Local driver, Ayurzan, and students with a bustard

Environmental Education in Northern Mongolia: A Two-Way Street

Aimee E. Kessler[1], David J. Gilroy[2], Luvsandash Chuluunchimeg[3], Dorjkhuu Enkhtuyaa[3] and Andrew T. Smith[1]
(1)School of Life Sciences, Arizona State University, POB 874501, Tempe, AZ 85287-4501, Mimi.Kessler@ASU.edu
(2)Center for Limnology, University of Wisconsin, Madison, 680 North Park Street, Madison, WI 53704
(3)Taimen Conservation Fund, Baga Toiruu 44, Ulaanbaatar, Mongolia

Local forest ranger, Ayush, holding a large taimen

Introduction

International wildlife conservation research projects, often limited in time and resources, can easily focus on data gathering, analyses, and professional publication of findings without prioritizing collection of local knowledge or local outreach efforts. However, efforts to involve the local community to a greater degree often bring substantial benefits, including a two-way transmission of environmental information between the research team and the public.

Incorporating traditional or local environmental knowledge into western-based conservation research and science education has proven useful for:

- •Locating species which are rare or cryptic
- •Estimating historic ranges of species
- •Identifying unconsidered hypotheses and research directions

Despite a trend towards collecting traditional knowledge about the environment, there are few literature records of research teams engaging the local community to a greater degree by involving local people in daily research efforts. However, those projects that have involved local people to a greater degree often derived unexpected benefits. A few examples of conservation research involving local people in research activities include:

- •Developing a range management plan by training Sami reindeer herders in GIS, satellite image interpretation and vegetation sampling (Sandström et al. 2003)
- •Training a community member to monitor tortoise behavior in Egypt (Attum et al. 2007)
- •Improving the accuracy of bowhead whale censuses via collaborative workshops and field work with Eskimo whalers (Huntington 2000)
- •Involving Canadian fishers in data collection about sea turtle sightings and captures (Martin and James 2005)

Of course, there are obstacles to cross-cultural ecological research and it must be carried out with cultural sensitivity.

Research Site: Höbsgöl & Bulgan Provinces, northern Mongolia

Our Research

Here we offer experiences from two research projects in northern Mongolia as examples of the challenges and benefits of integrating research within local communities.

The Bustard Project researches the conservation biology of the endangered Asian great bustard (*Otis tarda dybowskii*), a large steppe-dwelling bird. This work is carried out by A. Kessler (author) with a local field team and volunteers.

The Taimen Project studies the threatened Siberian taimen (*Hucho taimen*), a large trout-like fish native to northern Eurasian rivers. This research is carried out by an international team led by J. Vander Zanden (U. Wisc-Madison) and S. Chandra (U. Nevada-Reno). Much of the field research is coordinated by D. Gilroy (co-author).

The Taimen Conservation Fund, a Mongolian NGO and umbrella organization to the Taimen Project, conducts environmental outreach which often includes both taimen and bustard ecology. This work is overseen by L. Chuluunchimeg and D. Enkhtuyaa (both co-authors),

The local community here consists mostly of nomadic pastoralists with the remaining, sedentary population working as government employees, merchants, drivers/mechanics, and wheat farmers.

Literature Cited

Attum, O. *et al.* 2007. *Zoo Biol* 26: 397-406.
Huntington, H. 2000. *Ecol Appl* 10: 2000.
Martin, K. and M. James. 2005. *Chelonian Conserv Bi* 4: 899-907.
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Methods of Integrating Members of the Community into Project Research

Doing Research Together

Community Members as Trained and Employed Field Staff:

- Training local team members with technical and analytical skills to independently conduct research activities
- Funding the higher education of local team members to gain additional skills
- Employing support staff to lead logistical aspects of field work
  - •Driving and mechanical repair
  - •Field station and supply maintenance
  - •Food preparation
- Giving responsibility to local team members to continue research activities year-round:
  - •Bustard population and chick counts
  - •Tracking of taimen movements
  - •Environmental monitoring

Seasonal Assistance in Research Activities:

- Breeding ground behavioral observations and bustard population counts
- Capturing, measuring and tagging chicks and fish
- Angling for fish to assess population density/size structure, individual fish diets, growth rates and fish community composition
- Tracking fish using radio and acoustic telemetry to identify seasonal movements and home range
- Visual surveys for spawning fish and their nests (redds)
- Surveys for bustard breeding grounds

Learning from Local People

Formal Interviews:

- With elder community members - historical changes in species populations environmental cues relating to the species, causes of species decline
- With observant community members - current locations of populations, seasonal movements and approximate population counts
- With general community members - views on regional natural resources and project goals, extent of poaching

Informal Visits and Meetings:

- Maintaining regular visits with herding families who live near important habitat and with particularly interested community members
- Spending time to discuss news and updates relating to research projects and people's livelihoods with people in village centers, at research stations, or while working or traveling in the countryside

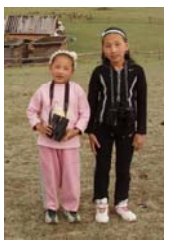
Sharing with the Community

Environmental Education Outreach:

- Development and distribution of environmental curricula to local schools
- Teaching wildlife research methods and bird identification at a children's summer camp
- A program in which students learn bird ecology and wildlife research skills through discussions of the movements of local bustards with transmitters
- Formal presentation of project findings directly to school and community groups
- Informal presentation of research activities and findings to visitors at field stations
- Educational evenings incorporating environmental quizzes, skits by community teams, song competitions and dancing
- Sharing of research multimedia (i.e., video, photographs) for both educational as well as entertainment purposes
- Incorporation of local religious leaders into discussions of environmental management

Non-Scientific Outreach and Support:

- Advising project managers on needs and requests of the local community
- Providing employment opportunities, both short and long-term, to locals as much as possible
- In-kind assistance to rural herding families (transportation, river crossings, supply delivery, emergency assistance)



Benefits and Challenges

Our two research teams have found that close collaboration with local communities can lead to "two-way" environmental education, which speeds the research process, raises interest in the species among residents, allows the creation of appropriate environmental outreach programs, and provides local people opportunities to participate in research. Below we review aspects of our methodology which enhanced the success of our research and conservation actions, as well as some challenges we encountered.

Local members of the research team contribute heavily to the success of our research by:

- Guiding the team in appropriately negotiating local norms
- Designing effective outreach activities incorporating traditional beliefs
- Building trust within the community
- Helping us to gain insight as to the magnitude of illegal activities, such as poaching
- Training foreign team members on skills required for working in rural Mongolia

Incorporating community volunteers

- Promotes transparency about the research teams' activities
- Combats the spread of rumors or incorrect information
- Encourages public interest and knowledge of the species
- Exposes young people to biology as a career
- Volunteers tend to be "self-selecting;" those who continue to participate are typically skilled at tasks required

Interviews

- Allow us to quickly locate populations of these rare species
- Give a better understanding of local ecosystems (e.g., timing of breeding events, relative abundances of fish species)
- Give historical context as to the frequency and magnitude of seasonal climatic events affecting our research species
- Give insight as to herders' use and dependence on resources
- Poachers are often knowledgeable about our species; developing a dialogue with these individuals also allows us to supply information about conservation needs
- However, exaggeration in reported population sizes was common, especially among poachers
- Observations of animal behavior related to us sometimes raised new research questions for the teams
- Enabled us to determine misconceptions about our study species and areas in which pubic information campaigns are needed

Public outreach programs

- Spread information about our research activities
- Engage the community in a larger discussion about conservation
- Programs involving children and teachers have proved especially successful

Challenges

- Dealing with negative feedback from local people not directly participating in the project ("the rumor mill")
- Maintaining trust that our research is not negatively impacting the local environment nor exploiting local resources
- Balancing research needs with local requests for assistance or participation in local events
- Maintaining cultural sensitivity in research activities (e.g., taboos regarding treatment of wildlife)
- Involving the public in daily research means that any mistakes or problems encountered are observed and discussed in the wider community
- Dealing with community members under the influence of alcohol
- Difficulty in getting an honest opinion about research or conservation activities; often interviewees seemed to give answers they thought the interviewer would like to hear

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