

Long Term Research in Environmental Biology (LTREB)

PROGRAM SOLICITATION

NSF 12-501

REPLACES DOCUMENT(S):

NSF 10-558



National Science Foundation

Directorate for Biological Sciences
Division of Environmental Biology
Division of Integrative Organismal Systems

Preliminary Proposal Due Date(s) (required) (due by 5 p.m. proposer's local time):

January 10, 2012

January 10, Annually Thereafter

Full Proposal Deadline(s) (due by 5 p.m. proposer's local time):

August 01, 2012

August 1, Annually Thereafter

IMPORTANT INFORMATION AND REVISION NOTES

The Divisions of Environmental Biology and Integrative Organismal Systems are instituting an annual cycle of preliminary and full proposals that includes proposals submitted to the Long Term Research in Environmental biology solicitation. For **new** LTREB projects, preliminary proposals will be accepted in January and a binding decision will be made to invite/not invite full proposals for submission in August. Full proposals received that were not invited will be returned without review. A limit on the number of submissions of preliminary proposals accepted from each proposer is also described in this solicitation.

Full LTREB **renewal** proposals will be accepted annually for the August 1 deadline. Preliminary proposals are NOT required for LTREB renewal proposals.

Important Reminders

A revised version of the *NSF Proposal & Award Policies & Procedures Guide (PAPPG)*, [NSF 11-1](#), was issued on October 1, 2010 and is effective for proposals submitted, or due, on or after January 18, 2011. Please be advised that the guidelines contained in [NSF 11-1](#) apply to proposals submitted in response to this funding opportunity.

Cost Sharing: The PAPPG has been revised to implement the National Science Board's recommendations regarding cost sharing. Inclusion of voluntary committed cost sharing is prohibited. In order to assess the scope of the project, all organizational resources necessary for the project must be described in the Facilities, Equipment and Other Resources section of the proposal. The description should be narrative in nature and must not include any quantifiable financial information. Mandatory cost sharing will only be required when explicitly authorized by the NSF Director. See the PAPP Guide Part I: *Grant Proposal Guide (GPG)* [Chapter II.C.2.g\(xi\)](#) for further information about the implementation of these recommendations.

Data Management Plan: The PAPPG contains a clarification of NSF's long standing data policy. All proposals must describe plans for data management and sharing of the products of research, or assert the absence of the need for such plans. FastLane will not permit submission of a proposal that is missing a Data Management Plan. The Data Management Plan will be reviewed as part of the intellectual merit or broader impacts of the proposal, or both, as appropriate. Links to data management requirements and plans relevant to specific Directorates, Offices, Divisions, Programs, or other NSF units are available on the NSF website at: <http://www.nsf.gov/bfa/dias/policy/dmp.jsp>. See [Chapter II.C.2.j](#) of the GPG for further information about the implementation of this requirement.

Postdoctoral Researcher Mentoring Plan: As a reminder, each proposal that requests funding to support postdoctoral researchers must include, as a supplementary document, a description of the mentoring activities that will be provided for such individuals. Please be advised that if required, FastLane will not permit submission of a proposal that is missing a Postdoctoral Researcher Mentoring Plan. See [Chapter II.C.2.j](#) of the GPG for further information about the implementation of this requirement.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Synopsis of Program:

Through the LTREB program, the Division of Environmental Biology (DEB) and the Division of Integrative Organismal Systems (IOS) encourage the submission of proposals that generate extended time series of biological and environmental data to address ecological and evolutionary processes and resolve important issues in organismal and environmental biology. Researchers must have collected at least six years of previous data to qualify for funding, and these data must motivate the proposed research. The proposal also must present a cohesive conceptual rationale or framework for ten years of research. Questions or hypotheses outlined in this conceptual framework must guide an initial 5-year proposal as well as a subsequent, abbreviated renewal. Together, these will constitute a decadal research plan appropriate to begin to address critical and novel long-term questions in organismal and environmental biology. As part of the requirements for funding, projects must show how collected data will be shared broadly with the scientific community and the interested public.

All proposals submitted to the LTREB program are co-reviewed by participating Clusters in the two participating Divisions: Ecosystem Science, Population and Community Ecology, and Evolutionary Processes in DEB, and Behavioral Systems and Physiological and Structural Systems in IOS. Proposals must address topics supported by these programs. Researchers who are uncertain about the suitability of their project for the LTREB Program are encouraged to contact the cognizant program director.

Cognizant Program Officer(s):

Please note that the following information is current at the time of publishing. See program website for any updates to the points of contact.

- Saran Twombly, Program Director, DEB, telephone: (703) 292-8133, email: stwombly@nsf.gov
- Michelle Elekonich, Program Director, IOS, telephone: (703) 292-7202, email: melekoni@nsf.gov

Applicable Catalog of Federal Domestic Assistance (CFDA) Number(s):

- 47.074 --- Biological Sciences

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 6 to 8 per year

Anticipated Funding Amount: \$3,000,000 pending availability of funds

Eligibility Information

Organization Limit:

The categories of proposers eligible to submit proposals to the National Science Foundation are identified in the Grant Proposal Guide, Chapter I, Section E.

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI: 2

All LTREB proposals are reviewed by one or more of the appropriate, participating core programs, and successful proposals are co-funded (in DEB) or fully funded (in IOS) by the appropriate core program(s). These core programs in both the Division of Environmental Biology and the Division of Integrative Organismal Systems now limit the number of preliminary proposals on which a given individual may participate, as PI, co-PI, or sub-award Lead, to **no more than two in any year**. "PI, co-PI, or lead senior investigator of a subaward" refer to the role an individual would play in a full proposal including all parts of a collaborative proposal. Participating in a proposal as other senior personnel does not count toward this limit.

Submission of an LTREB preliminary proposal in response to this solicitation will count toward the annual limit of 2 submissions per individual to the Division - either DEB or IOS - that manages and reviews the proposal. For example, an investigator who submits an LTREB preliminary proposal that is appropriate for review by one of the participating clusters in DEB will be allowed to participate, as PI co-PI, or sub-award Lead, in only one other preliminary proposal submitted to DEB.

LTREB renewal proposals for the second five years of funding do not count toward this limit, because preliminary proposals are not required for these renewals. If an individual is eligible to submit an LTREB renewal proposal, he or she may participate in up to 2 preliminary proposals submitted to the appropriate Division in the same year.

It is the responsibility of the submitters to confirm that the research team is within these eligibility guidelines. Changes to the team post-submission to meet eligibility limits will not be allowed.

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Not Applicable
- **Preliminary Proposals:** Submission of Preliminary Proposals is required. Please see the full text of this solicitation for further information.
- **Full Proposals:**
 - Full Proposals submitted via FastLane: NSF Proposal and Award Policies and Procedures Guide, Part I: Grant Proposal Guide (GPG) Guidelines apply. The complete text of the GPG is available electronically on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg.
 - Full Proposals submitted via Grants.gov: NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov Guidelines apply (Note: The NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide)

B. Budgetary Information

- **Cost Sharing Requirements:** Inclusion of voluntary committed cost sharing is prohibited.
- **Indirect Cost (F&A) Limitations:** Not Applicable
- **Other Budgetary Limitations:** Other budgetary limitations apply. Please see the full text of this solicitation for further information.

C. Due Dates

- **Preliminary Proposal Due Date(s) (required)** (due by 5 p.m. proposer's local time):
 - January 10, 2012
 - January 10, Annually Thereafter
- **Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):
 - August 01, 2012
 - August 1, Annually Thereafter

Proposal Review Information Criteria

Merit Review Criteria: National Science Board approved criteria. Additional merit review considerations apply. Please see the full text of this solicitation for further information.

Award Administration Information

Award Conditions: Standard NSF award conditions apply.

Reporting Requirements: Standard NSF reporting requirements apply.

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I. INTRODUCTION

Many important questions in organismal biology, ecology, ecosystem science and evolutionary biology can only be addressed with long-term data. Research areas include, but are not limited to, populations or predator-prey systems that oscillate over decades; communities of organisms that have extended life spans and long turnover times; pools of materials such as nutrients in soils that turn over at intermediate to longer time scales; external forcing functions such as climatic cycles that operate over long return intervals; and behavioral dynamics, stress physiology, or energetic condition of long-lived organisms. Investigators often are constrained in addressing questions in these areas or studying these phenomena by the relatively short support periods associated with typical research awards. In recognition of this problem, the Divisions of Environmental Biology (DEB) and Integrative Organismal Systems (IOS) encourage investigators to apply for LTREB awards. These awards are designed to provide the funding to maintain an ongoing, long-term research project for a period of a decade or longer.

Because the usefulness of long-term data sets extends beyond typical scientific publications, a means of sharing data with other investigators should stimulate synthesis and generation of novel ideas. The results also should be of interest to the general public. To take advantage of the unique informational aspects of long-term projects, LTREB investigators will be required to implement mechanisms of data sharing in the broadest manner possible.

II. PROGRAM DESCRIPTION

The NSF seeks to stimulate and enhance long-term perspectives on problems in organismal and environmental biology. Long-term environmental research is funded through two NSF programs – Long-term Ecological Research (LTER) and LTREB. The two programs are different. LTER projects are funded in response to calls for specific proposals, are evaluated by a special panel, and are characterized by multiple investigators conducting multi-disciplinary investigations at large temporal and spatial scales. In contrast, LTREB projects are submitted to annual target dates, evaluated by appropriate programmatic panels (Evolutionary Processes, Population and Community Ecology, Ecosystem Studies, Behavioral Systems, Physiological and Structural Systems) and are initiated by one or a few investigators. Examples of current LTREB awards can be viewed at <http://www.nsf.gov/awardsearch/> by including "LTREB" in a title search.

The LTREB Program intends to support decadal projects. Funding for an initial, 5-year period requires submission of a preliminary proposal and, if invited, submission of a full 15-page proposal following the guidelines in the Grant Proposal Guide. A cogent conceptual framework for a decadal research plan is a required and a critical part of the initial proposal. This plan must clearly articulate important questions that cannot be answered with the data in hand, but that could be answered if ten additional years of data were collected. Proposals for renewal of support for a second 5-year period are limited to 8 pages in length and will be evaluated using the standard NSF Merit Review Criteria and three additional criteria: 1) progress made toward long-term goals during the initial 5-year award, 2) a brief description of planned research activities and 3) evidence that previous data are available to the broader research community. Preliminary proposals are NOT required for LTREB renewals, and full LTREB renewal proposals will be accepted annually for the August 1 deadline.

Projects submitted for LTREB funding must address questions that require long-term data collection to be answered. Investigators must present a conceptual framework that spans at least ten years. This framework will be a critical component of an initial 5-year proposal, and questions or hypotheses outlined in this framework must guide any subsequent renewal. At least six years of data must have been collected continuously at an appropriate time interval (for example, monthly or annually) and must be documented to seek LTREB funding. These data should motivate the new questions posed and the decadal research plan provided. Justification must be provided for continuing data collection for at least ten years beyond the initial six-year period. Although most LTREB projects involve field studies, some laboratory projects (for example, long-term selection experiments) may also be suitable for LTREB funding. The approach to data collection must be hypothesis driven. The LTREB Program does not support basic monitoring efforts.

Decadal Research Plan: As described above, this plan should clearly articulate important questions that cannot be addressed with data that have already been collected, but could be answered if ten additional years of data were collected. This plan is not a research timeline or management plan. It is a concise justification for ten additional years of support in order to advance understanding of key concepts, questions, or theories in organismal and environmental biology.

Plan for Data Management and Dissemination: Data from long-term research projects have value beyond the peer-reviewed and other publications generated by the investigators collecting the data. Other researchers may develop new perspectives on the same long-term data or new ideas may arise from a combination of long-term data sets. Also, long-term data are expected to be of special interest to the public. Therefore, all proposals must describe details of information management and plans for data sharing with the broader research community and the interested public. This plan should be submitted as a Supplementary Document, following guidelines in the NSF GPG.

LTREB Renewals: To implement the decadal time frame intended for LTREB projects, proposals for renewed support during a second, five-year period do not require submission of a preliminary proposal. They will be evaluated using the standard NSF Merit Review Criteria and three additional criteria: 1) progress made toward the decadal research plan outlined in the initial five-year award, 2) a brief description of planned research activities to complete this decadal plan, and 3) evidence that previously-collected data (at least 6-11 years) are available to the broader research community. Research activities must address questions or hypotheses that are consonant with the initial decadal research plan. Renewal proposals are limited to 8 pages (project description). Titles for renewal proposals must begin with "LTREB Renewal:" The only proposals eligible for submission as an LTREB Renewal are those that continue projects that began via an LTREB award with a decadal research plan.

Continuation of LTREB projects beyond the initial ten years of support will require submission of a new preliminary proposal. If a full proposal is invited, it will follow the same sequence of an initial proposal of 15 pages followed by a renewal proposal of 8 pages.

All proposals submitted to the LTREB Program are co-reviewed by participating Clusters in the Division of Environmental Biology (Ecosystem Science, Population and Community Ecology, and Evolutionary Processes) and the Division of Integrative Organismal Systems (Behavioral Systems, Physiological and Structural Systems). Proposals must address topics supported by these programs.

Researchers are strongly encouraged to contact cognizant program officers to ensure that their projects are appropriate for this program.

Ecological research on marine populations, communities and ecosystems is not supported by LTREB and should be directed to the Biological Oceanography Program: (http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=11696&org=OCE). However, proposals addressing long-term questions focused on marine organisms that are consonant with areas of research supported by the Behavioral Systems Cluster and the Physiological and Structural Systems Cluster in IOS are appropriate for LTREB, as are proposals to examine the evolutionary dynamics of marine populations or communities. Investigators who are uncertain about the suitability of their research for LTREB are encouraged to contact one of the managing program officers listed in this solicitation.

Review Process

A two-stage review process will be used for all new LTREB submissions:

Preliminary Proposals: Investigators must submit a preliminary proposal that outlines the major goals of the project, including the components described below. Preliminary proposals typically will be reviewed by a panel of outside experts. The Program Directors will communicate the decision to Invite / Do Not Invite full proposals via FastLane, and those decisions will be based on the panel recommendations and additional portfolio considerations. Decisions to Invite / Do Not Invite are binding. At their discretion, Program Directors may invite a full proposal submission based on a preliminary proposal that was submitted in the previous (rather than the current) year or may invite a previously submitted full proposal that was declined for funding.

Full Proposals: Invited full proposals will receive panel and *ad hoc* review at the discretion of the program, as described in Section VI of this solicitation. Full proposals that were not invited will be returned without review.

III. AWARD INFORMATION

LTREB awards are not to exceed \$90,000 per year (direct and indirect costs) and \$450,000 over a 5-year (60 month) effort. NSF anticipates making 6-8 new awards annually, pending availability of funds. Involvement of undergraduate and graduate students is encouraged. Researchers may request up to one month of salary per year. These requests must be justified carefully and proposers are encouraged to contact the cognizant program officer prior to proposal development. Because data management is a key aspect of these research projects, it is expected that the proposed budget will reflect the establishment or periodic upgrading of information technology to provide for data sharing with other researchers and the general public. In general, funds will not be provided to purchase major equipment. Under unusual circumstances, the purchase of major equipment (over \$5,000) will be entertained if these expenses are well justified. Support from the LTREB Program does not preclude support from other NSF programs.

Proposals submitted to DEB have two sources of funding; appropriate core programs provide 50% of the requested funds, and the LTREB program, which has a small independent budget, provides 50%. In IOS, funds come solely from the participating core programs.

In both Divisions and all participating programs, the number of awards and average award size/duration are subject to the availability of funds.

IV. ELIGIBILITY INFORMATION

Organization Limit:

The categories of proposers eligible to submit proposals to the National Science Foundation are identified in the Grant Proposal Guide, Chapter I, Section E.

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI: 2

All LTREB proposals are reviewed by one or more of the appropriate, participating core programs, and successful proposals are co-funded (in DEB) or fully funded (in IOS) by the appropriate core program(s). These core programs in both the Division of Environmental Biology and the Division of Integrative Organismal Systems now limit the number of preliminary proposals on which a given individual may participate, as PI, co-PI, or sub-award Lead, to **no more than two in any year**. "PI, co-PI, or lead senior investigator of a subaward" refer to the role an individual would play in a full proposal including all parts of a collaborative proposal. Participating in a proposal as other senior personnel does not count toward this limit.

Submission of an LTREB preliminary proposal in response to this solicitation will count toward the annual limit of 2 submissions per individual to the Division - either DEB or IOS - that manages and reviews the proposal. For example, an investigator who submits an LTREB preliminary proposal that is appropriate for review by one of the participating clusters in DEB will be allowed to participate, as PI co-PI, or sub-award Lead, in only one other preliminary proposal submitted to DEB.

LTREB renewal proposals for the second five years of funding do not count toward this limit, because preliminary proposals are not required for these renewals. If an individual is eligible to submit an LTREB renewal proposal, he or she may participate in up to 2 preliminary proposals submitted to the appropriate Division in the same year.

It is the responsibility of the submitters to confirm that the research team is within these eligibility guidelines.

Changes to the team post-submission to meet eligibility limits will not be allowed.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Preliminary Proposals (required): Preliminary proposals are required and must be submitted via the NSF FastLane system, even if full proposals will be submitted via Grants.gov.

The following exceptions and additions to the NSF GPG apply to preliminary proposals submitted to this solicitation:

Submission of a Preliminary Proposal is required to be eligible for invitation for a Full Proposal. Preliminary proposals that are not compliant with NSF guidelines may be returned without review. It is the submitting organization's responsibility to ensure that the proposal is compliant with all applicable guidelines.

For collaborative projects, the preliminary proposal should be submitted by the lead institution **ONLY**. The collaborative partners should be indicated in the list of personnel in the project description, as described below.

Preliminary proposals must contain the items listed below and adhere strictly to the specified page limitations. No additional information may be provided as an appendix or by links to Web pages. Figures and tables must be included within the specified page limit. All elements of the proposal, including legends and tables, must meet the formatting requirements for font size, characters per inch, margins, etc., as specified in the current NSF GPG.

Preliminary proposals should contain an overview of the proposed research with sufficient detail to allow assessment of the major ideas and approaches to be used. Preliminary proposals must include the following components:

Cover Sheet: Select the LTREB program solicitation from the pull-down list, and check the box indicated for a preliminary proposal. Entries on the Cover Sheet are limited to the Principal Investigator and a maximum of four co-Principal Investigators. Beginning Investigators (individuals who have not been a Principal Investigator or a co-Principal Investigator on a Federally-funded award with the exception of doctoral dissertation, postdoctoral fellowship or research planning grants) must check the box for "Beginning Investigator" on the proposal Cover Sheet. Additional FastLane instructions can be found below in section V.D.

Project Title: The project title must begin with 'LTREB Preliminary Proposal:', followed by the substantive title.

Project Summary (1 page): Provide an overview of the proposed research, addressing separately the intellectual merit and the broader impacts of the project. The summary should be written in the third person, informative to those working in the same or related field(s), and understandable to a scientifically or technically literate reader. Preliminary proposals that do not separately address both intellectual merit and broader impacts in the Project Summary will be returned without review.

Project Description: **Maximum 5 pages total**, containing the following two sections:

I. Personnel (This section is limited to one page. Any remaining space should be left blank). Provide a list of project personnel, including Principal Investigator(s) (PIs), co-PIs, and senior personnel, whether from proposed collaborative (inter-institutional) or sub-awards, plus each person's institutional affiliation, title, status on the full proposal (i.e., PI, co-PI, sub-award lead, other senior personnel) and **one sentence** describing that individual's role(s) in the project.

II. Project (This section is limited to four pages. We suggest the use of the sub-sections listed below, organized as appropriate).

1. Conceptual Framework
2. Rationale and Significance, including the Decadal Research Plan (as described above)
3. Hypotheses or Research Questions
4. Core Data
5. Research Approach or Experimental Plan
6. Broader Impacts

References Cited are limited to 3 pages; see the GPG for format.

Biographical Sketches (2-page limit per individual) should be included for each person listed on the Personnel page. The sketch should include the individual's expertise as related to the proposed research, professional preparation, professional appointments, five relevant publications, five additional publications, and up to five synergistic activities. Advisors, advisees, collaborators, and other conflicts of interest should **not** be listed in these documents, but should appear in a separate table (see below).

No budget should be submitted. Please enter \$2 in the Requested Amount box on the FastLane Cover Sheet; this entry facilitates FastLane processing.

Current and Pending Support statements are required for all PIs and co-PIs; see GPG for format.

A combined Conflict of Interest document: In the Single Copy Documents section, upload a single, alphabetized table identifying conflicts of interest for all persons listed on the first page of the project description. The table should list (by column): A. full names (last, first); B. institutional affiliations; C. type of conflict; and D. name of PI/co-PI/senior personnel having the conflict. The table should be alphabetized on column A. Conflicts to be identified are (1) Ph.D. dissertation advisors or advisees; (2) collaborators or co-authors, including post-doctoral researchers, for the past 48 months; (3) any other individuals with whom, or institutions with which, the senior personnel (PIs, co-PIs, other named personnel) have financial or other professional ties or conflicts, including advisory committees (specify type). Conflicts of interest involving junior authorship on a multi-authored paper (5 authors) may be limited to the senior author.

Applicants must include the above documents, prepared in accordance with standard NSF formatting guidelines). **No other items or appendices are to be included.** Facilities, Equipment or Other Resources; Budget and Budget Justification; Data Management Plan; and Post-doctoral Mentoring Plan are NOT required.

Full Proposal Preparation Instructions: Proposers may opt to submit proposals in response to this Program Solicitation via

Grants.gov or via the NSF FastLane system.

- Full proposals submitted via FastLane: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF Grant Proposal Guide (GPG). The complete text of the GPG is available electronically on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@nsf.gov. Proposers are reminded to identify this program solicitation number in the program solicitation block on the NSF Cover Sheet For Proposal to the National Science Foundation. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.
- Full proposals submitted via Grants.gov: Proposals submitted in response to this program solicitation via Grants.gov should be prepared and submitted in accordance with the NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov. The complete text of the NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: (http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide). To obtain copies of the Application Guide and Application Forms Package, click on the Apply tab on the Grants.gov site, then click on the Apply Step 1: Download a Grant Application Package and Application Instructions link and enter the funding opportunity number, (the program solicitation number without the NSF prefix) and press the Download Package button. Paper copies of the Grants.gov Application Guide also may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@nsf.gov.

In determining which method to utilize in the electronic preparation and submission of the proposal, please note the following:

Collaborative Proposals. All collaborative proposals submitted as separate submissions from multiple organizations must be submitted via the NSF FastLane system. Chapter II, Section D.4 of the Grant Proposal Guide provides additional information on collaborative proposals.

For new LTREB projects, full proposals will be accepted only from PIs who have submitted Preliminary Proposals and have been invited to submit a full proposal. LTREB Renewal proposals requesting the second five years of funding are excepted from the required Preliminary Proposal.

The full proposal should not deviate substantially from the preliminary proposal in scope or in the list of personnel without prior approval of the relevant Program Officer.

Project Description (maximum 15 pages, including Results from Prior NSF Support for PI and all co-PIs): The proposal should address the following three themes in the Project Description or where otherwise indicated:

Conceptual Framework. Proposals must address critical concepts in understanding long-term (decadal or longer) patterns and processes in organismal and environmental biology. Clearly defined hypotheses must guide the research. These hypotheses must be motivated by at least 6 years of data already collected on the study system or organism, and must be grounded in appropriate concepts or theory.

Core Data Set. A feature central to all successful LTREB projects is a set of core data that are already being collected continually in the laboratory or at an existing site or sites. Proposals should clearly indicate what core data have been collected, how long they have been collected, if they will continue to be collected, and how these data motivate the questions addressed in the proposal. Proposed modifications to these core data - for example, the addition of new sites or the initiation of a new manipulation - must be consistent with and complementary to the long-term data collection. New study sites or new manipulations will be considered only if they do not compromise the integrity of the long-term data set, and if their justification is consonant with the long-term rationale for the study. Questions concerning the appropriateness of an existing data set as the basis for an LTREB proposal should be discussed with the cognizant NSF Program Officer prior to proposal development. The LTREB Program does not provide support solely for the analysis of long-term historical data.

Decadal Research Plan: The Project Description must include a specific section, entitled 'Decadal Research Plan,' that identifies questions or hypotheses that require an additional 10 years of investigation to be answered. These questions or hypotheses should form the crux of the proposal. Investigators must demonstrate that the questions posed cannot be answered with data already in hand, or with data collected from typical three-to-five-year awards made by core programs. The decadal research plan should provide the overarching motivation for the initial 5-year investigation as well as for a 5-year renewal.

Data Management and Dissemination (Supplementary Document, 2-page maximum): Long-term data are a valuable resource that can stimulate and support investigations well beyond the scope of the initial study. The value of these data depends on their availability, along with the availability of associated metadata. Data collected as part of an LTREB-funded project must be made available to other researchers and to the general public within a reasonable period of time after their collection. The required Data Management Plan (see the GPG) should articulate how, where, and when the data will be archived; how and when they will be made available to the broader scientific community; and how future access to the data will be guaranteed. As data maintenance is an iterative process, the information technology used should have sufficient flexibility to allow periodic updates. Proposers may wish to consult with the cognizant program officer on the best manner in which to achieve this component of the project.

Postdoctoral Researcher Mentoring Plan: As a reminder, each proposal that requests funding to support postdoctoral researchers must include, as a supplementary document, a description of the mentoring activities that will be provided for such individuals. Please be advised that if required, FastLane will not permit submission of a proposal that is missing a Postdoctoral Researcher Mentoring Plan. See [Chapter II.C.2.j](#) of the GPG for further information about the implementation of this requirement.

A combined Conflict of Interest document: In the Single Copy Documents section, upload a single, alphabetized table identifying conflicts of interest for all persons listed on the first page of the project description. The table should list (by column): A. full names (last, first); B. institutional affiliations; C. type of conflict; and D. name of PI/co-PI/senior personnel having the conflict. The table should be alphabetized on column A. Conflicts to be identified are (1) Ph.D. dissertation advisors or advisees; (2) collaborators or co-authors, including post-doctoral researchers, for the past 48 months; (3) any other individuals with whom, or institutions with which, the senior personnel (PIs, co-PIs, other named personnel) have financial or other professional ties or conflicts, including advisory committees (specify type). Conflicts of interest involving junior authorship on a multi-authored paper (>5 authors) may be limited to the senior author.

Letters of Collaboration. Supplementary Documents may include letters of collaboration from individuals or organizations integral to the proposed project but not supported by subawards. Such involvement may include subsidiary involvement in some aspect of the project; cooperation on outreach efforts; or documentation of permission to access materials, data, or study sites. Letters of collaboration should focus solely on affirming that the individual or organization is willing to collaborate on the project as specified in the project description. No additional text, especially elaboration of the nature of activities to be undertaken by the collaborator and endorsements of the potential value or significance of the project for the collaborator, may be included. The template that must be used for preparation of letters of collaboration is provided below.

Letters of collaboration should not be provided from any individual designated as a principal investigator or senior personnel, and are not required from any organization that will be a subawardee in the proposal budget.

Each letter of collaboration must be signed by the designated collaborator. Requests for letters of collaboration should be made by the PI well in advance of the proposal submission deadline, because they must be included at the time of submission. **Letters deviating from the following template will not be accepted and may be grounds for returning the proposal without review.**

Template for letters of collaboration:

To: NSF _____(Program Title)_____Program

From: _____

(Printed name of the individual collaborator or name of the organization and name and position of the official submitting this memo)

By signing below (or transmitting electronically), I acknowledge that I am listed as a collaborator on this proposal, entitled "____(proposal title)____," with ____ (PI name)____ as the Principal Investigator. I agree to undertake the tasks assigned to me or my organization, as described in the project description of the proposal, and I commit to provide or make available the resources specified therein.

Signed: _____

Organization: _____

Date: _____

Renewal: To implement the decadal time frame intended for LTREB projects, proposals for renewed support during a second, five-year period will be evaluated using the standard NSF Merit Review Criteria and three additional criteria: 1) progress made toward long-term goals during the initial five-year award, 2) a brief description of planned research activities, and 3) evidence that previously-collected data (at least 6-11 years) are available to the broader research community. Research activities must address questions or hypotheses that are consonant with the initial decadal research plan. Renewal proposals are limited to 8 pages (project description). Titles for renewal proposals must begin with "LTREB Renewal:" followed by the substantive title. The only proposals eligible for submission as an LTREB Renewal are those that continue projects that began via an LTREB award with a decadal research plan. **As noted above, LTREB Renewal proposals are exempt from the submission of a preliminary proposal.**

Continuation of LTREB projects beyond the initial ten years of support will require submission of a new preliminary proposal. If a full proposal is invited, it will follow the same sequence of an initial proposal of 15 pages, followed by a renewal proposal of 8 pages.

B. Budgetary Information

Cost Sharing:Inclusion of voluntary committed cost sharing is prohibited

Other Budgetary Limitations: Proposals will be limited to \$90,000 per year and a total of \$450,000 over five years.

C. Due Dates

- **Preliminary Proposal Due Date(s) (required)** (due by 5 p.m. proposer's local time):

January 10, 2012

January 10, Annually Thereafter

- **Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):

August 01, 2012

August 1, Annually Thereafter

D. FastLane/Grants.gov Requirements

- **For Proposals Submitted Via FastLane:**

Detailed technical instructions regarding the technical aspects of preparation and submission via FastLane are available at: <https://www.fastlane.nsf.gov/a1/newstan.htm>. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail fastlane@nsf.gov. The FastLane Help Desk answers general technical questions related to the use of the FastLane system. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this funding opportunity.

Submission of Electronically Signed Cover Sheets. The Authorized Organizational Representative (AOR) must electronically sign the proposal Cover Sheet to submit the required proposal certifications (see Chapter II, Section C of the Grant Proposal Guide for a listing of the certifications). The AOR must provide the required electronic certifications within five working days following the electronic submission of the proposal. Further instructions regarding this process are available on the FastLane Website at: <https://www.fastlane.nsf.gov/fastlane.jsp>.

- **For Proposals Submitted Via Grants.gov:**

Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. Comprehensive information about using Grants.gov is available on the Grants.gov Applicant Resources webpage: http://www07.grants.gov/applicants/app_help_reso.jsp. In addition, the NSF Grants.gov Application Guide provides additional technical guidance regarding preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov

Contact Center at 1-800-518-4726 or by email: support@grants.gov. The Grants.gov Contact Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this solicitation.

Submitting the Proposal: Once all documents have been completed, the Authorized Organizational Representative (AOR) must submit the application to Grants.gov and verify the desired funding opportunity and agency to which the application is submitted. The AOR must then sign and submit the application to Grants.gov. The completed application will be transferred to the NSF FastLane system for further processing.

VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

Proposals received by NSF are assigned to the appropriate NSF program where they will be reviewed if they meet NSF proposal preparation requirements. All proposals are carefully reviewed by a scientist, engineer, or educator serving as an NSF Program Officer, and usually by three to ten other persons outside NSF who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with the oversight of the review process. Proposers are invited to suggest names of persons they believe are especially well qualified to review the proposal and/or persons they would prefer not review the proposal. These suggestions may serve as one source in the reviewer selection process at the Program Officer's discretion. Submission of such names, however, is optional. Care is taken to ensure that reviewers have no conflicts of interest with the proposal.

A. NSF Merit Review Criteria

All NSF proposals are evaluated through use of the two National Science Board (NSB)-approved merit review criteria: intellectual merit and the broader impacts of the proposed effort. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

The two NSB-approved merit review criteria are listed below. The criteria include considerations that help define them. These considerations are suggestions and not all will apply to any given proposal. While proposers must address both merit review criteria, reviewers will be asked to address only those considerations that are relevant to the proposal being considered and for which the reviewer is qualified to make judgements.

What is the intellectual merit of the proposed activity?

How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of the prior work.) To what extent does the proposed activity suggest and explore creative, original, or potentially transformative concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

What are the broader impacts of the proposed activity?

How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

Examples illustrating activities likely to demonstrate broader impacts are available electronically on the NSF website at: <http://www.nsf.gov/pubs/gpg/broaderimpacts.pdf>.

Mentoring activities provided to postdoctoral researchers supported on the project, as described in a one-page supplementary document, will be evaluated under the Broader Impacts criterion.

Additional Solicitation Specific Review Criteria

In evaluating proposals against the two standard review criteria established by the National Science Board, reviewers will look for convincing responses to the three required components of an LTREB project: (1) Core data - at least six years of data collected by the investigator at the time of submission, (2) A compelling decadal research plan; and (3) A plan for data management and dissemination to other researchers and the general public.

NSF staff also will give careful consideration to the following in making funding decisions:

Integration of Research and Education

One of the principal strategies in support of NSF's goals is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions provide abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the diversity of learning perspectives.

Integrating Diversity into NSF Programs, Projects, and Activities

Broadening opportunities and enabling the participation of all citizens -- women and men, underrepresented minorities, and persons with disabilities -- is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

B. Review and Selection Process

Proposals submitted in response to this program solicitation will be reviewed by Ad hoc Review and/or Panel Review.

Reviewers will be asked to formulate a recommendation to either support or decline each proposal. The Program Officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation.

After scientific, technical and programmatic review and consideration of appropriate factors, the NSF Program Officer recommends to the cognizant Division Director whether the proposal should be declined or recommended for award. NSF is striving to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. The time interval begins on the deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director accepts the Program Officer's recommendation.

A summary rating and accompanying narrative will be completed and submitted by each reviewer. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers, are sent to the Principal Investigator/Project Director by the Program Officer. In addition, the proposer will receive an explanation of the decision to award or decline funding.

In all cases, after programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements for review of business, financial, and policy implications and the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at their own risk.

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

Notification of the award is made to *the submitting organization* by a Grants Officer in the Division of Grants and Agreements. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See Section VI.B. for additional information on the review process.)

B. Award Conditions

An NSF award consists of: (1) the award letter, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award letter; (4) the applicable award conditions, such as Grant General Conditions (GC-1); * or Research Terms and Conditions * and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreements also are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC) and the applicable Programmatic Terms and Conditions. NSF awards are electronically signed by an NSF Grants and Agreements Officer and transmitted electronically to the organization via e-mail.

*These documents may be accessed electronically on NSF's Website at http://www.nsf.gov/awards/managing/award_conditions.jsp?org=NSF. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@nsf.gov.

More comprehensive information on NSF Award Conditions and other important information on the administration of NSF awards is contained in the *NSF Award & Administration Guide (AAG) Chapter II*, available electronically on the NSF Website at http://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag.

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the Principal Investigator must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period. (Some programs or awards require more frequent project reports). Within 90 days after expiration of a grant, the PI also is required to submit a final project report, and a project outcomes report for the general public.

Failure to provide the required annual or final project reports, or the project outcomes report will delay NSF review and processing of any future funding increments as well as any pending proposals for that PI. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF's electronic project-reporting system, available through FastLane, for preparation and submission of annual and final project reports. Such reports provide information on activities and findings, project participants (individual and organizational), publications, and other specific products and contributions. PIs will not be required to re-enter information previously provided, either with a proposal or in earlier updates using the electronic system. Submission of the report via FastLane constitutes certification by the PI that the contents of the report are accurate and complete. The project outcomes report must be prepared and submitted using Research.gov. This report serves as a brief summary, prepared specifically for the public, of the nature and outcomes of the project. This report will be posted on the NSF website exactly as it is submitted by the PI.

VIII. AGENCY CONTACTS

Please note that the program contact information is current at the time of publishing. See program website for any updates to the points of contact.

General inquiries regarding this program should be made to:

- Saran Twombly, Program Director, DEB, telephone: (703) 292-8133, email: stwombly@nsf.gov
- Michelle Elekonich, Program Director, IOS, telephone: (703) 292-7202, email: melekoni@nsf.gov

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 1-800-673-6188; e-mail: fastlane@nsf.gov.

For questions relating to Grants.gov contact:

- Grants.gov Contact Center: If the Authorized Organizational Representatives (AOR) has not received a confirmation message from Grants.gov within 48 hours of submission of application, please contact via telephone: 1-800-518-4726; e-mail: support@grants.gov.

IX. OTHER INFORMATION

The NSF Website provides the most comprehensive source of information on NSF Directorates (including contact information), programs and funding opportunities. Use of this Website by potential proposers is strongly encouraged. In addition, National Science Foundation Update is a free e-mail subscription service designed to keep potential proposers and other interested parties apprised of new NSF funding opportunities and publications, important changes in proposal and award policies and procedures, and upcoming NSF Regional Grants Conferences. Subscribers are informed through e-mail when new publications are issued that match their identified interests. Users can subscribe to this service by clicking the "Get NSF Updates by Email" link on the [NSF web site](#).

Grants.gov provides an additional electronic capability to search for Federal government-wide grant opportunities. NSF funding opportunities may be accessed via this new mechanism. Further information on Grants.gov may be obtained at <http://www.grants.gov>.

ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) is an independent Federal agency created by the National Science Foundation Act of 1950, as amended (42 USC 1861-75). The Act states the purpose of the NSF is "to promote the progress of science; [and] to advance the national health, prosperity, and welfare by supporting research and education in all fields of science and engineering."

NSF funds research and education in most fields of science and engineering. It does this through grants and cooperative agreements to more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations and other research organizations throughout the US. The Foundation accounts for about one-fourth of Federal support to academic institutions for basic research.

NSF receives approximately 40,000 proposals each year for research, education and training projects, of which approximately 11,000 are funded. In addition, the Foundation receives several thousand applications for graduate and postdoctoral fellowships. The agency operates no laboratories itself but does support National Research Centers, user facilities, certain oceanographic vessels and Arctic and Antarctic research stations. The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

Facilitation Awards for Scientists and Engineers with Disabilities provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See Grant Proposal Guide Chapter II, Section D.2 for instructions regarding preparation of these types of proposals.

The National Science Foundation has Telephonic Device for the Deaf (TDD) and Federal Information Relay Service (FIRS) capabilities that enable individuals with hearing impairments to communicate with the Foundation about NSF programs, employment or general information. TDD may be accessed at (703) 292-5090 and (800) 281-8749, FIRS at (800) 877-8339.

The National Science Foundation Information Center may be reached at (703) 292-5111.

The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for research and education in the sciences, mathematics, and engineering.

To get the latest information about program deadlines, to download copies of NSF publications, and to access abstracts of awards, visit the NSF Website at <http://www.nsf.gov>

- **Location:** 4201 Wilson Blvd. Arlington, VA 22230
- **For General Information** (NSF Information Center): (703) 292-5111
- **TDD (for the hearing-impaired):** (703) 292-5090
- **To Order Publications or Forms:**

Send an e-mail to: nsfpubs@nsf.gov

or telephone: (703) 292-7827

- To Locate NSF Employees:

(703) 292-5111

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; and project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to proposer institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies or other entities needing information regarding applicants or nominees as part of a joint application review process, or in order to coordinate programs or policy; and to another Federal agency, court, or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, [NSF-50](#), "Principal Investigator/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004), and [NSF-51](#), "Reviewer/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

An agency may not conduct or sponsor, and a person is not required to respond to, an information collection unless it displays a valid Office of Management and Budget (OMB) control number. The OMB control number for this collection is 3145-0058. Public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding the burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to:

Suzanne H. Plimpton
Reports Clearance Officer
Division of Administrative Services
National Science Foundation
Arlington, VA 22230

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