



BOOK REVIEW

Winter Ecology of the Amur Tiger Based Upon Observations in West-Central Sikhote-Alin Mountains 1970–1973, 1996–2010, 2nd Revised Edition. A. G. Yudakov and I. G. Nikolaev. Managing Editor E. N. Matyushkin. Translated from Russian by M. Jones and J. C. Slaght. English Editors D. G. Miquelle and J. C. Slaght. 2012. Dalnauka, Vladivostok, Russia. 199 pp. \$10.99 paperback. ISBN 978-5-8044-1333-1.

This is a report on the most extensive snow-tracking study of Amur (Siberian) tigers (*Panthera tigris altaica*) ever undertaken. Dale Miquelle explains in the foreword that when he went to the Russian Far East in 1992 to begin the joint Russian-American tiger research project, he and the other Americans assumed that with their modern technology they would be the first to learn about the behavior and ecology of the Amur tiger. But with improved Russian language skills, he "... came to understand that any new information we gained in our studies would be because of the ground-breaking work that had gone on before us. Far from being the first, we would indeed be standing on the shoulders of giants" (p. 3). For those of us who do not read Russian, our picture of the Russian Far East is framed by Arseniev's (1941) *Dersu the Trapper* and the extensive description of tiger natural history by Heptner and Sludskii (1992). We did not know the work of giants such as K. G. Abramov, V. K. Abramov, S. P. Kucherenko, E. M. Matyushkin, E. N. Smirnov, D. G. Pikunov, Y. M. Dunishenko, and many others, including the authors of this volume. Anatolii Yudakov followed 1,285 km of tiger tracks in the winter when temperatures dipped to -50°C , through snow that by March was 50 cm deep in some places. Evgeny Matyushkin determinedly guided Igor Nikolaev through the deciphering of field logs to bring this great field effort to publication after Yudakov's tragic death in 1974.

This book is a great natural history travel adventure. It is a description of a little-known part of the world. It is an account of how science-based wildlife conservation and management is done in the Russian Far East. The stage for this story was set by the pioneering work of Kaplanov (1948). Unregulated hunting and the capture of tiger cubs to supply zoos and circuses had depleted tiger numbers in the Russian Far East to 20–30 in the first half of the 20th century. This led to a 1947 moratorium on tiger hunting and cub capture—a global first. India's moratorium on tiger hunting was 2 decades in the future. Although the book is primarily a detailed account of the behavior and ecology of the tiger in winter, it also contains some of the most detailed accounts available on the ecology and behavior of the tiger's principal prey, including red deer (*Cervus elaphus*), wild boar (*Sus scrofa*), and Siberian roe deer (*Capreolus pygargus*).

Known in the West as the Siberian tiger, these tigers do not live in Siberia. They live in temperate broadleaf-mixed-pine forest and pure deciduous forest of the Sikhote-Alin Mountains, bound on the east by the Sea of Japan and by the north-flowing Amur River on the west (although in the

last census, a few tigers are now found living on the west side of the Amur) roughly between 42 and 50 degrees north latitude (between Mt. Shasta, CA and Vancouver, BC). Yudakov and Nikolaev selected a 40-km \times 60-km study area in the western foothills of the Sikhote-Alin Mountains. They choose this area because it typified Amur tiger habitat, mostly unprotected forests where logging, hunting, and trapping take place and small villages and fields in the river bottoms dot the landscape. Working from pre-stocked base camps (usually a hunter's cabin), they searched for fresh tiger tracks and asked logging truck drivers and hunters for information. They worked alone while tracking tigers, either following separate cats or working 1 set of tracks from opposite directions. Their study area supported a tiger density of 0.2–0.3/100 km², with red deer, wild boar, and roe deer numbers totaling about 1 prey animal/km², although tigers usually hunted areas with more than 1.5 prey animals/km². For comparison, the highest tiger density recorded recently in India is more than 30/100 km² and the best areas support more than 100 potential prey animals/km².

After the book's opening chapters covering history and the authors' preliminary surveys, the tiger's paws hit the snow in Chapter 6, where the authors give a detailed description, with maps, of 34 individual tiger snow-trails they followed. Based on these tracks, the subsequent chapters include analyses of social structure and home ranges of individual tigers, daily travel rates and activity patterns, travel routes in relationship to environmental factors and anthropogenic factors, extended rest sites and shelters, characteristics and frequency of marking behaviors in varying conditions, hunting behavior and hunting success, general food habits, impacts on prey populations and relationships to competitors and scavengers, and behaviors and reactions to humans. Highlights of these analyses are coalesced in the conclusion.

This is followed by an account of the contemporary status of tigers, prey, and their habitat based on yearly standardized index winter surveys carried out from 1996 to 2010 in the same area. Compared to the early 1970s, much has changed. Restructuring of the forestry and hunting industries in the early 1990s forced many people into the forest for their subsistence. Levels of poaching have increased by a factor of 3, and there are half the numbers of red deer and wild boar. Although the number of resident tigers doubled on the study area, no litters were detected in the final 3 seasons, most probably linked to decreasing prey numbers. "And in December 2000... a tiger for the first time throughout all our years of observation attacked a human without provocation" (p. 175).

"Yudakov's Last Trip" by S. P. Kucherenko, appended to this edition, is an unsparing account of Yudakov's journey into his study area in January 1974. He was traveling alone; Nikolaev, his companion from boyhood, remained behind grieving the passing of his younger brother. Kucherenko inserts his own reflection "... people who spend a lot of time in the forest often ignore the dangers they face with every

step and, thinking of themselves as sons of the forest, think their forest mother will protect them from harm” (p. 187). So it may have been for Yudakov. Late in the day, he was cutting down a large ash for firewood; the ash split, as ash trees tend to do, and the falling tree landed on Yudakov. His next—and last—hours and days are pure terror and tragedy. As Dale Miquelle wrote to me, “He is a man I never knew, but I still feel like I miss him, and often wonder what the tiger conservation landscape in Russia would look like if he had survived.”

LITERATURE CITED

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