

## **Title: Creation of the Center for Transnational Biodiversity Conservation (CTBC) at SUNY-ESF**

Core Team: *SUNY-ESF*: Jonathan Cohen, Colin Beier, Andrea Feldpausch-Parker, Michael Schummer; *Foundation for Ecological Welfare*: Ketan Tatu

**Discovery Opportunity:** In this pre-proposal, we draw upon the example of wetland management and migratory bird conservation in rural India to pilot a program for transnational conservation scholarship and practice that draws upon the strengths of SUNY-ESF. Threats to ecosystems that support biodiversity and human society tend to transcend national boundaries. As a result, global visions for natural resource conservation and international partnerships are required to achieve conservation goals. This, in itself, is dependent upon effective decision-making that optimizes the incorporation of scientific information, social values, and cultural identities to tackle such increasingly complex natural resources conservation issues. Scale and diversity are also critical factors in the decision-making process. For example, stakeholder involvement should range in scale from local communities and grassroots organizations to transnational governments. Stakeholder diversity should take into consideration not only dominant voices, but also those that are often marginalized, such as women, minority groups, and indigenous populations. The conservation of wetland-dependent wildlife in India will provide an excellent model system for demonstrating the effectiveness of a transnational conservation center. Wetlands in India provide a wide variety of human ecosystem services including subsistence, drinking water, laundering, and recreation. Human activities in wetlands are highly regulated under Indian law. Moreover, wildlife hunting is illegal in India, except for special circumstances related to threats to life or property. Thus, India has officially codified a strong natural resource ethic, which would facilitate partnerships for wetland conservation. This strong ethic is also based on the concept of exclusion, which presents opportunities for studying natural resources conflict as well as the practice of conflict resolution.

For most transnational conservation issues, such as the effect of climate change on habitat, the economic activity of one nation may impact ecosystem health and services in another. In the case of migratory birds, however, the species themselves regularly cross jurisdictions that may span nearly from one pole of the Earth to the other, subjecting them to multiple biological, physical, social and cultural stressors. The plight of migratory wetland birds is particularly precarious, as wetland ecosystems make up only 4 to 6% of the Earth's surface yet are imperiled by human activity wherever they occur. With renowned experts in wildlife ecology, landscape ecology, natural resource policy, and the human dimensions of natural resource management, SUNY-ESF is strongly positioned to play a global leadership role in transnational biodiversity conservation. We are proposing a Center for Transnational Biodiversity Conservation (CTBC) with a Director at SUNY-ESF and an inaugural demonstration project focused on the conservation of migratory wetland birds in India. The Center will be a focal point for international exchanges of student interns and courses, graduate student research projects, and collaborative structured decision-making and adaptive management with international partners.

We will build our pilot project off a currently-scheduled workshop and summit in Gujarat State, India in January 2019. Dr. Jonathan Cohen and two graduate students, Michelle Stantial and Alison Kocek, were invited by the Gujarat Ecological Education and Research Foundation (GEER) of the Gujarat Forests and Environment Department to present a workshop on Coastal Waterbird Research and Conservation for an audience of graduate students and state biologists. After the workshop, GEER has invited Dr. Cohen to the Vibrant Gujarat summit, an international event, to discuss a new Memorandum of Understanding between GEER and SUNY-ESF for the sharing of teaching and research programs. In addition, a fledgling Indian nonprofit founded by the Gujarat state waterbird biologist, the Foundation for Ecological Welfare (FEW), has agreed to partner with SUNY-ESF on a demonstration research and conservation project should this Discovery Challenge Grant get funded.

**Undergraduate and Graduate Programs Impacted:** The initial project for the Center for Transnational Biodiversity Conservation at SUNY-ESF will consist of three focal areas in the first year: 1) hiring a Director, 2) implementing a summer undergraduate exchange program in wetland wildlife conservation with an Indian University or research institution, with an intersession seminar containing both sets of students, 3) establishing a graduate-level research project on the conservation of migratory wetland birds in India in collaboration with FEW. Dr. Cohen will lead the initial workshop in Gujarat in January. He will work with GEER to establish an MOU with SUNY-ESF for student exchanges. We will create a natural resources decision making program for Indian students coming to ESF for the Fall semester, to include courses in wildlife management planning, wetlands and waterfowl ecology, restoration ecology, and human dimensions. In the winter intersession, the co-PI's will coinstruct a seminar in which students from both countries present a final project based on the experience. Our cooperative research project with FEW will entail 1) assessment of the distribution and habitat suitability for a suite of waterbirds in coastal and inland wetlands in Gujarat, to include expert and citizen-science based data collection and the training of a graduate student, 2) evaluation of the attitudes of local stakeholders in relation to wetlands and wetland-dependent birds, and an enumeration and valuation of ecosystem services, with a second graduate student, and 3) migration tracking of a sample of migratory shorebirds including outreach and public education. We will hire a field coordinator from India with experience in social and biological sciences to coordinate data collection for the second objective and to collaborate with the second graduate student. For the third objective, we will place telemetry transmitters on shorebirds in coastal wetlands. A digital array comprising five automated telemetry receiving towers will be placed along the coastal region of the Gulf of Kutch. Digitally encoded tags will allow simultaneous monitoring of individuals across the landscape as well as continuous monitoring of individuals within range of the receiver. Tracking long-distance migrant birds not only provides key information of use to conservation planning in different parts of the annual cycle, it is also a tremendous tool for outreach and education, as migration data often capture the public imagination. To that end, the website for the CTBC will provide frequent updates on the birds detected at each tower, and we will create public programs and programs for school-aged children to share updates on this aspect of the Center's activities in India and the U.S.

**Agencies, Partners, and Funding Entities:** We have three currently interested partners in India: 1) GEER, a state government organization wishing to form an MOU for shared teaching and research with SUNY-ESF, 2) FEW, a fledgling nonprofit that seeks to improve science-based decision making for ecological problems, and 3) the Bombay Natural History Society, which has developed over a century of expertise in cataloging biodiversity, studying species-habitat relationships, and conducting conservation projects. Additionally, we have garnered collaboration interest from the MOTUS network, a program of Bird Studies Canada, which currently has a large network of telemetry-based avian migration tracking stations in North America that has yet to expand in Asia. The seed money for the Discovery Challenge grant would launch the demonstration project and create the capacity for further fundraising that would target international development and conservation agencies and organizations such as USAID, which funds \$250 million per year in biodiversity conservation, and Save our Species, which can provide grants of up to \$800,000. Moreover, we would attempt to attract interest from the Gates Foundation, which has strong programs in education and sustainable development in India.

**Partnerships:** The initial project will build connections between SUNY-ESF and Indian Universities and Research Institutes, government agencies, and NGOs, as well as the University of West Virginia which is a co-founder of FEW. It will also strengthen our existing relationship with Bird Studies Canada. As the CTBC grows, we would hope to build similar connections with institutions in other countries.

**The Use of ESF Assets:** Although the project is focused overseas, the exchange programs will lead to some additional focus on ESF assets. The courses in which foreign students will enroll as part of the exchange program include working on a management plan for wildlife at Heiberg Forest.

**Informing Policy and Enhancing the Reputation of ESF:** A three-year goal of the Discovery Grant will be to produce collaborative strategic and local plans with Indian organizations for managing coupled human-natural systems in this biodiversity hotspot. To the latter end, over the second two years of the grant the co-PIs, the directors of FEW, and Indian governmental agencies will develop adaptive management plans for wetland bird habitat that incorporate hypotheses about both the biological and human dimensions of wetland conservation, which will be updated as preliminary results from the research become available. Moreover, the research and management processes will be integrated into the seminar curriculum. Our long-term vision is to grow the CTBC at ESF into a global partner in science-based decision making and conservation education, with multiple simultaneous projects around that engage ESF's world class faculty and students.

**New Investments:** We propose the hiring of a permanent Director for the CTBC to be ESF research faculty. They will focus on management of the CTBC research and teaching programs, and development. They will be tasked with working with the Office of Research Programs and the College Foundation to find funding to support the CTBC's programs, including field staff in partner countries, travel for researchers and students, student stipends, and facilities.