



CONSERVATION IMPLICATIONS OF BLAKISTON'S FISH OWL OWL RESOURCE SELECTION IN PRIMORYE, RUSSIA

**FINAL REPORT TO NATIONAL BIRDS OF PREY TRUST
2009-2010**



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SUMMARY: This final report summarizes activities conducted by the Blakiston's Fish Owl Project between September 2009 and April 2010, starting when funding was spent and ending at the conclusion of the 2010 capture season.

PROJECT BACKGROUND

Blakiston's fish owl (*Ketupa blakistoni*) is a charismatic, endangered species resident in old-growth river valleys of northeast Asia (Fig. 1). Possibly the largest owl in the world, this aquatic prey specialist manages to survive year-round in an environment largely frozen for months on end. In Russia, the habitat of this species is under increasing risk from anthropogenic threats, primarily logging. However, a lack of the most simple baseline ecological data has prevented development of conservation or habitat management plans. The old-growth riparian areas this owl relies on for breeding are used by a number of other rare and threatened species, including mammals such as Amur tigers (*Panthera tigris*), which search for prey in the mixed-forest river bottoms, and Asiatic black bears (*Ursus thibetanus*), which den in old-growth tree cavities found there. Rare raptor species that depend on this

ecosystem include Hodgson's hawk-eagle (*Spizaetus nipalensis*) which nest on the fringes of these river valleys, and Steller's sea-eagles (*Haliaeetus pelagicus*), which winter in the region to feed on salmon carcasses. Therefore, conservation of Blakiston's fish owls directly translates into protection of these and other animals and their habitats, which suggests that Blakiston's fish owls may effectively serve as a flagship species for this increasingly threatened ecosystem, and the multitude of other species that rely on it.

Our primary goal is to develop a Blakiston's fish owl conservation plan for Primorye, Russia. This goal will be achieved by (1) developing an understanding of the owl's resource selection, (2) mapping Primorye to indicate areas of high Blakiston's fish owl probability-of-use, and (3) formulating conservation recommendations for this impressive raptor. We tagged owls with VHF and GPS transmitters to collect data on movements and resource use, and will utilize the probability-of-use map to identify Blakiston's fish owl hot spots in Primorye, thus focusing our species conservation and habitat management efforts. Finally, we will use these data to guide the development of a species conservation plan to promote the establishment of protected areas, and managed use of riparian zones by the logging industry.

Secondary project goals are (1) scientific capacity building, and (2) conservation awareness. We will increase scientific capacity in Primorye by training a cadre of Russian scientists and field assistants in advanced wildlife study techniques. We will meet our goal of conservation awareness by increasing public knowledge of Blakiston's fish owls on local, national, and international levels. By meeting these goals, we will simultaneously publicize the conservation problems facing Blakiston's fish owls, and provide the necessary local skill base to address them.

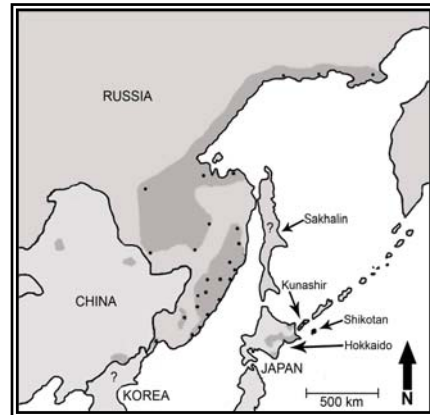


Figure 1. Blakiston's fish owl range is shown in grey. Confirmed detections are represented by black dots.

PROGRESS & ACHIEVEMENTS

In order to objectively evaluate our progress and achievements, at project conception we identified three key components to a successful study: research, capacity building, and conservation awareness. Each component had a list of targets directly related to one of our research objectives, anticipated outcomes, or conservation aims. Although this project has not yet been completed, data collection is almost finished and we can begin to evaluate our progress.

Research: The primary goal of this project is to develop a Blakiston's fish owl conservation plan for Primorye, Russia. During this reporting period (September 2009-March 2010) we made significant steps towards meeting our first primary objective: to develop an understanding of Blakiston's fish owl resource selection.

In September 2009, using funding from National Birds of Prey Trust, we purchased high-resolution, multispectral SPOT Image satellite imagery. This imagery is an essential component in our understanding of fish owl resource selection as it will be used to develop a high-quality habitat map. In winter 2009, we captured eight fish owls and outfitted them with GPS datalogger backpacks. These were the owls we targeted for recapture in winter 2010. In February and March 2010 we captured eight fish owls (Fig. 2), although only six of them were recaptures of 2009-tagged birds. The seventh fish owl was a two-year old (untagged) juvenile, and the last fish owl was a young adult. We removed dataloggers from all six target owls, and gave three of these owls new dataloggers (we only had three new dataloggers on hand). Two of the eight target owls, as of April 2010, have not yet been recaptured (see **Difficulties Encountered**, below). Capture of these remaining two birds will be attempted in April and May, 2010. GPS data were downloaded from four of the six recaptured owls (again, see **Difficulties Encountered**). Data quantity ranged from 128-550 locations over the course of 10-12 months (Fig. 3).

These data represent the first year-round movements ever collected from Blakiston's fish owls. Interestingly, these data reveal that fish owls do not use the same habitats throughout the year. In winter and spring, when all previous fish owl research has been conducted, the species uses approximately six linear kilometers of river as their home range. In summer and autumn, fish owls expand their home range considerably, in some cases traveling more than 25 kilometers. Additionally, the upper reaches of rivers appear to be particularly important in autumn. Perhaps the fish owls are following spawning fish, such as Dolly Varden trout. This last revelation is particularly interesting for conservation, as these narrow, rocky river valleys have never before been considered important habitat for fish owls. Therefore, this discovery has important consequences in our habitat use analysis, and will influence our conservation recommendations. Once the



Figure 2. Jonathan Slaght with Katya, the Kudya female, prior to release.

habitat map has been created (by summer 2010), fish owl data points will be plotted, and resource use by this species will be defined. We anticipate completing analysis and data write-up by the end of 2010.



Figure 3. GPS locations of four fish owls on three territories.

Capacity Building: We hired six field assistants for work with fish owls during 2009-10; they learned fish owl survey techniques, prey analysis, study animal capture, restraint, and harness attachment. Training has been so successful that capture and harness attachment was done entirely by the Russian field crew in 2010, under direct supervision of project leaders.

Conservation Awareness: We wrote and published four articles related to fish owls and our work during the reporting period, both peer-reviewed and popular, and had four popular articles written about our research (see list, below). Further, we gave seven invited presentations throughout North America (Minnesota, Colorado, Nova Scotia). In addition, a documentary series titled “Wild Russia” was aired in the United

States (Discovery Channel, Animal Planet) and Europe (National Geographic Channel); the Primorye episode prominently featured some of our study animals from the Saiyon and Mineralnaya territories. For most viewers, this was their first look at a Blakiston’s fish owl. Based on the sharp increase in traffic to the Blakiston’s Fish Owl Project website following the Wild Russia program, the documentary had a positive effect.

Peer-reviewed:

1. SLAGHT, J.C., S.V. AVEDYUK, AND S.G. SURMACH. 2009. Using prey enclosures to lure fish-eating raptors to traps. *Journal of Raptor Research* 43: 237-240 ([link](#)).

Popular:

1. SLAGHT, J. 2009. Ghost Owl. *Wildlife Conservation Society Members' News*. September-October 2009:2-3 ([link](#)).
2. SLAGHT, J.C. 2009. Night fishing Primorye’s wild rivers: a portrait of the Blakiston’s fish owl. *Russian Conservation News* 44:22-26 ([link](#)).
3. SLAGHT, J.C. 2009. Winter Fishing. *Vestnik Terneya* 49:11. 02 May 2009. (in Russian, [link](#))
4. SLAGHT, J.C. 2009. Chasing a giant. *Wildlife Conservation* 112(2):44-49. ([link](#))

Media Attention:

1. Our work was featured in an issue of Oceanography Magazine that was distributed at the Copenhagen Climate Summit in late 2009. Full citation and link: [Dybas, C. 2009. Russian Roulette: To Catch a Fish Owl. *Oceanography* 22:12-13.](#)
2. The in-flight magazine for Vladivostok Air featured an interview with J. Slaght, both in English and Russian. Full citation and link: [Pankratiev, E. 2009. *American Ornithologist in Primorsky Krai. Vladivostok Air In-Flight* 4:44-47.](#)
3. A summary of the 2009 field season was outlined online by bird blogger Jim Ducey of Wildbirds Broadcasting ([link](#)).
4. Our fish owl contribution to one of the Center for Biological Diversity's projects was highlighted in a *New York Times* article on 02 January 2009 ([link](#)).

Presentations:

1. SLAGHT, J.C. AND S.G. SURMACH. 2010. Blakiston's Fish Owls in Russia. Doctoral Dissertation Research Showcase, 06 April 2010. University of Minnesota, Minneapolis, MN, USA. Invited poster presentation.
2. SLAGHT, J.C. 2009. Blakiston's Fish Owls in Russia: Conservation of the World's Largest Owl. Doctoral Dissertation Fellowship Seminar, 11 November 2009. University of Minnesota, Minneapolis, MN, USA. Invited oral presentation.
3. SLAGHT, J.C. 2009. Primorye: Land of Striped Cats, Fanged Deer, and Giant Owls. Dalhousie University. 15 October 2009. Halifax, NS, Canada. Invited Oral Presentation.
4. SLAGHT, J.C. 2009. Blakiston's Fish Owl Project 2009. Denver Zoo Conservation Night. 15 October 2009, Denver, CO, USA. Invited Poster Presentation.
5. SLAGHT, J.C. 2009. The Blakiston's Fish Owl Project. Denver Zoo. 23 July 2009, Denver, CO, USA. Invited Oral Presentation.
6. SLAGHT, J.C. 2009. The Blakiston's Fish Owl Project. Gabbert Raptor Center. 18 June 2009. St. Paul, MN, USA. Invited Oral Presentation.
7. SLAGHT, J.C. 2009. About Blakiston's Fish Owls in Russia. Roseville Area High School. 18 May 2009. Invited Oral Presentation.

FUNDING EXPENDITURES

We received £7,613 from National Birds of Prey Trust. These funds were used to purchase high-resolution satellite imagery, a video camera, and to pay field assistant salary. All funds were spent as outlined in the grant request, except for approximately £2,149, which was reallocated from satellite imagery to field assistant salary with written permission from grant administrators. The purchased video camera was an integral part of the capture process, and was not only used to indicate when a fish owl visited our trap, but also to record fish owl behavior (Fig. 4).

DIFFICULTIES ENCOUNTERED

In 2010, we spent more time than expected at several fish owl territories (Shami, Kudya, Faata) attempting to re-capture owls tagged in 2009. Our inability to capture owls at these areas was largely due to environmental conditions. First, we usually determine where fish owls hunt (and therefore where to place our traps) based on tracks in the snow along river banks. However, there was almost no fresh snowfall from January to March 2010. Therefore we had to rely on luck to identify fish owl hunting spots, and luck sometimes requires time. Additionally, very cold nights in March (to -27°C) caused ice dams to form in the rivers, which raised the water level and flooded out our traps, making them unavailable to the owls. As a result of these factors, we ran out of time and were only able to capture six of the eight target owls. One of these uncaptured owls is a female and is presently sitting on the nest (she will be available for capture in May, once her chick fledges). The other owl, a male, is presently being sought by the Russian capture team.



Figure 4. The Kudya male searches for fish.

Of the six dataloggers we retrieved, only four contained data. The fifth datalogger had no data at all and appears to be defective, and the sixth datalogger was waterlogged due to owl-induced damage. This sixth unit has been returned to the manufacturer; they suspect that some data may still be preserved within the flash memory of the unit. As of this moment, we have GPS movement data from six fish owls, and VHF movement data from an additional three owls. Although this sample size is smaller than we had hoped for, it nonetheless represents the best fish owl dataset ever collected, and is sufficient to meet our needs.

PROJECT SUSTAINABILITY & FUTURE PLANS

We expect that by the end of 2010 we will have legitimate conservation recommendations to present to decision makers and stake holders in Primorye. We have

collected high-quality data, and we believe that our results and subsequent recommendations will be a reflection of that. As some stake holders, such as logging company TerneiLes, have already expressed interest in Blakiston's fish owl conservation, we think that our research and our results will have a legitimate impact on species conservation.

As stated in the **Progress & Achievements** section above, the Russian field crew have been successfully trained in fish owl capture, restraint, and harness attachment, and are capable of conducting future field work without direct supervision (Fig. 5). This is clear success in regards to project sustainability. Furthermore, we will be able to use and reuse our GPS dataloggers at almost no cost, as battery replacement costs are negligible. Therefore, as long as we can continue to find minimal funding to finance short capture trips, and we continue to recapture owls and retrieve dataloggers, our studies of fish owl movements can be continued indefinitely.

Four years ago we decided to learn more about this almost-unstudied species, and undertook this resource selection study. After trial and error in capture (these birds had never been captured for scientific purposes in Russia), harness attachment (backpack transmitters had not previously been used on this species; neither had GPS technology), and data collection (the owls destroyed our first-generation transmitters within months), we have developed the skills and expertise necessary to tackle more advanced aspects of Blakiston's fish owl biology and ecology. In addition to advocating for protected areas and management plans that benefit both the local communities and fish owls, we hope to expand our work to study juvenile dispersal, prey preference, population demographics, and possibly assess the viability of reintroductions to areas where local fish owl populations have gone extinct.



Figure 5. Sergei Avdeyuk, field crew leader, set to release Sasha, the Sha-Mi male.