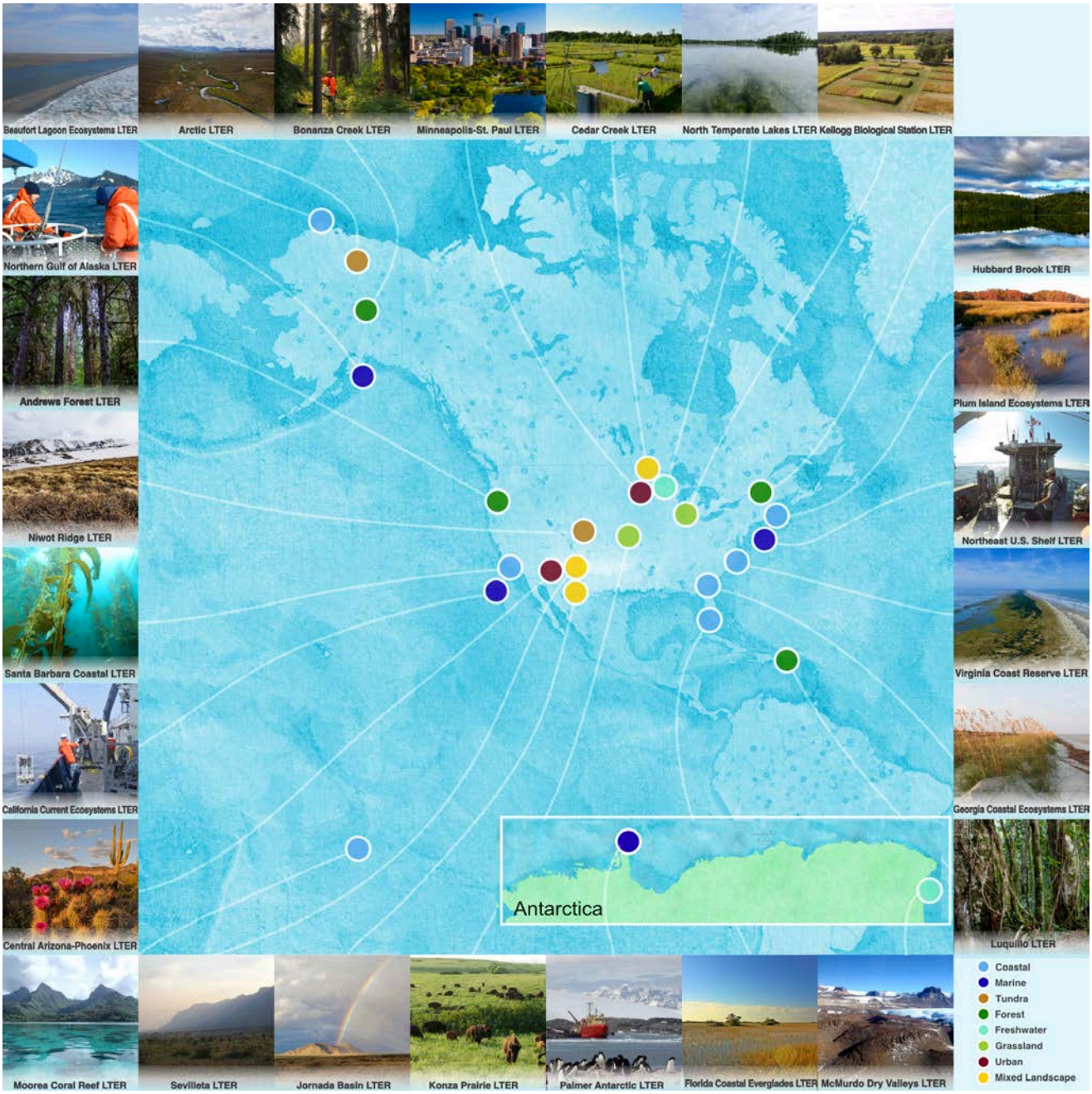
Long Term Ecological Research Network: A Vision and Roadmap for the Next Decade (2026-2035)

NATIONAL SCIENCE FOUNDATION
LTER NETWORK
LONG TERM ECOLOGICAL RESEARCH

Toward 50 years of understanding the changing life-support systems of our planet



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To effectively manage ecosystems, we need to understand the mechanisms that govern their behavior. The Long Term Ecological Research (LTER) Network is an environmental sentinel, essential to quantifying, understanding, and predicting long-term trends in Earth's life support systems. Collaborating across a suite of marine, coastal, freshwater, forest, urban, grassland, desert, tundra, and managed ecosystems, the U.S. National Science Foundation-funded LTER Network conducts powerful experiments, maintains observational datasets, and develops models that are vital to maintaining food security, biodiversity, and ecosystem health.

Context Statement

This document is focused on Network-level aspirations and activities. Following the LTER Network's fourth decadal review, the LTER Science Council began a 2-year planning process, engaging partners within and outside the Network to generate a vision for the next decade of the Network. While LTER sites are individually funded and evaluated, here we articulate how *collaborations among sites and at the interface of science and society* provide unique opportunities to investigate ecological mechanisms, analyze novel environmental conditions that lack modern analogs, and support network scientists at all career stages in addressing emerging national to global challenges.

Our work relies on the innovation and services provided by the Environmental Data Initiative (EDI) and the coordination and synthesis activities led by LTER Network Office. The LTER Network complements the efforts of other environmental research and monitoring networks to confront the critical challenges of a rapidly changing world that place increasing pressure on its ecosystems.

This document articulates the novelty and importance of the LTER Network and describes the Network's scientific, outreach, and education priorities. Although the process was begun before the

current upheaval in U.S. science, the guidance it provides will be even more important as the Network navigates a changing science landscape.

Introduction

The LTER Network occupies a unique position in the constellation of environmental science networks. By focusing interdisciplinary research on the *mechanisms* of ecosystem functioning, sites develop a synoptic understanding of their systems. Over 45 years, the Network has been a major force for developing new ecological theory grounded in observation and experimentation; trained thousands of students for careers in environmental science and management; and partnered with federal, regional, and local resource managers to incorporate science into practice and policy (*1–3*). These accomplishments emerged from local innovation and active, site-based research communities that are characteristic of the Network, and flourished through coordination and collaboration across the Network.

The mission, vision, and values of networked LTER sites

Mission: The LTER mission is to create knowledge, inspire solutions, and cultivate learning through inclusive and interdisciplinary long-term ecological research.

Vision: At the network scale, we envision synergy arising from collaborations among investigators working at long-term research sites across diverse ecosystems. This synergy will accelerate discoveries that enhance the welfare of society and the environment.

Values: Each LTER site is rooted in place-based, hypothesis-driven long-term ecological research; however, the Network's synergistic power stems from linking these sites into a collaborative whole.

As an LTER Network we aspire to embody open, rigorous, and inclusive science. We value a deep understanding of ecosystems and transformative outcomes for our science and the people involved. We believe that deliberate collaboration and active exchange of ideas produce synthetic knowledge of emergent properties that lead to a more universal understanding of the natural world.

We feel a responsibility to society through advancing and sharing knowledge, informing decision making, and responsible stewardship. By embracing these values, we aim to produce tangible and intangible outcomes at the Network level that are greater than what could be achieved by individual sites.

In this document, we envision the Network's potential for the coming decade by combining this strong foundation with today's rapid technological evolution and enhanced cross-site and cross-network collaboration. The National Academies (*4*) describe a near future in which, using new tools, "researchers [will be] able to combine data from various realms across organizational, spatial, and temporal scales, addressing questions on biological processes and patterns that cannot be answered by observations at either small or large scales alone." But first, the authors say, the field will need to overcome two major challenges: 1) to "integrate data obtained from very different methodologies across spatial and temporal scales;" and 2) to develop "theoretical frameworks to keep pace with the exponential rise in ecological and environmental data across spatial and temporal scales." The LTER Network excels in addressing both of these challenges, leveraging inquiry-based science—including theory, experiments, and observational studies—to develop a mechanistic understanding of ecosystems and their components, then building theoretical frameworks through data synthesis and model development.

Understanding the "why" behind ecosystem responses is essential for predicting and managing their behavior under novel conditions.

To date, the Network has effectively leveraged post hoc synthesis of existing data to address integrative questions, producing significant advances in ecological theory (*5–8*) and broadly reusable datasets (*9–12*), as well as tools for speeding synthesis of disparate data (*13*, *14*). The current rapid evolution of artificial intelligence (AI) tools presents extraordinary opportunities to further speed data collection, documentation, and integration and requires thoughtful planning and preparation.

To be more predictive, generalizable, and scalable in ecology and allied fields, we need shared strategic priorities to guide site-driven creativity and to strategically engage partners.

This strategic plan, illustrated in Figure 1, is intended to guide the Network in (1) understanding context-dependent mechanisms of ecological synthesis; (2) identifying and exploring no-analog futures; (3) expanding partnerships to enhance the use of long-term ecological science in managing long-term environmental resilience; and (4) inspiring, preparing, and connecting researchers. These goals will be met through (A) strategic partnerships; (B) next-generation tool advancements for information gathering, analysis, synthesis; and (C) expanded opportunities that best enable a new generation of ecologists to solve the world's pressing environmental problems.

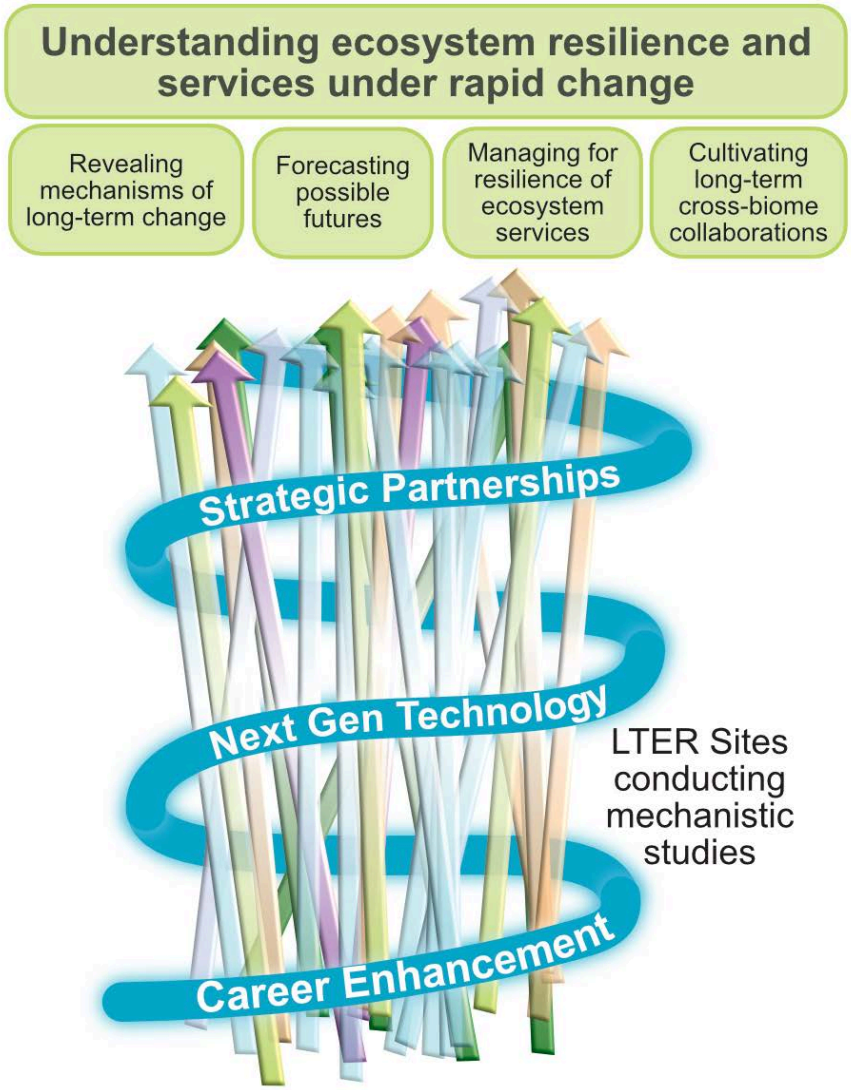

Figure 1. Individual LTER sites (arrows) continue to conduct mechanistic studies to answer key questions in their ecosystems while expanding cross system insight and impact through network coordination (blue helix).

Strategic Priorities and Implementation Plan

Strategic Priority 1: Leverage long-term research conducted across biomes to understand and compare the pace, drivers, and mechanisms of ecological change.

Long-term, site-based, hypothesis-driven research at individual LTER sites has led to the discovery and development of many foundational ecological principles, However, developing a broader understanding of ecological trends, processes, and mechanisms requires moving beyond research within a given locale or ecosystem to seek generality and resolve context-dependent responses to environmental drivers. Synthesis of site-based research across the LTER Network has revealed illuminating commonalities and differences in how ecosystems function (*15*). For instance, LTER synthesis shows that biodiversity is positively related to stability across a broad suite of terrestrial, aquatic, and marine ecosystems (*16*, *17*). Other syntheses provide evidence for context-dependent trajectories of environmental change. One LTER research group (*18*) developed a testable framework for predicting the trajectory of ecosystem recovery from disturbance based on experiments in forest, grassland, and tundra ecosystems and another group, working with 30-60 years of data from pelagic ocean, coastal benthic, polar marine, and semi-arid grassland ecosystems, found that the abruptness of ecosystem state shifts can depend on spatiotemporal context and life histories of key organisms (*19*). Building on these successes, we aim to accelerate synthesis activities that use increasingly long-duration, widely distributed data to understand sources of context dependency in ecosystem dynamics (*20*, *21*), and develop new approaches for coordinated experiments that reveal the commonalities or differences in processes driving ecological dynamics. Fostering strong partnerships (SP3) and training ecologists (SP4) how to conduct distributed studies will be essential to fulfilling this priority.

Figure 2. Five original core research areas [36] and an optional 6th (human-environment interaction, added in 1997) provide a common structure across multiple ecosystem types, while allowing flexibility for specific conditions and questions.

Goal A: Promote synthesis of increasingly long-duration data among sites to reveal the generalizable processes or sources of context-dependent patterns of ecological change.

- **Objective 1: Identify commonalities, mismatches, and opportunities for harmonizing measurement approaches within the LTER core areas (Figure 2).**

Activities

a. *Compile and regularly update metadata on major types of measurements and experiments in each core area at each site into a single, publicly shared resource.*
    ⩥ *Lead: LNO and EDI | Priority: Start now*
b. *Facilitate exchange of site-level science and technologies to inspire coordinated approaches to data collection.*
    ⩥ *Lead: LNO | Priority: Do next*
c. *As measurement methods change, continuously evaluate opportunities to harmonize measurements via standardization or normalization of approaches.*
    ⩥ *Lead: PIs and Information Managers | Priority: Do next*
d. Investigate the potential of AI, knowledge graphs, and traditional data science approaches for improving discovery and alignment of historical datasets on a post hoc basis.
    ⩥ *Lead: EDI | Priority: Start now*

- **Objective 2: Increase efficiency and scope of hypothesis-driven synthesis toward uncovering general ecological principles and mechanisms generating context-dependent variation.**

  Activities

  a. Continue to provide infrastructural, organizational, and analytical support for synthesis through the LTER Network Office and promote participation by sites and researchers outside the LTER Network.
      ⩥ *Lead: LNO | Priority: Ongoing and should be increased*
  b. Seek additional avenues for supporting synthesis through other grant programs, synthesis centers, and science incubators.
      ⩥ *Lead: LNO | Priority: Start now*
  c. Widely disseminate synthesis results through Network communications.
      ⩥ *Lead: LNO | Priority: Start now*
  d. Prioritize dedicated efforts to use AI and knowledge guided machine learning to accelerate synthesis, including testing and assessing the use of AI to construct synthesis datasets.
      ⩥ *Lead: EDI/LNO | Priority: Start now*
  e. Engage AI researchers to better understand the potential for using existing LTER data for training domain-specific AI models.
      ⩥ *Lead: Information Managers and Investigators | Priority: Start now*
  f. As appropriate, develop and support new modes of engagement among LTER sites and other long-term data generators (e.g., expand participation in Synthesis Skills for Early Career Researchers Course, cross-site visits, OBFS partnerships, NEON exchanges, etc.).
      ⩥ *Lead: LNO | Priority: Find funding*

- **Objective 3: Accelerate data collection and improve the use of site-based research in cross-site synthesis by facilitating the Network-level exchange of knowledge, experience, methods, and existing and emerging technologies within and beyond the Network.**

Activities

a. Organize special sessions at conferences where long-term researchers can exchange ideas, approaches, and methods.
    ⩥ *Lead: Investigators* | *Priority: Ongoing and should be increased*
b. Maintain a strong collaboration among LTER, the Environmental Data Initiative (EDI), other research and information networks including CUAHSI, GBIF, NEON, and others through shared projects.
    ⩥ *Lead: LNO & Executive Board* | *Priority: Ongoing and should be increased*
c. Expand communities of practice and workshops for investigators, graduate students, and information managers on topics including novel technologies for information collection and synthesis, including AI-assisted approaches.
    ⩥ *Lead: LNO* | *Priority: Ongoing and should be increased*
d. Partner with companies to develop and test technologies with potential to generate new discoveries and increase efficiency of data collection and synthesis.
    ⩥ *Lead: Investigators* | *Priority: Start now*

Goal B: Facilitate coordinated cross-system long-term mechanistic experiments to identify common drivers and patterns of ecological change and/or sources of context-dependency.

- **Objective 1: Leverage existing experiments that have similar designs to synthesize mechanisms of ecological change.**

  Activities

  a. Compile a categorized list of ongoing experimental and observational studies across sites, identifying manipulated variables (e.g., nutrients, climate, disturbance) and scales of manipulation.
      ⩥ *Lead: LNO & EDI* | *Priority: Start now*
  b. Convene discussions across the Network on common (similar) experiments, and potential for sites to collaborate on existing efforts.
      ⩥ *Lead: LNO and Investigators* | *Priority: Do next*
  c. Pursue avenues for funding synthesis of existing experiments, including LNO synthesis opportunities and coordinated experiments within site renewal proposals.
      ⩥ *Lead: Investigators* | *Priority: Start now*

- **Objective 2: Assess and articulate the potential for cross-site experiments to test generalizable or context-dependent mechanisms of change.**

  Activities

  a. Evaluate funding opportunities and articulate strong arguments for concerted cross-site distributed experiments as a new foundational effort for distributed long-term ecological research.
      ⩥ *Lead:* Executive Board and LNO | *Priority*: Start now
  b. Curate best practices for planning, executing, and leading collaborative, distributed experiments based on existing successful distributed experimental protocols (*22*, *23*).
      ⩥ *Lead:* LNO | *Priority*: Do next

c. Develop experimental protocols that can be replicated across terrestrial, coastal, freshwater and marine sites.
   ⩥ *Lead:* LNO and Investigators | *Priority*: Do next
d. Pursue funding for distributed experiments and related synthesis.
   ⩥ *Lead:* Investigators | *Priority*: Start now

Strategic Priority 2: Understand how ecosystems will respond to rapidly changing drivers, including anticipated environmental conditions that have not previously been encountered.

LTER sites excel in exploring how biotic and abiotic interactions shape ecosystem change. The development of 'no-analog ecosystems', which we define as those that differ in important characteristics (i.e., structure, dominant species, altered climate relationships, carbon and nutrient stocks) from any modern ones (*24*, *25*), presents a formidable challenge to ecosystem science. Humanity depends critically on the services that ecosystems provide and will face tremendous hardship if we merely react to these changes after they occur (*26*). There is a compelling need to understand and anticipate how novel systems form and function.

LTER's data and sample resources, together with our mechanistic research program (Strategic Priority #1), put the Network in a unique position to confront the challenge of no-analog ecosystems. In addition, LTER scientists have deep experience developing and using a variety of modeling tools to understand and potentially influence the course of future environmental change. In this strategic priority, we call for an effort to: 1) Leverage existing long-term data and sample archives to define "analog" conditions (those within modern human experience) and identify no-analog drivers as a basis for mechanistic studies of these conditions — these data will be essential for parameterizing future models and experiments; 2) Extend mechanistic knowledge to forecast ecological responses to no-analog conditions (as defined by SP2; Obj. 1) and their implications for conservation, management, and human well-being (SP3); and 3) Intentionally integrate evolutionary mechanisms into LTER research programs to understand if and when they influence ecological dynamics and ecosystem processes. These activities will use the mechanistic studies described in SP1, facilitate the flow of information between science and society (SP3), and help to establish a novel and relevant platform for training the next generation of environmental scientists (SP4).

Goal A: Integrate mechanisms and multi-decadal data with modeling and scenarios approaches to advance the science of forecasting non-analog futures.

- **Objective 1: Assemble and promote updated site histories, descriptions, and visualizations that characterize long-term patterns of variation.**

  Activities

  a. Construct a structure and process for contributing to, updating, and visualizing site histories, possibly in collaboration with paleoecologists and historians (see esp. (*27*)).
     ⩥ *Lead: LNO | Priority: Start now*
  b. Gather, document, and update site histories.

⩥ *Lead: Site personnel* | *Priority: Do next*

c. Continue building relationships with Indigenous stewards and incorporate Indigenous knowledge into site histories as appropriate (e.g., (*28*)).
   ⩥ *Lead: Site personnel* | *Priority: Ongoing and should be increased*
d. Identify and catalog collections of physical and biological artifacts that are relevant to site history and develop a process to ensure that collections are discoverable and connected with available data.
   ⩥ *Lead: EDI, LNO, site researchers* | *Priority: Start now*

- **Objective 2: Extend mechanistic knowledge to forecast ecological and ecosystem response processes to no-analog conditions (as defined by Obj. 1) and their implications for conservation, management, and human well-being.**

  Activities

  a. Identify consistent driver-response relationships across sites and develop hypotheses based on shared mechanistic understanding of how sites may respond to novel environmental conditions.
     ⩥ *Lead:* synthesis groups | *Priority:* Start now
  b. Develop a motivating research framework that incorporates mechanistic understanding of the conditions that shape ecosystem processes yet allows for surprises such as new organisms (e,g, new species), disturbances, or climatic extremes that change the "rules of the game."
     ⩥ *Lead:* PIs and synthesis groups | *Priority*: Start now

- **Objective 3: Develop a community of AI practitioners directed at modeling and forecasting non-analog futures.**

  Activities

  a. Identify and highlight multi-decadal datasets for data-hungry AI models to inspire and foster collaborations with AI researchers and development of AI-assisted modeling in the field of ecology.
     ⩥ *Lead: Investigators and Information Managers* | *Priority: Start now*
  b. Conduct training workshops in innovative uses of AI in modeling and forecasting.
     ⩥ *Lead: LNO in partnership with Investigators* | *Priority: Start now*
  c. Develop shareable tools for AI-assisted model parameterization and application.
     ⩥ *Lead: Investigators* | *Priority: Do next*

Goal B: Improve consideration of evolutionary mechanisms in interpretation of LTER data and design of LTER experiments.

- **Objective 1: Accelerate approaches that deliberately integrate evolutionary mechanisms into ecological and ecosystem-scale studies through synthesis and cross-site collaborations.**

  Activities

a. Examine, share, and incorporate, where possible, recommendations from 2022 NSF-funded workshops and other current research regarding evolutionary mechanisms of change (*29–31*).
   ⩥ *Lead: PIs and Executive Board | Priority: Do next*
b. Propose and promote symposia and/or special issue(s) focused on ecosystem evolution under novel conditions with a focus on key species in key locations (e.g., amphibians in riparian zones or serotiny in changing fire regimes (*32*)).
   ⩥ *Lead: Investigators and synthesis groups | Priority: Start now*

Strategic Priority 3: Expand partnerships to enhance the use of long-term ecological science in managing long-term environmental resilience.

The LTER Network's long track record of site-specific partnerships has facilitated the rapid incorporation of LTER science into management practices and helped shape LTER science to better address societally important questions. Expanding the capacity to partner at the Network level has the potential to amplify the impact in many areas, including discovery science, technological and data science innovation, and career trajectories of trainees. It is especially potent, though, at the interface between researchers and the organizations and individuals building the capacity to address our nation's gravest environmental challenges. Although we describe these

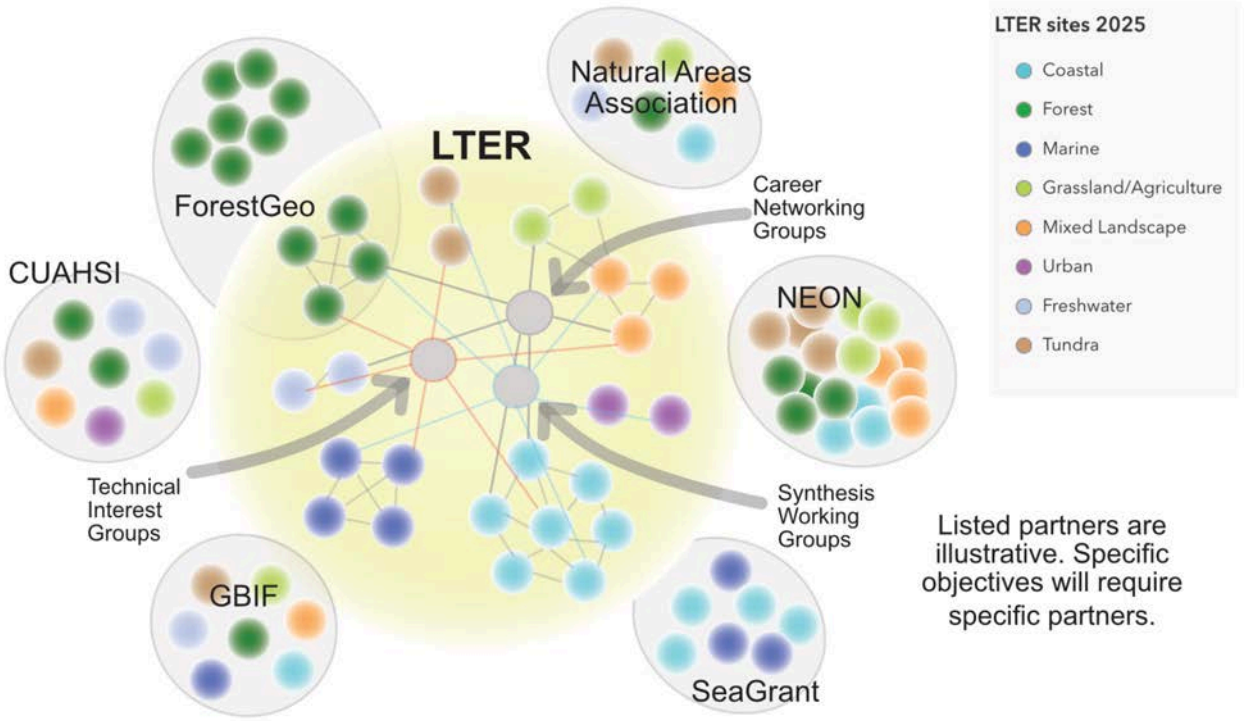

Figure 3. Connections between LTER sites of similar ecosystem types are naturally strong, but building and maintaining connections across the multiple ecosystem types requires deliberate effort. The structures that help maintain those connections (synthesis working groups, career networking groups, and technical interest groups) are also valuable links with external strategic partners.

goals in the context of translational ecology, many of these objectives and activities will also expand the Network's impact in other areas.

Here, we call for a focus on identifying, developing, and stewarding Network-level partnerships (Figure 3) to broadly engage environmental decision makers and expand the societal impact of LTER science. At the same time, we envision strong synergies with new and existing site-based partnerships.

Goal A: Amplify the societal impact of LTER science through Network-level partnerships with users of LTER science and data.

- **Objective 1: Identify regional, national and international partners with high potential to find mutual benefits with LTER science in achieving shared environmental objectives.**

  Activities

  a. Take stock of existing site-level collaborations to identify success factors and potential connections to national partners.
     ⩥ *Lead: LNO and LPIs | Priority: Start now*
  b. Brainstorm potential national partners or umbrella organizations and prioritize on the basis of alignment with LTER research priorities, reach, and capacity for engagement.
     ⩥ *Lead: LNO and LPIs | Priority: Ongoing and should be increased*
  c. Convene small groups of potential partners around identified themes to discuss shared priorities and synergies.
     ⩥ *Lead: LNO and Investigators| Priority: Start now*
  d. Identify and pursue efficiencies, opportunities for increased impact, and potential funding sources for new activities.
     ⩥ *Lead: LNO and Investigators | Priority: Do next*

- **Objective 2: Clarify pathways toward Network-level partnerships.**

  Activities

  a. Update LTER mission statement and align public communications with it.
     ⩥ *Lead: LNO | Priority: Ongoing and should be increased*
  b. Maintain and share historical and current information about LTER Network and sites.
     ⩥ *Lead: LNO | Priority: Ongoing and should be increased*
  c. Develop and share goals, criteria, and process for initiating and formalizing collaborations.
     ⩥ *Lead: LNO | Priority: Start now*

Goal B: Build LTER sites' capacity to establish and steward effective partnerships with users of LTER science and data.

- **Objective 1: Strengthen capacity for site-based partnership within and outside of the LTER Network.**

  Activities

  a. Identify existing partnerships with mutually-benficial outcomes and characterize elements of success.

⩥ *Lead: LNO | Priority: Start now*

b. Promote positive examples through web/newsletter stories, scientific meetings, and PI meetings/community calls.
   ⩥ *Lead: LNO | Priority: Start now*
c. Hold workshops with engagement experts to reflect on successes and areas for growth.
   ⩥ *Lead: LNO and Lead PIs | Priority: Do next*
d. Establish regular opportunities for inspiration, community reflection, and resource-sharing among interested site personnel.
   ⩥ *Lead: LNO | Priority: Do next*

Strategic Priority 4: Cultivate generations of collaborative scientists and educators grounded in long-term, interdisciplinary, site-based research.

The LTER Network plays a critical role in developing, connecting, and supporting generations of scientists and educators. To grapple with the unknown consequences of ongoing environmental changes, researchers need to combine deep, mechanistic knowledge of specific ecosystems with the skills and conceptual training to seek generality by comparing across ecosystems. The LTER core areas, shared across all sites, furnish a common frame of reference on which to build. The regular exchange of ideas, technologies, and people among Network sites deepens and broadens this capacity across career stages and roles. Mechanisms such as in-person LTER All Scientists Meeting, Science Council Meetings, and Committee Meetings have supported mentoring, community-building, and career growth, but are costly and carbon-intensive. In the coming decade, we aim to place greater emphasis on complementary, smaller-footprint approaches to building skills and capacity for technical proficiency, collaboration, and leadership.

Goal A: Support the career advancement and growth of scientists from all career stages.

- **Objective 1: Provide orientation, communication, and leadership opportunities to support careers of scientists at all stages within the Network.**

  Activities

  a. [Grad/Postdoc] Coordinate Network onboarding process and invite participation in Network-wide ECR community.
     ⩥ *Lead: LNO | Priority: Ongoing and should be increased*
  b. [All Stages] Maintain updated email lists for all participants as well as ECR-specific, role-, and interest-group lists to ensure communication among groups of shared interests or career stages.
     ⩥ *Lead: LNO/Site personnel | Priority: Ongoing and should be increased*
  c. [PI] Facilitate and share best practices and lessons in site leadership.
     ⩥ *Lead: PIs | Priority: Ongoing and should be increased*
  d. [Pre-tenure] Foster opportunities for leadership of cross-site scientific synthesis.
     ⩥ *Lead: LNO/Science Council | Priority: Ongoing and should be increased*
  e. [Post-tenure] Foster engagement in Network-scale activities, leadership, and partnership development.
     ⩥ *Lead: Science Council | Priority: Start now*

- **Objective 2: Build capacity and ideas for team science centered around long-term data.**

  Activities

  a. Cross-promote resources and trainings from societies, networks, and centers with common interests in collaborative, data-driven science.
     ⩥ *Lead: LNO | Priority: Ongoing and should be increased*
  b. Offer regular online skills workshops in areas of rapid growth and change, including scientific computing, artificial intelligence, mentoring, public engagement, and intentional collaboration.
     Lead: LNO/Interest groups | Priority Start now
  c. Continue to offer, promote, and develop Synthesis Skills for Early Career Researchers (SSECR) Course in collaborative synthesis science.
     ⩥ *Lead: LNO and investigators | Priority: Find funding*
  d. Expand the audience for SSECR course to related networks and sectors.
     ⩥ *Lead: LNO | Priority: Find Funding*
  e. Centralize and promote existing data training resources across life stages, (e.g., LTER data sampler, SciComp website, data training workshops, R/Python bilingualism website).
     ⩥ *Lead: LNO/Information Managers/EDI | Priority: Start now*
  f. Develop additional synthesis training and tools that integrate long-term data and best practices for using cutting-edge technologies and approaches (e.g., machine learning and AI).
     ⩥ *Lead: LNO/EDI/Information Managers | Priority: Start now*

- **Objective 3: Foster broader opportunities for student and post-doc career paths, including academic, public, and private sectors, through new and expanded partnerships (SP3).**

  Activities

  a. Leverage existing site-level cross-sectoral partnerships to build network-level relationships with public and private sector employers in environmental science.
     ⩥ *Lead: LNO and Investigators | Priority: Start now*
  b. Create opportunities for convening and shared learning across sectors with practice-focused agencies and organizations (professional associations, research and regulatory agencies, resource management, consulting, NGOs).
     ⩥ *Lead: LNO and Investigators | Priority: Start now*
  c. Where shared goals and mutually beneficial opportunities exist, develop internships and joint fellowship programs.
     ⩥ *Lead: LNO and sites with partner organizations | Priority: Find funding*

Goal B: Build scientific literacy, knowledge, and engagement in undergraduate students and P-16 educators through exposure to authentic research experiences, data, and networks.

- **Objective 1: LTER sites currently provide formative hands-on research experiences for undergraduate students. Amplify and extend the value of these experiences through cross-site professional development opportunities for undergraduates.**

Activities

a. Develop a unified Network-wide strategy for cohort networking and professional development, including site orientation, Network-level onboarding, research skills development, communication skills, assessment, and follow-up.
    ⩥ *Lead: Education-Outreach Committee and LNO* | *Priority: Ongoing and should be increased*
b. Establish structure and facilitate shared professional development activities.
    ⩥ *Lead: LNO* | *Priority: Find funding*
c. Provide content for shared professional development activities.
    ⩥ *Lead: Investigators and Educators* | *Priority: Find funding*

- **Objective 2: Many LTER sites currently provide authentic, hands-on research experiences for P-16 educators. Enhance social learning, build professional networks, and attract consistent funding by developing and seeking support for a cross-site cohort model.**

  Activities

  a. Establish structure for Network-wide teacher cohort including research webinars, discussion of science and data pedagogy, and materials-sharing.
      ⩥ *Lead: LNO and Education Committee* | *Priority: Start Now*
  b. Facilitate cross-site discussion and materials-sharing of science and data pedagogy in the context of a hands-on research experience.
      ⩥ *Lead: Education-Outreach Committee* | *Priority: Find funding*
  c. Provide content for research webinars.
      ⩥ *Lead: Investigators and Educators* | *Priority: Find funding*

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