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KEYS TO THE JAPANESE BUTTERFLIES IN NATURAL COLOR, by Toshio Inomata. 1990. Hokuryukan, 3-21 Kanda Nishiki-cho, Chiyoda-ku, Tokyo 101, Japan. In Japanese. 64 + 224 pp., 402 text figs., 103 color plates. Gold stamped hard cover with transparent wrap, slipcased; 15.5 × 21.5 cm, no ISBN, 4800 Yen (about \$39.00 U.S.).

As the title suggests, this book provides keys to all of Japan's 256 recorded butterfly species from the order level to the subspecies level, and it does so quite thoroughly.

The book starts with a short foreword by Yoshihiko Kurosawa, former executive of the Zoology Department at the Japanese National Science Museum, a brief introduction, and a lengthy table of contents. A brief discussion of the phylogenetic placement of the order Lepidoptera within the kingdom Animalia, instructions on how to use the book's dichotomous keys, and a brief description of important anatomical features used in the keys follow. The next section contains keys to family, subfamily, tribe (for Papilionidae and Lycaenidae), and genus for all Japanese butterflies. This 49 page dichotomous key first identifies all of the world's butterfly families, elaborates upon Japan's eight butterfly families, and organizes them by subfamily. Each subfamily is split into genera, and each generic description is accompanied by a sepia tone photograph of a Japanese member of that genus. Each generic description includes the number of the plate where the species and subspecies of that genus are fully illustrated. Throughout the keys, figures showing important taxonomic features are provided. For example, photographs or line drawings of hesperiid legs are shown in all instances where they are taxonomically significant. Drawings of wing venation are presented throughout the keys, showing differences in wing venation at family, subfamily, and generic levels. The last 224 pages of the book (which are numbered separately from the first 64 pages) consist of 103 two-page color plates, an Index that lists all the Japanese butterflies in Japanese, an Index that lists each

species by scientific name, and a short Bibliography. The only mistake that I noticed among the few sections printed in Latin letters is the incorrect spelling of W. H. Howe's surname (as "How") in the bibliography.

The most impressive aspect of this book is the quality and number of color plates. Each two-page color plate consists of at least one full page of pictured specimens on the right page. The facing page contains at least one full map of Japan showing in colored outlines the distribution of each butterfly species and subspecies treated on that page. Detailed discussions of each species' and subspecies' distribution, biology, foodplants, and variations, and a separate color plate that shows rare or stray species with additional variations of the species pictured on the adjacent page, are provided in almost all plates. This smaller "color plate within the color plate" is also frequently used to explain and illustrate in more detail differences between similar species. The plates are separated by family, and then by genus. A dichotomous key to the species in each genus is provided at the beginning of each generic treatment, and is always highlighted in boxes with a pastel colored background for immediate visual access. Additional tawny colored boxes provide more detailed information on several species, such as their taxonomic history or seasonal variation. Citations of taxonomic revisions are often given in the tawny boxes. Species names are written in both Japanese characters and Latin letters. Colored blocks on the edge of each plate, which can be seen even when the book is closed, show the location of each family within the plates.

The color plates are the finest I have ever seen in a book on butterflies. They are equal to or better than the plates in the MONA series. Every specimen shown is in fresh condition, except for two stray specimens with small imperfections. Full specimens are usually shown, and wing borders are cut off at the edges of plates only on larger specimens. Each color plate contains 7 to 32 specimens, shown against a light gray-blue background. Shadows are very slight and never draw attention away from the butterflies. Even white Pierids are excellently illustrated, which is very difficult in plates photographed against pale backgrounds. The completeness of the color plates is impressive. For example, 28 specimens of *Lycæides subsolanus* Eversmann are illustrated on page 111, showing every slight variation on both the dorsal and ventral surfaces. The comprehensiveness of the color plates is indicated by the fact that 1967 specimens are pictured, and only 256 species of butterflies are known from Japan! The quality of the plates is eloquent testimony to the expertise of the Japanese in color printing, and the overall design of the book is superlative!

Inomata is to be congratulated on the impressive thoroughness and beauty of his book, which must be seen to be fully appreciated. Although written in Japanese, at a fairly technical level, the value of this book even to lepidopterists who are not fluent in Japanese cannot be understated. Even if you have little interest in the butterflies of Japan, this book is well worth \$39.00, just for the color plates. I recommend this book to any person with interest in Palaearctic or Holarctic butterfly fauna.

ANDREW D. WARREN, *Department of Entomology, Comstock Hall, Cornell University, Ithaca, New York 14853.* [The assistance of Toko Morimoto in accurately reading the Japanese is gratefully acknowledged, and the comments on this review provided by Robert Dirig are sincerely appreciated.]