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**Testimony of Dr. Casey Thornbrugh
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for the Hearing, “Tribal Voices, Tribal Wisdom: Strategies for the Climate Crisis”**

Kuweeqâsunumuw. Good morning, Chairwoman Castor, Ranking Member Graves, and Committee Members. Thank you for the invitation to testify at today’s hearing. Nutus8ees Casey Thornbrugh kah nutômâs Mâseepeeut. My name is Casey Thornbrugh, and I am a citizen of the Mashpee Wampanoag Tribe. I live in Mashpee on Cape Cod Massachusetts on our original homelands and seascapes for those of us who call ourselves Wôpanaâk or “Wampanoag” the People of the First Light.

I serve as the Program Manager for the Climate Change Program in the Office of Environmental Resource Management of United South and Eastern Tribes, also known as USET. Established in 1969, USET is a non-profit, inter-Tribal organization serving 33 federally recognized Tribal Nations from the Northeastern Woodlands to the Everglades and across the Gulf of Mexico. USET is dedicated to enhancing the development of Tribal Nations, improving the capabilities of Tribal governments, and improving the quality of life for Indian people through a variety of technical and supportive programmatic services.

I also serve as a Tribal Climate Science Liaison supported by the Bureau of Indian Affairs Tribal Climate Resilience Program, and I work with the Department of the Interior’s Northeast and Southeast Climate Adaptation Science Centers. In these roles and through USET’s Climate Change Program, we work to connect Tribal Nations with technical support and information to support Tribal resilience to the impacts of Climate Change.

Climate Change will have lasting impacts on Tribal lands, seascapes, waters, and communities. As the First Nations of this continent, Tribal Nations have witnessed and adapted to glacial retreats, sea level rise, and changes in the climate that have occurred over thousands of years. However, Tribal Nations are now contending with a rapidly changing climate, one that is human-induced by greenhouse gas emissions and changing not over thousands of years, but over decades. And we are forced to mitigate and adapt to Climate Change while trying to protect the health and wellbeing of our communities, lands, and waters on a fraction of our original homelands.

Since the start of 20th century, the average annual temperature in the U.S. has increased between 1.2-1.8° degrees Fahrenheit (Vose et al., 2017). However, northeastern areas of the USET region have observed an increase of 3.0° degrees Fahrenheit (Dupigny-Giroux et al., 2018). If the rates of greenhouse gas emissions remain at a “business-as-usual scenario” temperature increases will range from 6–12°F by the year 2100 (Vose et al., 2017). However, should global greenhouse gas emissions be reduced, the average temperature increase could

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be less, and at 3–7°F by the year 2100 (Vose et al., 2017). Over the past 100 years, global sea levels have risen 7-8 inches (Sweet et al., 2017), and this has also been observed on the Atlantic coast in the USET region (Fernandez, 2015). However, with sinking land in coastal areas (subsidence) and damage to coastal wetlands from dredging and unnatural canals, some areas in our USET region, especially in the Gulf, have observed a sea level rise of 1-3 feet (Carter et al., 2017). Future projections indicate that sea levels will likely rise another 1-4 feet with an 8 to 11-foot sea level rise within the realm of possibility by 2100 (Dupigny-Giroux et al., 2018).

South and Eastern Tribal Nations: A Historical Context

Much of the current broad understanding of Tribal Nations and historical context within this country stems from the 19th century, when the United States and settlers expanded westward. Tribal Nations were forced to sign treaties, cede large tracts of land, and reside on reservations yet were promised autonomy and support from the federal government to manage natural resources, education, and health care. Tribal Nations within the USET region also signed treaties and were forced to cede lands. However, many USET Member Tribal Nations are “First Contact Nations” and faced 17th and 18th-century local colonial governments and distant European nations at the onset of colonization of North America.

During the 17th and 18th centuries, colonial wars and disease also decimated Indigenous populations. Within decades after establishment of the United States, a federal policy of removal was adopted, and many Tribal Nations whose aboriginal territories were in the Appalachians, Southeast, and Midwest were forcibly removed to western territories. For example, the “1830 Indian Removal Act” split entire Tribal Nations and families and forced tens of thousands of Indigenous people to reservations in Oklahoma. Despite these removals some Tribal Nations (e.g. USET Tribal Nations) found ways to remain within our territories showing resolve and determination to remain within our original homelands.

USET Tribal Nations have persevered despite colonization and federal policies of assimilation, termination and other events that have unfolded over the past 400 years. Despite disease, warfare, and removal, our Tribal Nations have persisted and continue to exhibit profound resilience. In environments considered harsh to European and American settlement such as the Gulf Coastal Bayous, the Everglades, the Appalachians, or the Northern Forests, Tribal Nations not only survived, but adapted and rebounded as communities and Nations. Tribal communities even integrated into more populated landscapes, have maintained self-governance and distinct cultural identities tied to cultural and traditional homelands and family kinship systems. The 20th century witnessed a rebound in population of Indigenous communities within the USET region and a resurgence of Tribal voices on a national platform to promote Tribal sovereignty and self-determination, management of natural resources on remaining Tribal lands that are now mere fractions of once held territories, and the restoration of Tribal lands lost to the colonies and early states.

Climate Change Impacts Exasperated by Dispossession of Tribal Nation Homelands

On average, Tribal Nations retain jurisdiction for approximately 2.6% of our original Tribal homelands (Farrell et al., 2021). Although Tribal Nations across the United States have regained the management of natural resources for over 100 million acres of Tribal homelands, USET member Tribal Nations continue to have substantially smaller Tribal land bases from

which to assert direct jurisdiction and management of natural resources, and Climate Change impacts to these vulnerable land bases pose serious threats to Tribal cultures and lifeways. Often, fish and wildlife, traditional foods, medicinal plants, and places of cultural significance, some of which may be outside of Tribal reservation or trust lands, are impacted by Climate Change. This means Tribal Nations must work with federal, state, and local jurisdictions to address Climate Change impacts on natural resources of cultural and economic significance beyond Tribal lands. At best, institutional barriers arise as the interests and management plans of non-Tribal jurisdictions often do not align with Tribal priorities or cultural values. At worst, Tribal Nations are not even included in local and regional plans that would have implications on our natural resources and areas of cultural significance.

Ultimately, one of the greatest threats of Climate Change is the migration of species and shifting of ecosystems beyond Tribal homelands or even beyond Tribal regions, rendering the fixed political boundaries and territories of present-day homelands unconnected to long held traditional lifeways.

Specific climate change impacts in the USET Region include the following:

- Temperature change has greatly impacted the timing of species migration and reproduction across the USET region. For example, the timing for fish that migrate from the sea to freshwater rivers, such as salmon and herring, for spawning has been changing.
- In the USET region, the Gulf of Maine is one of the fastest warming bodies of water in the world. Warm water species such as blue crabs, and black sea bass are showing up in the Gulf of Maine and staying longer in the summer. It is uncertain if the Gulf of Maine will remain suitable habitat for cold water species such as cod, haddock, pollock, or Atlantic salmon for future generations to come.
- The ranges of many culturally significant plant and animal species are moving northward on land and in the oceans, beyond the homelands of Tribal Nations while Tribal lands, due to U.S. policies forced upon us such as reservations and relocation, remain fixed. Further, invasive plant and animal species that are favored by warmer conditions have moved into ecosystems, thus competing with native species Tribal Nations have relied upon for millennia.
- Certain species adapted to warmer climates are showing up in more northern locations. For example, deer ticks which are vectors for Lyme disease are now more common in the Northeast woodlands. Warmer winters also allow moose ticks to survive longer, plaguing the moose population.
- In our region, Tribal and state agencies are also working to keep an invasive species, the Emerald Ash Borer (EAB), at bay. EAB is an invasive insect that is a threat to Brown Ash trees, a tree of cultural significance for Tribal Nations of the Northeastern Woodlands.

- The winter season is getting shorter. Winter snowpack, frozen ponds, rivers, and lakes are no longer a guarantee each winter in the Northeast woodlands.
- In the Southeast, landfall of higher category hurricanes has impacted the infrastructure and safety of USET Tribal Nations. Tribal emergency response and public safety are increasing having to respond and prepare for such events.
- Tribal Nations across the USET region have observed a higher frequency of extreme weather events such as heat waves, tropical storms, cold snaps, ice-jam flooding from early ice thaws on rivers, and tornados in areas and during seasons for which they have been historically less frequent.
- Rainfall is getting heavier throughout most of the USET region, due to more moisture in a warmer atmosphere. However, extended dry periods and droughts continue to occur as well, and when they occur, they are more damaging under warmer conditions.
- Sea level rise poses a greater risk to coastal habitats and coastal communities from tidal and storm surge flooding. Several of our USET Member Tribal Nation communities are directly on the coast or in tidal areas susceptible to the impacts of sea level rise.

Many of the places that have significance to the cultural heritages, identities, and physical and mental health of Indigenous peoples from Tribal Nations within the USET region are located off Tribal reservation or trust lands. In many instances, places of cultural significance are now located within national parks, monuments, wildlife refuges, and seashores, or state parks, forests, or private lands. While Climate Change impacts the ecosystems, water, and landscapes of these places, our Tribal Nations continue to struggle with non-Tribal jurisdictions for access to these places for activities of cultural, spiritual, or ceremonial importance. USET member Tribal Nations and their citizens often find themselves in a position of having to request access to locations of cultural significance to partake in cultural activities they have been engaging in for thousands of years. Loss of access to these places impacts both the physical and mental health of Indigenous peoples and has been doing so for many years. Climate Change impacts do threaten sites, practices, and relationships with cultural, spiritual, or ceremonial importance which are foundational to Indigenous peoples, yet current barriers to access and a lack of a meaningful role in the Climate Change adaptation planning process of these areas compounds the issue.

Tribal-led Climate Change Adaptation and Institutional Barriers

Tribal Nations are working to become more resilient to the impacts of Climate Change. As of this year, there are over 60 Tribal Climate Change adaptation plans and vulnerability assessments across Indian Country, with many more currently in development (University of Oregon, 2021). Some of the first Tribal-led Climate Change adaptation plans within the United States came from Tribal Nations in the USET region.

The impacts of the 2012 northeastern summer drought and heat wave, as well as coastal flooding from Hurricane Sandy, respectively, prompted the Saint Regis Mohawk Tribe and the Shinnecock Indian Nation to complete Climate Change adaptation plans for their homelands, waterways, and communities in 2013. Other Tribal Nations within the USET region have followed suit through exploring Climate Change adaptation options and opportunities to fund adaptation activities. Often, departments within Tribal Nations, such as natural resource or cultural preservation departments, take the lead, but not exclusively, as Tribal emergency management or economic development programs have also explored Climate Change adaptation options.

Despite exceptional efforts toward Climate Change adaptation, there remain significant institutional barriers to Tribal Climate Change adaptation planning. The same institutional barriers of limited jurisdiction and access to traditional territory or places of cultural significance remain factors in Tribal Climate Change adaptation planning. Though there have been significant increases in federal funding toward Tribal Climate Change resilience, including through the recent infrastructure bill, funding for long-term Climate Change adaptation remains a challenge. Tribal Climate Change resiliency funding remains very “project-based,” and unsustainable for long-term Climate Change adaptation plan implementation.

Furthermore, despite federal trust and treaty obligations, Tribal Nations continue to be limited to competitive funding for Climate Change resiliency projects. This makes such funding inaccessible to Tribal Nations with limited grant pursuit staffing capacity, regardless of significant Climate Change impacts and concerns (ATNI, 2020). In addition, federal natural and cultural resources funding can be very sector-, species-, or place-specific, whereas Tribal Nations are concerned about the health of our whole communities and environments. Many Tribal Nations are forced into the position of pursuing multiple grants and searching for funding from different sources with varying objectives required in order to address larger Climate Change impact on our homelands and communities. Federal funding for Climate Change adaptation is also at the whim of political power shifts in Congress and the White House. Opportunities available this year may not be available next, hobbling a consistent or long-term Climate Change adaptation plan.

Climate Change adaptation must also include placing lands into trust to provide communities safety from sea level rise and to provide Tribal Nations access to species of cultural importance whose ranges have shifted due to Climate Change. Tribal Nations also seek to restore our homelands to restore our jurisdiction so that we may care for and protect natural and cultural resources. In addition to extremely burdensome and lengthy federal processes to restore our homelands, the 2009 *Carcieri* Supreme Court decision further challenges the ability of Tribal Nations to have lands taken into trust, even when those lands are on Tribal homelands and territories. Thus, if a location becomes uninhabitable or ecosystems with cultural significance shift due to Climate Change, Tribal Nations may face difficulties and opposition, if adaptation means relocating to and re-acquiring lands that provide access to cultural resources and safety from sea level rise.

When it comes to Tribal Nation relocation, it cannot be overstated that such a term is profoundly sensitive for Tribal Nations, as we have had multiple experiences in U.S. history with

forced or coerced relocation and removal of access to our homelands. It is understood that sea level rise, riverine erosion, and other Climate Change impacts, and worst-case scenario projections are going to require the movement of communities and infrastructure in some locations. Tribal Nations must be afforded the dignity and the means to move to places that will continue the health and well-being of our Nations and communities. However, our rights and access to our original homelands, waters, and coasts must be maintained and protected, even if these places become submerged.

Traditional Ecological Knowledge (TEK)

USET acknowledges and supports the Biden Administration's commitment to elevating Indigenous Knowledge in federal policy decisions. This also represents a partial solution to management of public lands not held in trust. Tribal Nations, being the sovereign First Nations of this continent with thousands of years of experience, are in the position to be leaders and partnering Nations with the United States to address the Climate Crisis. Tribal Nations have lived sustainably in our ancestral homelands for countless generations, relying on our Indigenous Knowledge, also commonly referred to as Traditional Ecological Knowledge (TEK), a body of information built upon observations, experiences, and lessons derived from living in a sustainable manner with the natural environment. The application of TEK has also led to practical solutions improving forested management, wildlife corridors and dealing with sea level rise (Leonard, 2021). However, TEK must be respected and protected as Tribal proprietary knowledge, as Tribal Nations and cultures carry the responsibility of its application for the well-being of our communities, homelands, and seascapes.

Conclusion

Successful adaptation for USET member Tribal Nations will rely on use of Indigenous knowledge, resilient and robust social systems and protocols, and a commitment to principles of self-determination. However, it will also require additional action from the federal government to address the institutional barriers USET member Tribal Nations face today in adapting to Climate Change. Ultimately, it will be important for the United States to meet its trust and treaty obligations to Tribal Nations through ensuring accessible, flexible long-term funding for Tribal Climate Change adaptation. With regard to TEK, it will be important to uphold an approach of free, prior, and the informed consent of Tribal Nations when TEK is sought for local and regional Climate Change adaptation. Successful adaptation will also require respect for Tribal Nations to develop our own Climate Change adaptation frameworks and strategies that capture our Indigenous knowledge systems for resilience in the face of Climate Change (Leonard, 2021). Tribal Nations in the USET region and across the country have demonstrated commitment and resolve in protecting and restoring our homelands with proportionally less funding, lower staffing capacity, and fewer resources at hand. Competitive project-based funding remains unsustainable for long-term Climate Change adaptation planning. Tribal Nations require support from our federal partners in the trust relationship to build long term Tribal department staff and program capacity to develop and implement adaptation plans to the long-term impacts Climate Change. USET acknowledges and supports the significant increase in Climate Resilience Funding in the current Infrastructure Bill and the Administration's commitment to elevating Indigenous Knowledge in federal policy. In accordance with trust and treaty obligations to support Tribal sovereignty, self-governance, and self-determination, we urge additional federal action and policy to support sustainable Tribal

Climate Change adaptation planning and resilience to sustain our lifeways for generations to come.

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