

**Bat Conservation International**  
**STUDENT RESEARCH SCHOLARSHIP PROGRAM**  
**Information for Applicants**

## **INTRODUCTION**

Each year, BCI sponsors students in conducting conservation-relevant research. Lack of knowledge about bat ecology and behavior is one of the greatest impediments to bat conservation progress. The goal of this program is to support exceptionally talented students in research initiatives that will contribute new knowledge essential to conserving bats and the ecosystems they serve. Individual awards range from \$1,000 to \$5,000. We hope these funds provide opportunities for matching grants from other conservation organizations, government agencies and private foundations, and that BCI's support will grow in future years.

## **SUGGESTIONS FOR APPLICANTS**

All BCI scholarship recipients must be conducting research that specifically addresses at least one of our specified areas of need by: 1) answering ecological or behavioral questions essential to conservation or management; 2) resolving an economic problem which will further conservation tolerance; 3) documenting key ecological or economic roles of bats; or 4) educating people who are directly relevant to conservation success.

*Our outside reviewers will be asked to consider only those proposals that are complete and clearly address conservation needs.* Reviewers will numerically rank all conservation-relevant proposals. Those receiving the highest scores will be funded. The following research areas are most likely to receive priority rankings.

### **Primary Areas of Research Need**

**A. Documentation of Bat Feeding Behavior** – Bats that eat insects, pollinate flowers and disperse seeds play key ecological roles in maintaining the balance of nature, but the impact of their feeding behavior remains entirely or mostly unknown for most of the world's bat species, greatly hampering conservation efforts. More research is needed in these areas, and as proposals begin to better address these specific needs, additional funding will become available.

1. **Insect eating** – Insectivorous bats often play important roles in keeping insect populations in check and therefore are essential to the balance of nature. They also are primary predators of insects that cost farmers and foresters billions of dollars annually. Nevertheless, very few studies document the exact species or quantities of insects eaten, nor the probable impact of such consumption. The few studies that exist support the belief that bats are far more economically important than is yet generally recognized. Additional documentation of this kind is often crucial to gaining public or governmental support for bat conservation efforts. We also need more information about bat foraging habitat requirements in order to plan for their conservation.

2. **Pollination** – Bats are known to serve as essential pollinators of many ecologically and economically important tropical plants in ecosystems as diverse as deserts and rainforests. Yet the roles of most nectarivorous bats remain unstudied, even those suspected of being crucial to economies valued at more than \$100 million annually. Numerous bat-dependent trees are of great importance as sources of tropical timber, food or other commodities. Durian fruits of the Old World tropics, for example, are worth more than \$100 million a year in the Malaysian Peninsula alone and require bats as primary pollinators, though no study of this economically valuable relationship exists. Anecdotal reports of durian crop failures exist from the Philippines to Malaysia due to declining bat populations. Documentation could play a key role in gaining conservation progress.

3. **Seed Dispersal** – It has been documented that bats account for up to 95 percent of seed dispersal in tropical clearings and play key roles in forest regrowth and maintenance. Nevertheless, only a handful of studies exist, and bats typically are not even considered in long-range plans for sustainable use of tropical forests. More detailed information is needed on bat seed-dispersal roles under varied conditions. In fact, rainforest conservation and land-use planning cannot be complete without such information.

**B. Documentation of Roosting Needs** – Few studies document bat roosting needs, especially during critical nursery or hibernation periods. Yet such knowledge is essential to the inclusion of bats in forestry, cave and mine management planning, as well as in efforts to provide artificial roosts.

1. **Tree Roosts** – Radio-tracking studies are essential to understanding bat needs for multi-age forests with varied kinds of tree hollows and loose bark located in proximity to food and water resources.

2. **Cave Roosts** – Most of the world's caves are increasingly disturbed by cave exploration, sealed shut because of owner liability concerns, filled by waste dumping, commercialized or otherwise made unusable for bats who traditionally have relied on caves as important roost resources. Yet few surveys exist to document bat population trends in caves, much less the exact roost characteristics or surrounding habitats required by cave-dwelling species. Today, bats are often found barely surviving in cave roost sites that in the long run cannot meet their needs, while nearby, traditional and potentially ideal roosting locations are no longer useable due to human disturbance. Conservation planners must have documentation of population changes in cave-dwelling species and know how to recognize ideal roost and habitat characteristics in order to protect the best sites, which may not be those where bats are now living.

3. **Abandoned Mine Roosts** – A large proportion of remaining bat populations now live in abandoned mines, as roosting sites of last resort, having lost traditional roosts. Abandoned mines can, in fact, provide ideal alternate homes for bats. However, since the most dangerous mines provide the best protection from human disturbance, yet are often the first to be closed for safety reasons, they become death traps when sealed. There is an urgent need to survey old mines for bats and to establish use patterns. Typically bats are unable to use many mines, but form sizeable colonies in the few that meet their needs. Studies of how bats select roost sites could help tremendously in locating those special mines that need to be protected as crucial bat resources.

4. **Development of Artificial Roosts** – Many bats are especially threatened by loss of natural roosts and are increasingly forced to occupy artificial alternatives. Studies of roost characteristics, such as internal dimensions, temperature, height above ground and their relationship to associated habitats are essential. Such information is vital when setting priorities for protection of natural roosts, as well as for the creation of artificial substitutes.

**C. Finding Solutions to Bat Nuisance Problems** – Practical conservationists must also help find solutions to the nuisance problems sometimes created by wildlife. Bat conservationists need to help in the following areas:

1. **Nuisance Bats in Buildings** – Most problems of this nature are now well understood and easily addressed by exclusion professionals. However, in a few situations, bats can be difficult to exclude from older structures. Nontoxic repellents are desirable in these cases and warrant further study.

2. **Fruit Damage** – Bats can damage certain fruit crops, typically during periods of drought or other famine conditions when native plants do not produce. Some Old World fruit bats also may leave undesirable scratches on bananas whose flowers they visit. Research on how to reduce or eliminate these problems is needed.

3. **Vampire Control** – Available vampire control techniques are adequate. However, research on innovative methods of educating people to use only appropriate species-specific methods may be considered.

**D. Anthropogenic Impacts on Bats and their Habitats** – Describe and quantify the anthropogenic impacts on bats resulting from land management practices. These are of particular interest:

1. **Wind Energy Development** – Wind power offers a remarkable source of renewable, pollution free energy. However, wind turbines are killing unexpectedly large numbers of bats, especially in the eastern

United States, thus heightening the urgency to understand problems and identify solutions. Bat-wind turbine interactions are poorly understood. We are clearly in a race against time to find solutions soon enough to prevent massive bat kills or excessive delays of wind power production. Numerous questions require further and immediate investigation to advance our understanding of bat fatalities at wind turbines, develop solutions for existing facilities and aid with assessing risk at future wind facilities.

2. *Environmental Contaminants* – Research is needed to document the effects on bats of environmental contaminants, including unregulated dumping, the use of pesticides and herbicides, cyanide-leaching ponds and other water-quality issues. For pesticides, researchers need to identify the kinds of chemicals used and timing of application. There also is a need to assess behavioral and physiological impacts to individual bats and bat populations resulting from pollutants.

## **ELIGIBILITY REQUIREMENTS**

Students enrolled in any college or university worldwide are eligible to apply. Students who have applied in previous years to BCI's Student Research Scholarship Program are eligible to reapply each subsequent year, whether they received a previous BCI grant or not. Non-students are not eligible.

All proposals to the Student Research Scholarship Program must be prepared by the applicant. While BCI will fund research that is part of a larger project, the student must personally research and develop the proposal. All funded projects must begin no later than December 31 of the year in which the award is received.

## **APPLICATION PROCEDURE**

Apply online at [www.batcon.org/scholarships](http://www.batcon.org/scholarships). The proposal, budget and student curriculum vitae should be included with the application. Templates for the proposal and budget documents can be found on "Step 6" in the application form. All submitted materials must be in English. Applications will not be accepted via mail. Only online and electronic applications will be accepted.

All application materials except letters of support must arrive by December 15 to be considered for the coming year, and applicants are strongly encouraged to submit all materials well in advance.

Submitted materials may be rejected from the review process for any of the following reasons:

1. Project does not meet the conservation goals of the program.
2. Sufficient materials were not received prior to the deadline.
3. Submitted materials do not meet submission requirements.
4. Applicant does not meet eligibility requirements.
5. Significant changes were submitted after the deadline.

Applicants whose submissions are rejected prior to review will be notified via email.

Please address all questions to: [grants@batcon.org](mailto:grants@batcon.org).

Notification of acceptance or rejection typically will be made within 90 days of the submission deadline. BCI may choose to grant the full requested amount or may grant only a portion of it, conditional on reviewer suggestions and available funds. All recipients will be required to sign a standard reporting and completion agreement and liability waiver. Upon signing of the agreement, BCI will write a check for 80 percent of the awarded amount, made payable to the sponsoring college or university. BCI does not allow any overhead, administrative or indirect costs to be taken from the awarded grant money by the supervising institution. Payment of the remaining 20 percent of the grant will be dependent upon timely submission of progress reports and photographs of project activities to BCI, with the balance paid upon submission of the final report. For more details about reporting requirements or contract conditions, applicants may contact BCI at any time.

## SUBMISSION MATERIALS

**Application** – All sections of the application form must be completed to the best of the student’s ability and knowledge. Questions which are not applicable to proposal should be marked “Not Applicable” or “N/A.”

### **Research Proposal**

**Content** – Proposals should clearly state objectives of studies and the significance of the work to bat conservation progress and give detailed descriptions of the methodology to be used. Proposals must show how projects support conservation needs and must demonstrate that the project in question is feasible within the planned time and financial limitations. It is very important to be clear in explaining the data collection and analysis techniques.

**Format** – The research proposal format can be found on “Step 6” in the application form.

**Summary of Progress** – Projects that are already under way must include an additional one-page summary of the progress made to date, including any significant findings.

**References Cited** – A complete bibliographic list of all sources cited in the *Research Proposal* and the *Summary of Progress* must be included. There is no page limit for bibliography.

**Budget** – A sample budget has been included. You do not have to follow the format of the sample budget, but you must present the following information:

1. *Total expenses for the current fiscal year* – Please specify, for example, equipment, assistants, field subsistence, travel, services, supplies, etc. Budget items must be itemized in detail.
2. *Funding and support for current fiscal year* – Include all sources of confirmed and pending funding or support for the current fiscal year. State whether they are alternative to your request to BCI. If any alternative or unlisted grants are received, you must notify BCI at once. If you are receiving no other support for this work, please explain.

A cumulative budget for all years of the project may be included *in addition to* the current fiscal year budget if the project is planned to cover multiple years. A budget justification section may also be included.

**Biographical Sketch of Applicant** – Applicants must submit a curriculum vitae, not to exceed two pages in length. If there are additional primary investigators, a short curricula vitae for each one may also be included.

**Letters of Support** – Provide the names and email addresses of three academic or conservation biology professionals familiar with your project and your qualifications. BCI will contact these individuals via email to request they submit a letter of support. When we request the letter, we will ask that it include a *short* curriculum vitae of the recommending person. The names you submit should be from professionals who are familiar with you and your project and are sufficiently established in the profession to lend credibility to their recommendations.

## REVIEW PROTOCOL

All conservation-relevant proposals that meet the minimum submission criteria will be forwarded to each member of a team of three outside reviewers, selected for their recognized expertise in bat conservation and research. Depending on the number of applications received, more than one review team may be used. Each of the three reviewers will assign scores of 1 (unacceptable) to 5 (excellent) in each of the following areas:

- 1) importance to conservation progress;
- 2) relevance to BCI’s stated conservation goals (see Suggestions for Applicants section);
- 3) methodology (project design and approach);
- 4) feasibility (time, funding, logistics, and experience).

Awards will be made according to the order of rankings provided by review team members. Due to the competitive nature of these awards, any project ranked below average in any area will be disqualified unless reviewers suggest an easily made remedy that the applicant agrees to follow.

Anonymous reviewer comments will be returned to applicants. No reviewer will be asked to review proposals from students at his or her own institution. Applicants attempting to lobby reviewers will be disqualified. No preference will be shown according to age, sex, race, nationality, institutional or geographic considerations.