members conduct research, teach, and use ecological science to address environmental issues that include biotechnology, natural resource management, ecological restoration, ozone depletion, global climate change, ecosystem management, species extinction and loss of biological diversity, habitat alteration and destruction, and sustainable ecological systems.

ESA has special knowledge on the scientific issues before this Court, including the physiology, behavior, and habitat of marine mammal species and the effects of MFA sonar on those species and the marine ecology. This scientific expertise enables ESA to explain the biological and ecological consequences of underwater noise, including MFA sonar, on marine mammals. Understanding these consequences is necessary to appreciate fully the substantial effects of MFA sonar on marine mammal mortality, behavior, and reproduction, and therefore why the courts below

properly issued an injunction to reduce the probability of substantial harm to the marine environment.

ESA supports the use of the best available scientific information in making decisions that affect marine resources, including marine mammal species.

SUMMARY OF ARGUMENT

The courts below properly applied traditional equitable principles in issuing an injunction tailored to prevent irreparable environmental harm while petitioners ("petitioners," or "the Navy") comply with the National Environmental Policy Act (NEPA) and complete an environmental impact statement.

I. Scientific evidence supports the injunction. The peer-reviewed, published literature has led scientists to conclude that "compelling evidence" links military sonar to death and injury in marine mammals.

The Navy, too, admits the connection but downplays the effects of sonar on cetacean populations. But the scientific evidence leaves no room for doubt: mid-frequency active (MFA) sonar harms cetaceans through direct acoustic trauma, through behavior modifications or other effects that make whales vulnerable to gas emboli; through adverse effects on the animals' ability to communicate, forage, avoid predators, and breed; and through "ripple effects" that affect the marine ecology and other marine species in ways potentially disproportionate to the harm experienced by the mammals themselves. Accordingly, the courts below were well on target in concluding that plaintiffs here established, to a "near certainty," that the Navy's use of MFA sonar in training exercises would cause irreparable harm.

II. There is no requirement that plaintiffs demonstrate species-level harm to obtain an injunction. Rather, looking to the statutory purpose of NEPA, injunctive relief is available to remedy environmental harm that results from uninformed agency action. See *Marsh* v. *Oregon Natural Res. Council*, 490 U.S. 360, 371 (1989) (NEPA's "manifest concern [is] preventing uninformed action"; its purpose is to preclude agencies from acting on an incomplete record). The environmental injury stemming from a NEPA violation is irreparable when agency action reaches a tipping point, when investment in and commitment to the project is too advanced for an environmental impact statement to make a difference in the agency's choices.

Moreover, even if plaintiffs had to show irreparable injury to their memberships, such harm does not need to be at the species level to warrant injunctive relief. The irreparable injury inquiry focuses on whether the injury has an adequate legal remedy. Environmental injury will usually meet this standard. See *Amoco Prod. Co.* v. *Village of Gambell*, 480 U.S. 531, 545 (1987) ("Environmental injury * * * can seldom be adequately remedied by money damages and is often permanent or at least of long duration, *i.e.*, irreparable."). And here the district court concluded that the evidence demonstrated "to a near certainty" that MFA sonar would cause irreparable harm to the environment and to Plaintiffs' standing declarants. *Natural Res. Def. Council* v. *Winter*, 530 F. Supp. 2d 1110, 1118 (C.D. Cal. 2008).

In addition, harm to marine mammals, even at less than a population level, can have cascading ecological effects because of the key place these mammals occupy in their environment. Similarly,

the aesthetic harm that plaintiffs themselves would suffer—loss of opportunity to view, study, and appreciate animals—has no adequate legal remedy and is sufficient to warrant injunctive relief.

III. Policy considerations and legal precedents both support preserving courts' authority to grant tailored injunctions to remedy NEPA violations. It is the courts' role to rigorously enforce NEPA's requirements. Without the means to do so—including injunctions when appropriate—NEPA would be rendered ineffective not just as to the procedural obligations it imposes but also as to the "significant substantive goals" that this Court has recognized that NEPA embodies. *Vermont Yankee Nuclear Power Corp.* v. *Natural Res. Def. Council*, 435 U.S. 519, 558 (1978). Without the threat that agency action might be enjoined, courts' NEPA-enforcement function would be toothless, and agencies would have no incentive to comply with NEPA or prepare an environmental impact statement.

Moreover, this Court's decisions involving procedural violations of environmental statutes—along with decades of NEPA cases—confirm that courts must use traditional equitable principles in enjoining NEPA violations. In case after case, this authority has included the flexibility to craft injunctions that prevent environmental harm while permitting some agency action to continue.

ARGUMENT

I. The Scientific Evidence Shows, To A Near Certainty, That MFA Sonar Will Harm Marine Mammals.

The scientific evidence from peer-reviewed studies strongly indicates that mid-frequency active sonar

harms cetaceans through a range of impacts, from direct acoustic trauma to behavioral disruption.

A. Cetaceans Are Harmed By Mid-Frequency Active Sonar.

Scientific evidence indicates an "overwhelming" correlation between the use of MFA sonar and the strandings and injury of cetaceans, particularly beaked whales. J.A. 614, 735. Beaked whales have repeatedly been found beached at the same time and place as naval exercises using mid-frequency sonar. S.E.R. 80-82, 108, 223; E.C.M. Parsons *et al.*, *Navy Sonar and Cetaceans*, 56 Marine Pollution Bull. 1248, 1249 (2008). Although many whales were found stranded on shore, this likely represents the tip of the iceberg, since dead and dying whales only rarely come ashore. *Ibid.*; S.E.R.2 at 90; S.E.R. 396, 400, 405.

The connection between MFA and injuries to whales was first made in May 1996, when at least twelve Cuvier's beaked whales stranded themselves along 40 miles of the Greek coast and died. J.A. 691. Researchers discovered that the strandings coincided with NATO naval exercises, which tested low- and mid-frequency sonar systems in the same time and place as the strandings. *Id.* at 694. By carefully examining potential causes of the deaths, one peer-reviewed study calculated that the probability of the stranding occurring for a reason other than the sonar tests was less than 0.07%. A. Frantzis, *Does Acoustic Testing Strand Whales?,* 392 Nature 29 (Mar. 5, 1998). Since that event biologists have catalogued a growing list of such events coinciding with naval exercises using sonar, including the Bahamas, the Canary Islands, Madeira, Spain, and numerous other

locations. Parsons, *supra*, at 1248-1250; J.A. 98, 617, 637, 652-656, 717-724, 756-779.

Having established the connection between sonar use and cetacean injury and death, scientists began seeking the cause. One possibility was direct auditory trauma from sonar at decibel levels far higher than whales could withstand. S.E.R. 86-87. Necropsies on the beaked whales killed in the Bahamas and Madeira showed bleeding in the brain, ears, and eyes, which was "consistent with auditory trauma." S.E.R. 183. This would explain certain of the injuries of cetaceans close to the sonar source, but given the types of pathologies observed in the animals and the whales' probable location and distribution, it did not provide the full explanation. Sound levels of the Navy's sonar in the Bahamas—which years of baseline study had established as Cuvier's beaked whale habitat—did not exceed 170 decibels. S.E.R.2 at 227; J.A. 581, 734. This level of sound was far lower than that estimated to cause even temporary hearing loss in these animals, and far lower than the 235 decibels or more that the Navy is currently using off Southern California. J.A. 734.

Necropsies and tissue analyses of whales stranded in the Canary Islands, and later in other sonar-related stranding events, provided another mechanism for cetacean injuries and deaths. S.E.R. 108; J.A. 667. In addition to finding similar hemorrhaging, investigators also found fat and gas bubbles throughout the blood vessels, liver, kidneys, and other organs. *Ibid*. These bubbles spread through the body via the circulatory system, acting as emboli that likely blocked blood vessels and impaired organ function, leading to death. *Ibid*. The gas bubbles and other pathologies resembled those seen in cases of de-

compression illness—or the "bends"—in humans. Parsons, *supra*, at 1250; J.A. 669. If severe, as they were in the case of the beaked whales, these emboli can cause extreme pain, disorientation, and even death. S.E.R.2 at 842.

Beaked whales and other deep-water species may be particularly susceptible to these pathologies because of their extraordinary diving behavior. Beaked whales "on average dive deeper and longer than reported for any air-breathing animal that dives to forage." Peter L. Tyack *et al.*, *Extreme Diving of Beaked Whales*, 209 J. Experimental Bio. 4238, 4239-4240 (2006). Cuvier's beaked whales make extremely deep foraging dives of more than 1500 meters that can last as long as 1.5 hours. *Id.* at 4241. After each lengthy foraging dive, the whales conduct a series of more shallow "bounce" dives of less than 500 meters. *Id.* at 4246. Other beaked whale species studied to date have similar dive profiles, although they do not dive quite as deep. Several peer-reviewed studies indicate that the most plausible mechanism of harm is a disruption of whale diving behavior, causing the animals either to surface too rapidly or to alter their shallow dive cycles. *Id.* at 4251; Parsons, *supra*, at 1250; J.A. 659; S.E.R. 239; Walter M.X. Zimmer & Peter L. Tyack, *Repetitive Shallow Dives Pose Decompression Risk in Deep-Diving Beaked Whales*, 23(4) Marine Mammal Sci. 888, 917 (2007). Regardless of the precise mechanism of harm, it is established that mid-frequency active sonar can injure whales at sea. J.A. 602; 655-656, 666; 757.

Additionally, as the Navy indicated in its Environmental Assessment, its training exercises are likely to significantly disturb or injure large numbers of animals. Pygmy sperm whales, for example, are

considered rare off the west coast, with an estimated minimum population of only 119 individual animals. E.R 341. However, the Navy predicted more than 900 annual "takes" for this species, including 56 cases of temporary hearing loss. J.A. 223. Although some individual animals will be exposed more often than others, on average each pygmy sperm whale will be significantly affected as many as 7.5 times each year by the Navy's actions, according to the Navy's own projections, with hearing loss occurring in as much as half of the entire population each year.

It is also established that sonar can significantly alter the behavior of whales. The peer-reviewed literature shows significant behavioral responses even at exposure levels far below the threshold for significant injurious harm in the Navy's Environmental Assessment. See *Ocean Mammal Inst.* v. *Gates*, 546 F. Supp. 2d 960, 974 (D. Haw. 2008) (holding that the Navy had failed to properly account for behavioral changes in cetaceans at lower decibel levels); J.A. 360; S.E.R. 242; Parsons, *supra*, at 1251. Biologists report that cetaceans are displaced from areas where sonar is used, affecting their foraging, socializing, and breeding. For example, after at least 16 whales were killed during the Navy's use of sonar in the Bahamas in 2000, investigators who had been conducting long-term studies of the Cuvier's beaked whale population there reported that those whales had disappeared entirely from the area and were not seen again, in any number, for well more than a year. S.E.R. 89. They reported that it was "entirely plausible that most, if not all, of the local population was killed on that day; or, at the very least, there has been a very serious displacement of these whales." *Ibid.* Thus, even in the "best case" scenario (i.e., the

entire population was not killed as a result of sonar use), there occurred a population-level change in the distribution of animals that was extremely biologically significant. Similarly, the use of mid-frequency sonar during military exercises off the coast of Scotland caused a "dramatic and statistically significant" displacement of the local minke whale population. J.A. 582-583. Scientific analysis of whale sighting rates were corroborated by whale-watching and marine tourism operators, who similarly reported the decline. *Ibid*. The whales did not return to the area in the same abundance for at least several weeks. *Ibid*.

Even if whales do not flee the area entirely, they exhibit significant stress responses that interfere with foraging and other behaviors. These responses have been observed both experimentally and opportunistically in a range of species and, appropriately, have been characterized by the National Marine Fisheries Service (NMFS) as "profound." J.A. 360; Small Takes of Marine Mammal Incidental to Specific Activities, 71 Fed. Reg. 38,710, 38,727 (July 7, 2006). For example, a NMFS contract scientist reported that a pod of resident killer whales—an endangered population—exhibited disturbance reactions in response to a single Navy vessel using mid-frequency active sonar at a distance of 47 kilometers, experienced foraging disruption at 22 kilometers, and showed extraordinary aversive behavior at closer ranges. J.A. 473-74. Extraordinary flight responses in Dall's porpoises and minke whales were also observed. *Ibid*. In sum, in addition to direct and indirect injuries, MFA sonar causes biologically significant disruption in cetacean behavior.

B. The Navy Has Mischaracterized The Science And Ignored The Findings Of Its Own Environmental Assessment.

Pursuant to NEPA, the Navy conducted an environmental assessment of its ongoing training exercises. In finding that the exercises would have "no significant impact" on the marine environment, however, the environmental assessment significantly understated the magnitude and the source of the threat to beaked whales and other marine mammals off the California coast from naval sonar. Even so, the Navy has mischaracterized even the limited conclusions of its own environmental assessment, consistently minimizing the admitted threat to marine mammals and overstating the effectiveness of its mitigation measures.

1. With considerable peer-reviewed scientific support, the Environmental Assessment used a lower threshold for beaked whale injury, one tied to behavioral disruption. In keeping with 1994 amendments to the Marine Mammal Protection Act, the Navy defines Level A harassment as "any act that injures or has the significant potential to injure a marine mammal or marine mammal stock in the wild." J.A. 160. Level B harassment is "any act that disturbs or is likely to disturb a marine mammal or marine mammal stock by causing disruption of natural behavioral patterns." *Id.* at 161. Such Level B harassment is by definition significant, including temporary hearing loss and habitat displacement. See 16 U.S.C. § 1362(18)(B)(ii).

However, because of the demonstrated lethal effects of sonar on beaked whales, the Navy defined Level B behavioral harassment as Level A injurious

harassment for beaked whales. J.A. 170. As discussed above (at 7-9), such an approach is well supported by the peer-reviewed literature, which indicates that some species experience injury at lower levels of exposure than estimated to cause hearing loss in marine mammals. On that basis, the Navy calculated 274 Level A harassments, or injuries, per year of beaked whales, including 13 cases of temporary hearing loss.[2] Nevertheless, the Navy now seeks to avoid the conclusions of its own environmental assessment and downplay the injuries predicted there. In doing so, however, the Navy ignores the science that justified categorizing beaked whale harassments as Level A in the first place.

In addition to the injuries estimated by the Navy's environmental assessment, each of the estimated 274 beaked whale harassments per year represents the potential of serious debilitation or death. The literature indicates that the pathologies observed in these species are known, in other species, to have the ability to cause systemic dysfunction and mortality. S.E.R.2 at 842. The Navy's environmental assessment inappropriately dismissed this demonstrable potential for mortality. The total minimum population size of Cuvier's beaked whales off the entire American west coast is estimated to be only 1,121 animals. See J.A. 185; James V. Carretta et al., *U.S. Pacific Marine Mammal Stock Assessments: 2006* at 150 (2007). The Navy estimates, however, that

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[2] This included four injurious harassments of Baird's beaked whales (see J.A. 179), 218 harassments of Cuvier's beaked whales, including 10 cases of temporary hearing loss (*id.* 186), and 52 harassments of unspecified Ziphiid Beaked whales, including three cases of temporary hearing loss (*id.* 199).

218 of these whales will annually be injured by the sonar, representing as much as 20% of the entire stock for each of the Navy's two years of exercises. Although it is unlikely that all will suffer lethal harm (beyond the injury already estimated by the environmental assessment), the Navy cannot simply conclude that *no* such harm will occur to these animals or to the stock, given the high number of exposures and the vulnerability of beaked whale species. Regardless, the injuries estimated by the environmental assessment will adversely affect beaked whales at a population level.

2. The Navy asserts harm to only eight common dolphins, but even those dolphins, the Navy confidently claims, will be protected by its mitigation measures. Br. 10; J.A. 184. The environmental assessment consistently—but mistakenly—assumes that the Navy will be able to mitigate the effects of the sonar and thereby minimize the exposure of marine mammals, including beaked whales.[3] See, *e.g.,* J.A. 186 ("Mitigation measures * * * would further reduce the potential for any effect on Cuvier's beaked whales."). The Navy claims to have implemented a series of 29 different mitigations measures to ensure that cetaceans will not be harmed. See Br. 7. This claim is misleading. As the courts found below, many

[3] The National Marine Fisheries Service unquestioningly adopts this assumption as well in its cursory memorandum supporting the CEQ's emergency exemption for the naval exercise. App. 250a. Although it admits that beaked whales "appear to be particularly susceptible to injury" from sonar, it concluded that "the mitigation measures employed during the exercises will minimize that risk." *Id*. at 257a-258a. It did not, however, indicate how mitigation efforts based on ineffective visual scanning for whales could protect beaked whales.

of the purportedly discrete mitigation measures are merely different aspects of the same requirement. For example, a full 13 of the measures can be summed up in the single requirement that lookouts and officers should, after sufficient training, scan the horizons using binoculars and night-vision equipment. J.A. 203-211. Several of the remainder involve procedures for reporting sightings of marine mammals. *Ibid*. Other measures are so qualified that they amount to no restriction at all, such as the requirement that the sonar levels should not exceed 235 decibels "except as required to meet tactical training objectives." *Id*. at 208. Not surprisingly, the district court characterized these mitigation measures as "woefully inadequate and ineffectual." App. 215a.

Even the primary mitigation measure—the reduction of sound levels when marine mammals are detected within certain narrowly defined "safety zones"—will likely protect only a small number of animals. From the rapidly moving ships used by the Navy, lookouts are unlikely to effectively spot cetaceans, particularly beaked whales, which spend the majority of their time at depth. S.E.R. 224. One published estimate indicated that Navy observers have less than a 2% chance of detecting beaked whales with their current monitoring techniques. *Id*. at 225. Even the Navy estimates that it only has a 5% chance in general of visually detecting marine mammals. Taking and Importing Marine Mammals, 66 Fed. Reg. 15,375, 15,380 (Mar. 19, 2001)(to be codified at 50 C.F.R. Part 216). Detection becomes even more difficult in adverse weather and at night. J.A. 592. As a result, the visual monitoring of the ocean surface and the safety zone proposed by the Navy would

likely have little effect in protecting beaked whales and would protect only a small proportion of other species.

In short, the Navy's environmental assessment has underestimated the harm that could come from its training exercises. Even so, the Navy inappropriately denigrates the harm it does estimate will occur in beaked whales and other marine mammals from its use of mid-frequency sonar.

C. The Alleged 40-Year Absence Of Evidence Does Not Indicate That Sonar Use Is Safe For Marine Mammals.

Although the Navy argues (at 3) that it has conducted these exercises for 40 years off the California coast without any sonar-related injuries, this claim is misleading.

Scientists have only recently become aware of the correlation between sonar use and cetacean injuries, so they have not previously sought evidence to explain any possible causation. In other words, because they were not previously looking for such evidence, they did not find it.[4] Moreover, a recent study showed that scientists could overlook even catastrophic declines in some marine mammal populations. S.E.R. 468. In general, wildlife managers primarily measure "direct, human-caused mortalities" of ma-

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[4] NMFS, in its supporting memorandum for CEQ's issuance of an emergency exception, makes this same logical error. It searched a database of beaked whale strandings in California and found none since 1982 that identified Navy sonar as the root cause. App. 256a-257a. This is not surprising given that, until very recently, pathologists would not have performed tissue analyses indicative of sonar-related injury, or indeed would even have known what to look for.

rine mammal populations, focusing on easily observable harms such as bycatch in commercial fisheries. *Ibid.* When animal populations decline from other, less obvious causes, managers can overlook the decline entirely, even when populations decline precipitously. *Ibid.* In fact, the study found that "the likelihood of *not* detecting a precipitous decline is quite high." *Id.* at 161. This problem is particularly acute for beaked whales, which spend much of their time at great depths, but it applies to most other cetacean species off southern California as well. *Id.* at 160. The study estimated that in 90% of beaked whales stocks, including all of those off southern California, a precipitous decline of 50% over 15 years would likely pass unnoticed by scientists. *Id.* at 162.

Moreover, beaching events likely represent only a fraction of the actual injuries to cetaceans from the Navy's use of sonar. Dead and dying whales typically do not wind up on beaches where people can find them; if they did, the world's beaches would be littered with whale carcasses. Generally with wild populations, only a small percentage of carcasses are ever found by investigators. See Gary Wobeser, *Investigation and Management of Disease in Wild Animals* 14 (1994). Indeed, it is "widely accepted" that "the discovery of a single body should always be considered indicative of a wider problem." Parsons, *supra*, at 1249. This problem is particularly acute in marine environments, where carcasses typically either sink to the ocean floor or are consumed by predators. See *ibid*; S.E.R. 2 at 90. Even if carcasses do wash ashore, they are often not found. As a result, the fact that no carcasses have washed ashore in southern California does not at all indicate that sonar has not injured or killed cetaceans there.

The district court rejected as a factual matter the Navy's claim that the absence of evidence meant that no harm had occurred in previous exercises. See *Natural Res. Def. Council* v. *Winter*, 2007 WL 2481037, at *4-5 (C.D. Cal. Aug. 7, 2007). It pointed to NOAA's stock assessments, which explained that "'[s]uch injuries or mortalities [from anthropogenic noise] would *rarely be documented*, due to the remote nature of many of these activities and the low probability that an injured or dead beaked whale would strand.'" *Id.* at *4 (quoting J.A. 728) (emphasis added by district court). It also pointed to the Navy's own environmental assessment, which concluded that the SOCAL exercises would result in 170,000 annual Level B takes and 466 cases of permanent injury. *Id.* at *5. The district court's finding is well supported and is entitled to deference.

II. The Navy's "Species-Level Harm" Standard Is Both Legally And Scientifically Inaccurate.

Neither the law nor science supports the Navy's argument that an injunction may only issue upon a showing of a likelihood of irreparable harm to the "species as a whole." Br. at 43-44.

A. Under NEPA, Irreparable Harm Is Environmental Injury Resulting From Uninformed Agency Action.

In enacting NEPA, Congress aimed to prevent decisionmakers from "act[ing] on incomplete information." See *Marsh* v. *Oregon Natural Res. Council*, 490 U.S. 360, 371 (1989). Under NEPA, therefore, the injury is uninformed agency action. See *ibid.* (NEPA's "manifest concern [is] preventing uninformed action."). The NEPA violation is an envi-

ronmental injury—of a potentially irreparable nature—that is more than merely procedural harm. See *Sierra Club* v. *Marsh*, 872 F.2d 497, 500-04 (1st Cir. 1989) ("[T]he harm at stake in a NEPA violation *is* a harm to the *environment*, not merely to a legalistic 'procedure.'") (Breyer, J.).

That harm becomes irreparable when agency action reaches a point of no return. Both courts and commentators have recognized that an injunction should issue if the "threatened harm would impair the court's ability to grant an effective remedy" later. 11A Charles Wright *et al.*, *Federal Practice & Procedure* § 2948.1, at 145-149 (2d ed. 1995). The same is true under NEPA. See William H. Rodgers, Jr., *Environmental Law* § 7.7, at 767 (1977) (NEPA's "purpose is to require consideration of environmental factors before project momentum is irresistible, before options are closed, and before agency commitments are set in concrete."); *Nat'l Audubon Soc'y* v. *Dep't of the Navy*, 422 F.3d 174, 201 (4th Cir. 2005) (injunction may be necessary to prevent actions that have an adverse environmental impact or limit agency's choice of reasonable alternatives); *N. Slope Borough* v. *Andrus*, 486 F. Supp. 326, 331 (D.D.C. 1979) (if injunction is not necessary "to preserve the decision-making process" should plaintiff ultimately prevail, "any harm to that process is not irreparable"); see also *infra* Section III. "Injunctive relief preserves an agency's ability and propensity to change its course, thus implementing NEPA's mandate that agencies fully consider all environmental impacts before making decisions." Leslye A. Herrmann, *Injunctions for NEPA Violations: Balancing the Equities*, 59 U. Chi. L. Rev. 1263, 1289 (1992).

B. Irreparable Harm To Plaintiffs Does Not Require Injury To The "Species As A Whole."

Even if plaintiffs had to show irreparable injury to their membership, such harm does not need to be at the species level to warrant injunctive relief. The irreparable injury inquiry "does not focus on the significance of the injury, but rather, whether the injury, irrespective of its gravity, is *irreparable*—that is, whether there is any adequate remedy at law." *Sierra Club* v. *Martin*, 933 F. Supp. 1559, 1570-71 (N.D. Ga. 1996), *rev'd on other grounds*, 110 F.3d 1551 (11th Cir. 1997); see also *Nat'l Audubon Soc'y*, 422 F.3d at 201 (recognizing inadequate remedy as touchstone of irreparable environmental injury). This Court has recognized as much, stating that that environmental injury is nearly always irreparable because of the lack of adequate legal remedy:

> Environmental injury, by its nature, can seldom be adequately remedied by money damages and is often permanent or at least of long duration, *i.e.*, irreparable. If such injury is sufficiently likely, therefore, the balance of harms will usually favor the issuance of an injunction to protect the environment.

Amoco Prod. Co. v. Village of Gambell, 480 U.S. 531, 545 (1987); see also Herrmann, *supra*, at 1276.

Indeed, agency action may have profound and irreparable ecological injury without necessarily harming a particular species at a population level. This is true, for example, of so-called "keystone species," which is a species whose effect "on its community or ecosystem is large, and disproportion-

ately large relative to its abundance." Mary E. Power *et al.*, *Challenges in the Quest for Keystones*, 46(8) Bioscience 609, 609 (Sept. 1996). Many cetaceans have been identified as keystone species. *E.g.*, *id.* at 612 (identifying baleen whales as keystone species for pelagic and other waters, and gray whales for soft sediment marine habitat); *Whales, Whaling, and Ocean Ecosystems* 381, 383 (James A. Estes *et al.* eds., 2007) (identifying killer whales and sperm whales as likely keystone species); Simone Libralato *et al.*, *A Method for Identifying Keystone Species in Food Web Models*, 195 Ecological Modeling 153, 164 (2006) (listing "toothed whales"—which include beaked whale and dolphin families—as keystone in the eastern tropic Pacific ecology). These species have a structural role within ecosystems such that their activities "strongly influence the abundance of other species and the ecosystem dynamic." Libralato, *supra*, at 153, 154. Thus even small changes in numbers or behavior of keystone species can have large "ripple effects" on other marine species and the marine ecology. See Power, *supra*, at 617. Because these ecological ripple effects often take time to manifest themselves, looking only at the short-term disturbance will often lead to the misleading impression that the effects of agency action are minimal even as to the keystone species, *e.g.*, Lars Bejder *et al.*, *Decline in Relative Abundance of Bottlenose Dolphins Exposed to Long-Term Disturbance*, 20(6) Conservation Biology 1791, 1792 (2006), l*et al*one to the ecosystem.

Moreover, courts have recognized irreparable harm to *plaintiffs'* interests wholly separate from the scope of environmental harm to the species they enjoy. These aesthetic injuries—loss of opportunity to

view, interact with, study, and appreciate animals—have no adequate legal remedy and are sufficient to warrant injunctive relief in appropriate cases. See, *e.g.*, *Nat'l Audubon Soc'y*, 422 F.3d at 183 (irreparable harm to birdwatchers where actions could "reduce [bird] feeding and resting times, alter [bird] behavior, hinder their migration, and decrease their populations"); *Fund for Animals* v. *Norton*, 281 F. Supp. 2d 209, 220-22 (D.D.C. 2003); *Anglers of the Au Sable* v. *U.S. Forest Serv.*, 402 F. Supp. 2d 826, 837 (E.D. Mich. 2005) (irreparable harm in loss of peace-and-quiet enjoyment, alteration of wildlife patterns, change in predator-prey relationship; disturbing of habitat, loss of recreational opportunities).

C. The Scientific Evidence Shows That Use of MFA Sonar Will Result in Species-Level Harm.

The serious effects of sonar on marine mammals are well-documented in the record and in Respondents' Brief. These effects include death;[5] physical trauma—including hemorrhaging around the brain, ears, kidneys, and acoustic fats and gas/fat emboli in vital organs[6]—which can cause dysfunction of key bodily functions, respiratory distress, disorientation, and death;[7] habitat displacement, hearing loss, and "profound" adverse behavioral modification, including

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[5] J.A. 666-705, 717-23, 730-31, 735, 737-446 (published scientific studies and reports of mass strandings); J.A. 756-79; 07-56157 C.A. S.E.R. ("S.E.R.") 180-90 (Navy documents and reports of mass strandings).

[6] J.A. 600-02, 673-89, 738-41, 760; S.E.R. 180.

[7] J.A. 601, 666-67, 674-76, 680, 685.

in feeding, diving, and social interaction;[8] and sharp declines in, with no short-term rebound of, visual observation.[9] The Navy's own evidence indicates that these effects are significant on a population level.

For example, the Navy estimated that use of MFA sonar in the SOCAL exercises would result in 436 "Level A" exposures—defined as exposure that "injures or has the significant potential to injure a marine mammal or marine mammal stock in the wild," including through permanent hearing loss and cranial hemorrhaging, J.A. 160-61—in Cuvier's beaked whales, which represents as much as one-third of the entire west-coast stock of that species. J.A. 223-24; S.E.R.2 926-27; App. 19a. The Navy's predicted number of "Level B" exposures—about 170,000—is not just large on its own, it is huge relative to the size of cetacean populations off Southern California. J.A. 223-24. When considered species-by-species, the environmental assessment's numbers take on added significance: 900 annual estimated takes of as few as 119 pygmy sperm whales; takes of as much as 25 percent of the eastern Pacific population of endangered blue whales; and takes of 15 to 20 percent of five distinct dolphin populations. J.A. 223-24; E.R. 341-43; App. 65a-66a.[10]

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[8] J.A. 360-62, 474; 71 Fed. Reg. 38,710, 38,727 (July 7, 2006).

[9] J.A. 473-74, 582-83, 590-91, 822; S.E.R.2 232-33. J.A. 644, 656, 701.

[10] Nevertheless, there is no requirement—and the Navy points to none—that agency action threaten or jeopardize the continued existence of an entire species to demonstrate irreparable harm, even if injury to "species as a whole" is the standard.

These "Level B" behavioral takes are more than minor irritation to marine mammals. They are, by definition, biologically significant. NMFS defines "behavioral (Level B) harassment * * * as a significant disturbance in a biologically important behavior (also referred to as a biologically significant response)." Taking and Importing Marine Mammals, 72 Fed. Reg. 37,404 , 37,409 (July 9, 2007) (to be codified at 50 C.F.R. 216). The Marine Mammal Protection Act defines "harassment" to includes actions that "caus[e] disruption of natural behavioral patterns including, but not limited to, migration, surfacing, nursing, breeding, feeding, or sheltering where such behavioral patterns are abandoned or significantly altered." 16 U.S.C. § 1362(18)(B)(ii).

Not surprisingly, the sonar-induced disruption or disturbance of such critical behavior—which NMFS has acknowledged can be "profound," 71 Fed. Reg. 38,710, 38,727 (July 7, 2006)—can have serious consequences on marine mammal populations due to its adverse effect on the animals' ability to communicate, forage, avoid predators, and breed. *E.g.*, J.A. 582-84 (describing wide-scale displacement and decrease in abundance of cetaceans off Scottish coast coinciding with Royal Navy exercises using active acoustics, and concluding that such displacement would have population-level effects if occurring during seasonal breeding or foraging periods). Again, NMFS acknowledged this in its own Biological Opinion, which stated that acoustic exposures can result in the death of marine mammals by impairing their ability to forage, to detect predators, or to communicate. See E.R. 849; see also 71 Fed. Reg. at 38,727 (stating MFA exposure levels "to which animals have demonstrated profound behavioral disturbance," and identifying

Level B harassment from MFA sonar, by definition affecting biologically important behaviors such as foraging or breeding).

III. Restriction Of The Court's Equitable Powers Would Have Adverse Policy Implications And Has No Support In The Law.

Policy considerations, practical concerns, and decades of jurisprudence dictate that district courts have the authority to use traditional equitable principles in crafting appropriate injunctions to remedy NEPA violations.

A. NEPA, and Courts' Rigorous Enforcement of Its Requirements, Advances Goals of Environmental Protection.

This Court has previously acknowledged that NEPA sets forth "significant substantive goals for the Nation." *Vermont Yankee Nuclear Power Corp.* v. *Natural Res. Def. Council*, 435 U.S. 519, 558 (1978). "[R]ecognizing the profound impact of man's activity on the interrelations of all components of the natural environment," NEPA established a broad national commitment to protecting and promoting environmental quality. 42 U.S.C. § 4331. In passing the Act, Congress declared it the policy of the federal government "to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans." 42 U.S.C. § 4331; see also 42 U.S.C. § 4321 (NEPA designed "to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man"). Implementing regulations thus require federal agencies to "[u]se all practicable means, consistent with the

requirements of the Act and other essential considerations of national policy, to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects of their actions upon the quality of the human environment." 40 C.F.R. § 1500.2(f).

"Congress recognized, however, that these desired goals could be incorporated into the everyday functioning of the Federal Government only with great difficulty." *Andrus* v. *Sierra Club*, 442 U.S. 347, 349-350 (1979) (citing S. Rep. No. 91-296, at 19 (1969)). To ensure that its broad national commitment is "infused into the ongoing programs and actions of the Federal Government," 115 Cong. Rec. 40,416 (remarks of Sen. Jackson), NEPA requires (among other things) that federal agencies contemplating major action prepare and publish an environmental impact statement. See 42 U.S.C. § 4332; see also *Kleppe* v. *Sierra Club*, 427 U.S. 390, 409 & n.18 (1976). This statutory requirement is the mechanism to promote the policies, purposes, and commitments that the statute embodies. See *Kleppe*, 427 U.S. at 409 ("By requiring [an environmental impact statement] Congress intended to assure such consideration [of environmental effects] during the development of a proposal."); see also 40 C.F.R. § 1500.1(a) (NEPA "establishes policy, sets goals ([42 U.S.C. § 4331]), and provides means ([42 U.S.C. § 4332]) for carrying out the policy. Section [4332(2)] contains 'action-forcing' provisions to make sure that federal agencies act according to the letter and spirit of the Act.").

Courts are an important part of this process. See 40 C.F.R. § 1500.1(a) ("The President, the federal agencies, and the courts share responsibility for enforcing the Act so as to achieve the substantive

requirements of [42 U.S.C. § 4332].”). It is the court’s role to ensure that the agency has taken a “hard look” at the environmental consequences of its action, *Kleppe*, 427 U.S. at 410 n.21 (quoting *Natural Res. Def. Council* v. *Morton*, 458 F.2d 827, 838 (D.C. Cir. 1972)), and, if it hasn’t, to exercise its equitable powers in granting appropriate relief, *Potomac Alliance* v. *U.S. Nuclear Regulatory Comm’n*, 682 F.2d 1030, 1035 n.21 (D.C. Cir. 1982) (per curiam) (“This circuit has long held that courts must exercise heightened scrutiny of agencies’ compliance with NEPA’s procedures.”); *Calvert Cliffs’ Coordinating Comm., Inc.* v. *U.S. Atomic Energy Comm’n*, 449 F.2d 1109, 1114 (D.C. Cir. 1971) (“Congress did not intend the Act to be such a paper tiger. Indeed, [its requirements set] a high standard for the agencies, a standard which must be rigorously enforced by the reviewing courts.”).

Here, the Navy and its *amici* urge the Court to restrict lower courts’ equitable powers to remedy NEPA violations. As shown below, such a rule would not just undermine the policies and goals that NEPA was intended to advance, it would also be contrary to decades of jurisprudence.

B. Restricting the Power to Enjoin NEPA Violations Would Have Adverse Policy Implications.

Without a mechanism to enforce the procedural obligations NEPA imposes, its “significant substantive goals” will be illusory. “[T]he preliminary injunction * * * is the vehicle by which a declared congressional policy can be effectuated.” *Envtl. Def. Fund* v. *TVA*, 468 F.2d 1164, 1184 (6th Cir. 1972). Importantly, any such enforcement mechanism must

include the power, in appropriate cases, to issue an injunction prohibiting further action until the agency satisfies the statute's obligations.

NEPA is designed and structured to put critical environmental information in decisionmakers' hands *before* they take action. See 40 C.F.R. § 1500.1(b) ("NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken."); see also *Marsh*, 490 U.S. at 371. The environmental impact statement that NEPA requires "is the outward sign that environmental values and consequences have been considered during the planning stage of agency actions." *Andrus*, 442 U.S. at 350. It is intended to provide decisionmakers with information needed to consider effects on the environment, *Calvert Cliffs'*, 449 F.2d at 1114, not to serve as post hoc rationalization of decisions already made, *Jones* v. *District of Columbia Redev. Land Agency*, 499 F.2d 502, 511 (D.C. Cir. 1974). "NEPA logically assumes that increased study, articulation, and public discussion of environmental effects will result in fewer federal decisions that cause harm to the environment." Herrmann, *supra*, at 1271.

Unless such consideration occurs before agency action commences, therefore, it may come at a time when environmental degradation is already underway and opportunities for environmental protection are already lost. See *Andrus*, 442 U.S. at 351. For this reason, regulations require agencies to "integrate the NEPA process with other planning at the earliest possible time to insure that planning and decisions reflect environmental values." 40 C.F.R. § 1501.2; see also 40 C.F.R. § 1502.5 (environmental impact statement "shall be prepared early enough so that it can

serve practically as an important contribution to the decisionmaking process and will not be used to rationalize or justify decisions already made"). Otherwise, the environmental impact statement becomes pro forma.

By extension, any rule limiting the remedy for a NEPA violation to a mandatory injunction only—requiring compliance with the statute's requirements while agency action continued unabated—would effectively render NEPA a dead letter. NEPA's procedural protections would be nullified if agencies could ignore their obligations and still continue the planned action. *See* John S. Applegate, *National Security and Environmental Protection: The Half-Full Glass*, 26 Ecology L.Q. 350, 369 (1999) ("Procedural approaches to environmental regulation, like NEPA, will fail unless the actions in question receive careful judicial scrutiny and unless there is a credible threat that the activity will be halted if the procedures are not followed."). Allowing agencies to proceed unfettered with projects, investing more and more resources into them, pending completion of an environmental impact statement, "the greater becomes the likelihood that compliance with section 102 of NEPA, and the reconsideration of the project in light of the provisions of section 101, will prove to be merely an empty gesture." *Envtl. Def. Fund* v. *TVA*, 468 F.2d at 1183-84; see also *California* v. *Bergland*, 483 F. Supp. 465, 499 (E.D. Cal. 1980) ("If, having established a violation of NEPA, plaintiffs are not allowed to enjoin further activities until the agency complies with NEPA, then NEPA would be an 'exercise in futility.'") (quoting *Minn. Pub. Int. Res. Group* v. *Butz*, 498 F.2d 1314, 1323 (8th Cir. 1974)), *aff'd in*

part, rev'd in part by California v. *Block*, 690 F.2d 753 (9th Cir. 1982).

Moreover, limiting district courts' traditional equitable powers to remedy NEPA violations may provide a perverse incentive for agencies *not* to comply with the statute. At the very least, curbing district courts' discretion in this way will send the message to agencies that failure to comply will not have consequences, thus "'subvert[ing] the very purpose of the Act and encourag[ing] * * * administrative laxity.'" *Davison* v. *Dep't of Def.*, 560 F. Supp. 1019, 1038 (S.D. Ohio 1982) (quoting *City of New York* v. *United States*, 337 F. Supp. 150, 160 (E.D.N.Y. 1972)). Only the threat of a prohibitory injunction will encourage agency compliance with NEPA:

> Enjoining a particular activity until all environmental factors are properly considered will not only compel agency compliance in that particular case but will also place all agencies on notice that the courts intend to enforce NEPA requirements effectively. The threat of injunction may very well be the only judicial tool that is capable of stimulating agencies to comply with this requirement in every case and not just in those cases where the agency believes the environmental impact will not alter its ultimate decision.

Note, *Program Environmental Impact Statements: Review and Remedies*, 75 Mich. L. Rev. 107, 138 (1976).

C. Decades of NEPA Jurisprudence Support the Full Extent of District Courts' Exercise of Equitable Powers.

Finally, there is no support in the law for restriction of district courts' equitable powers to remedy NEPA violations. For over 30 years, in fact, courts have held that a NEPA violation is subject to traditional standards in equity for injunctive relief. See *N. Cheyenne Tribe* v. *Norton*, 503 F.3d 836, 842 (9th Cir. 2007); *Nat'l Audubon Soc'y*, 422 F.3d at 200; *Envtl. Def. Fund* v. *Marsh*, 651 F.2d 983, 1006 (5th Cir. Unit A 1981) (in NEPA cases, "court should tailor its relief to fit each particular case"); *Davison,* 560 F. Supp. at 1039 ("In deciding whether to stay further agency action until the requirements of NEPA have been met, the courts are guided by traditional principles of equity and injunctive relief."); *City of Romulus* v. *County of Wayne*, 392 F. Supp. 578, 594 (E.D. Mich. 1975) ("general principles of equity are applicable in NEPA cases and these principles will control the Court's discretion"), *vacated as moot*, 634 F.2d 347 (6th Cir. 1980). This Court too has held that courts must apply usual equitable factors in determining the scope of an injunction pending compliance with procedural environmental laws. See *Amoco Prod.*, 480 U.S. at 544 (traditional equitable principles governed court's enforcement of statute establishing procedures for considering adverse effects on subsistence resources before taking federal land use actions); *Weinberger* v. *Romero-Barcelo*, 456 U.S. 305, 311-13 (1982) (relief to enforce statute prohibiting unpermitted discharge of pollutants included but was not limited to an injunction, as statutory scheme contemplated exercise of traditional equitable principles).

These traditional equitable principles give district courts flexibility, within their discretion, in crafting appropriate relief. See *Weinberger*, 456 U.S. at 312 ("[T]he traditional function of equity has been to arrive at a 'nice adjustment and reconciliation' between the competing claims.") (quoting *Hecht Co.* v. *Bowles*, 321 U.S. 321 (1944)). When addressing cases where agency action is underway before completion of or without an adequate environmental impact statement, therefore, courts have recognized that a NEPA injunction "'should be tailored to restrain no more than what is reasonably required to accomplish its ends.'" *Nat'l Audubon Soc'y*, 422 F.3d at 201 (quoting *S.C. Dep't. of Wildlife & Marine Res.* v. *Marsh*, 866 F.2d 97, 100 (4th Cir. 1989)). Specifically, a NEPA injunction predicated on preventing environmental harm should not restrict nonharmful actions, and allowing certain agency actions to continue during the NEPA process does not necessarily create the "option-limiting harm" that NEPA seeks to prevent. *Id.* at 201-202. This flexible approach finds support in NEPA's implementing regulations, which prohibit certain types of actions during the preparation of the environmental impact statement:

> While work on a required program environmental impact statement is in progress and the action is not covered by an existing program statement, agencies shall not undertake in the interim any major Federal action covered by the program which may significantly affect the quality of the human environment unless such action:
>
> 1. Is justified independently of the program;

> 2. Is itself accompanied by an adequate environmental impact statement; and
>
> 3. Will not prejudice the ultimate decision on the program. Interim action prejudices the ultimate decision on the program when it tends to determine subsequent development or limit alternatives.

40 C.F.R. § 1506.1(c); see also 40 C.F.R. § 1506.1(a) ("Until an agency issues a record of decision * * * , no action concerning the proposal shall be taken which would: [¶] 1. Have an adverse environmental impact; or [¶] 2. Limit the choice of reasonable alternatives."); 40 C.F.R. § 1502.2(f) ("Agencies shall not commit resources prejudicing selection of alternatives before making a final decision.").

It is no surprise, then, that for nearly 40 years courts have been crafting NEPA injunctions that are tailored to the equities of the particular case. See *N. Cheyenne Tribe* v. *Norton*, 503 F.3d 836, 842-44 (9th Cir. 2007) (affirming partial injunction allowing limited coal-bed methane development during additional NEPA analysis); *Nat'l Audubon Soc'y*, 422 F.3d at 201 ("Violation of NEPA is not always cause to enjoin all agency activity while the agency completes the required environmental analysis."); *S.C. Dep't. of Wildlife*, 866 F.2d at 100 ("The scope of the injunctive remedy imposed by the district court was, however, broader than necessary to protect against the environmental risk."); *Envtl. Def. Fund* v. *Marsh*, 651 F.2d at 1005-06; *Alaska* v. *Andrus*, 580 F.2d 465, 485 (D.C. Cir.) ("What is called for, in each case, is a particularized analysis of the violations that have occurred, of the possibilities for relief, and of any countervailing considerations of public interest.") (in-

ternal quotation marks omitted), *vacated in part on other grounds sub nom. W. Oil & Gas Ass'n* v. *Alaska*, 439 U.S. 922 (1978); *Conservation Soc'y of S. Vermont* v. *Sec'y of Transp.*, 508 F.2d 927, 933-34 (2d Cir. 1974), *vacated on other grounds*, 423 U.S. 809 (1975); *Sierra Club* v. *U.S. Fish & Wildlife Serv.*, 235 F. Supp. 2d 1109 (D. Or. 2002) (enjoining manipulation phase, but not data-collection phase, of wildlife predation study because harm justifying injunction was limited to that phase); *Davison*, 560 F. Supp. at 1038-39 (enjoining only nighttime operations of airport when environmental impact statement did not adequately address issue of sleep disruption of nearby population). Sometimes "the equities demand a partial injunction," *N. Cheyenne Tribe*, 503 F.3d at 843, and the courts below were well within their discretion in fashioning an appropriate one here.

* * * * *

In sum, sound policy reasons and decades of decisions enforcing NEPA—including decisions from this Court—compel the conclusion that the lower courts must retain the flexibility, using traditional equitable principles, to enjoin agency actions pending compliance with NEPA's requirements and tailor such injunctions to the facts of each case. There is no support, in policy or the law, to cabin this authority.

CONCLUSION

The decisions below should be affirmed.

Respectfully submitted,

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