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A New Species of Frog of the Genus *Rana*
from Thailand

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Two adult frogs, a male and a female, clearly belonging to the *ranae liebighianae* group of Boulenger (1920) were collected several years ago in Chantaburi Province, Thailand. They constitute the first Thai record of this species group, which is mainly if not exclusively a group adapted to life in swift streams (Liu, 1950; Bourret, 1941), usually in montane areas. All have extensively webbed toes, the tips of the digits more or less swollen, depressed heads, and stout legs, and the males of most species have melanic, cornified spines at least on the inner fingers and chest. They lack the odontoids of the mandible characteristic of the *ranae kuhlianae* and *ranae grunniens* groups, the other groups of the subgenus *Rana* from tropical Asia having fully webbed toes and the tips of the digits swollen.

The Thai sample appears to represent a new species distinguished by several characters and separated from the nearest known related population (*Rana verrucospinosa* Bourret) at Bach Ma, South Viet Nam, by a distance of 700 km. Its most distinctive feature is the grouping of ventral spines in the male into small bundles, hence the specific name.

***Rana fasciculispina*, sp. nov.**

Holotype.—An adult male from Kao Soi Dao, Changwat Chantaburi, Thailand, collected July 5, 1961 by Mr. Boonak. National Center for Reference Collections of Thailand, number 513-1385.

Diagnosis.—A large member of the *ranae liebighianae* group of Boulenger; webbing complete, not emarginate; tips of toes swollen to twice width of phalanges; proximal subarticular tubercles of fingers twice as long as distal ones (Fig. 1); back (Fig. 2) with numerous short, thick ridges, none as long as diameter of eye, interspersed with circular warts; male with ventral spines in groups of 5-10 (Fig. 3), clusters distributed across chest and throat.

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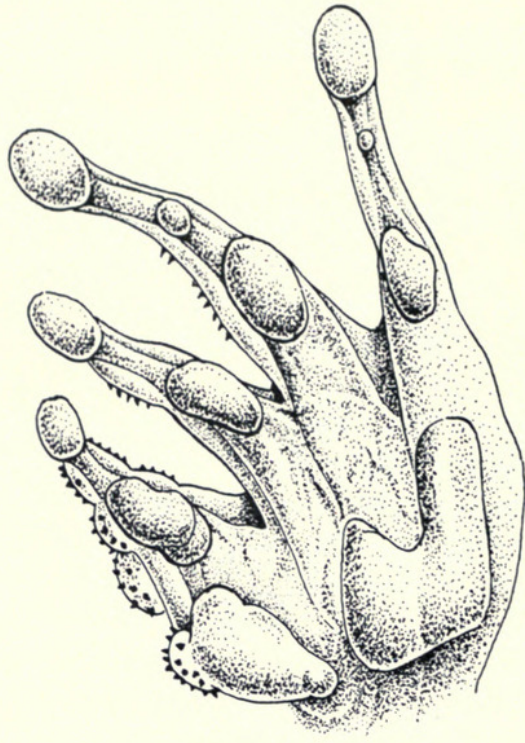


FIG. 1. Ventral surface of hand of male holotype of *Rana fasciculispina*, sp. nov.

Description of holotype.—Habitus robust; limbs heavy but long; head as wide as long; snout obtusely pointed, shorter than eye; nostrils midway between eye and tip of snout; canthus obtuse; lores oblique, weakly concave; interorbital narrower than upper eyelid; tympanum visible but obscure, about two-fifths eye diameter; distance between eye and tympanum about twice diameter of tympanum; vomerine teeth in short, slightly oblique groups between and just behind choanae, separation of groups shorter than their distance from choanae.

Tips of fingers distinctly swollen; first longer than second; both margins of second and third fingers with narrow fringes of skin; subarticulate tubercles conspicuous, proximal ones elongate and twice length of distal ones on third and fourth fingers; prepollex projecting strongly, but not extending beyond base of proximal subarticular tubercle of first finger.

Tips of toes swollen into round disks twice width of phalanges; all toes completely webbed to disks, web not emarginate; subarticular tubercles prominent, proximal ones elongate but not as long as those of fingers; inner metatarsal tubercle not compressed, length about

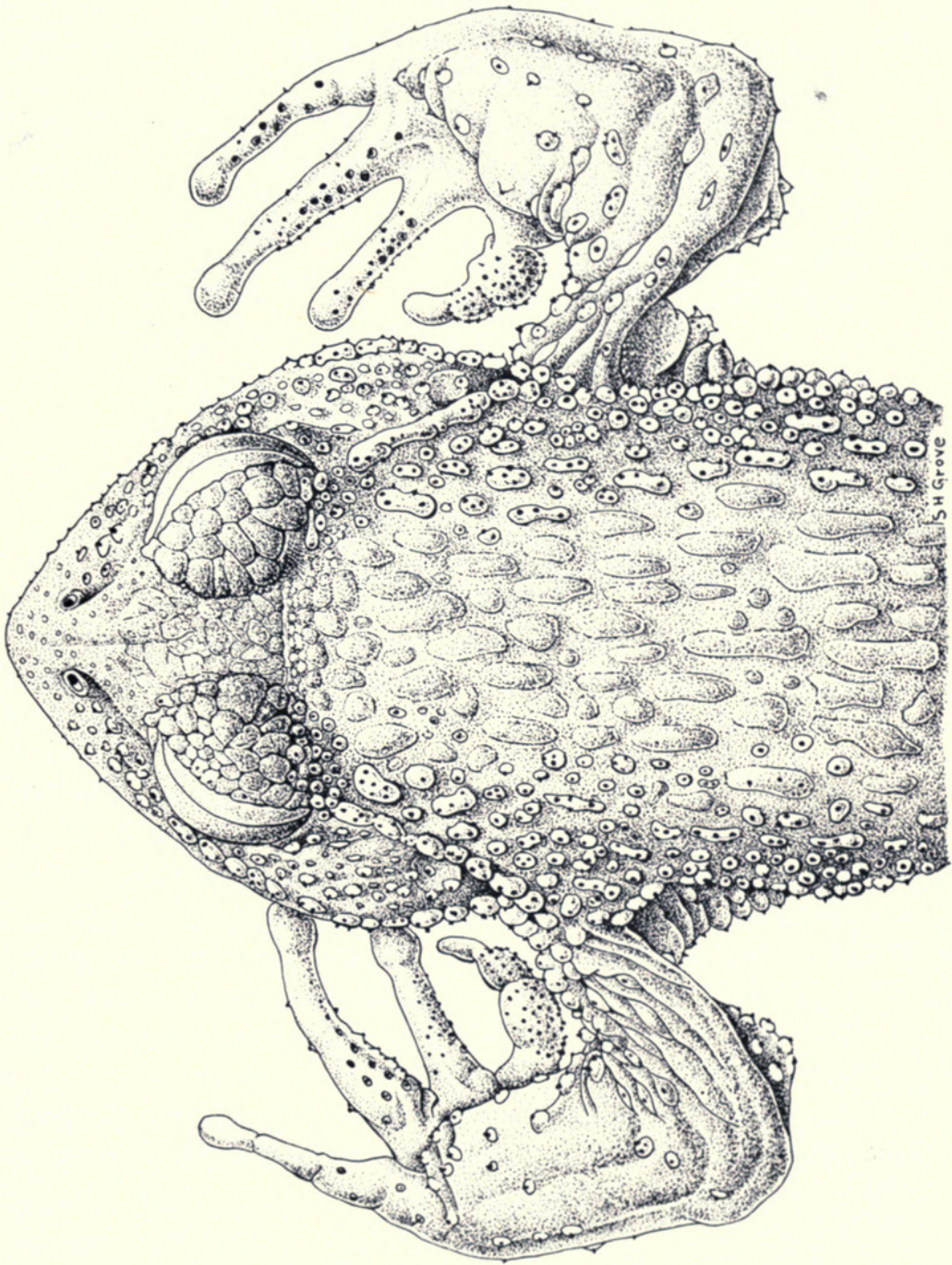


FIG. 2. Dorsal view of anterior half of male holotype of *Rana fasciculispina*, sp. nov.

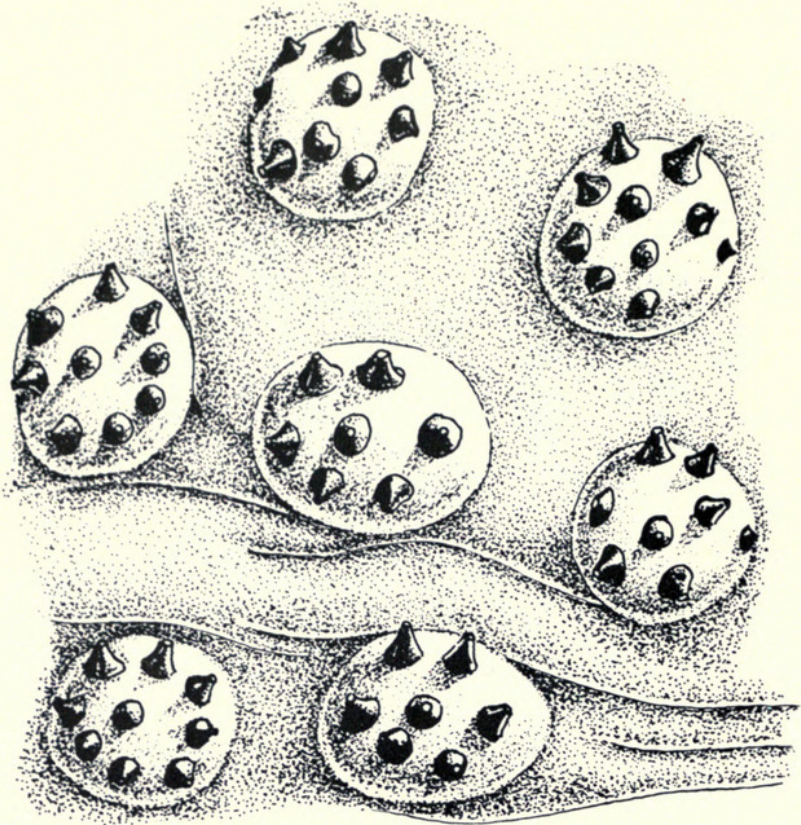


FIG. 3. Clusters of spines in mid-pectoral region of male holotype of *Rana fasciculispina*, sp. nov.

60 per cent length of first toe; no outer metatarsal tubercle; first and fifth toes with flaps of skin; an obscure, short tarsal ridge.

Back with numerous short, thick ridges, none as long as diameter of eye, interspersed with numerous circular warts; eyelids with circular tubercles; forehead smooth; sides of head and body with round warts; dorsal surfaces of limbs with round tuberosities mostly arranged in longitudinal series; ventral surfaces smooth except for secondary sex characters.

Male with circular vocal sac openings in floor of mouth; forearm enlarged; inner surface of forearm, entire chest, and throat with circular whitish tubercles each bearing 5 to 10 strong black spines; dorsal surface of prepollex and first finger with strong black spines not grouped into circular clusters, spines of prepollex separated from those of first finger by an area of smooth skin; dorsal surfaces of second, third, and fourth fingers with black spines; density and size of spines decreasing from first to fourth fingers; one to six black spines on warts and tubercles of sides of head and body; warts and ridges of back generally free of spines.

Color in preservative brownish with obscure darker spots on back.

Paratype.—Field Museum of Natural History 171309, an adult female collected at same time and place as holotype. The paratype contains a few enlarged, non-pigmented ova. It agrees in most respects with the holotype except in the secondary sex characters. The ridges on the back are not as elevated as those of the male, while the dorsal spotting is more conspicuous.

Measurements (in millimeters)	Holotype	Paratype
Snout-vent	106	104
Head width	43	41
Head length	42	40
Diameter of tympanum	4	4
Diameter of eye	14	14
Eye-tympanum distance	8	7
Interorbital width	7	7
Width of upper eyelid	9	10
Tibia	53	49

Comparisons.—*Rana fasciculispina* differs from all previously described species of *Rana* in the grouping of the ventral spines into small clusters distributed across the breast in the male. In other members of the ranae liebigianae group the spines are single, whether spread across the chest or restricted to its lateral portions (see Boulenger, 1920). In two characters, *R. fasciculispina* differs from all other species of the ranae liebigianae group except *R. mediolineata* Bourret: (1) The tips of the toes are swollen to twice the width of the phalanges. In other species of this group, the tips of the toes are either not (e.g., *phrynoides*) or only slightly (e.g., *boulengeri*, *spinosa*) wider than the phalanges. (2) The proximal subarticular tubercles are elongate and those of the fingers are at least twice the length of the distal ones. In the other species the proximal subarticular tubercles are either circular or not much longer than the distal ones.

Rana fasciculispina differs from *mediolineata* and resembles *spinosa* and *boulengeri* in the sculpturing of the dorsal skin. In *mediolineata*, according to the original description and figures (Bourret, 1937), the ridges of the back and sides are very narrow and a number of them are longer than the diameter of the eye. In contrast, the ridges of *fasciculispina*, *spinosa*, and *boulengeri* are thick and none is as long as the eye; they resemble the dorsal ridges of *verrucospinosa* figured by Bourret (1937).

Remarks.—The large, non-pigmented ova of the paratype of *R. fasciculispina* indicates that this species probably oviposits under large rocks in swift streams as does *R. Boulengeri* (Liu, 1950).

The area of distribution of this species group lies more than 1,000 km. north of the type locality of *R. fasciculispina*. The group is known from South and Southwestern China (*phrynoides*, *spinosa*, *yunnanensis*, *Boulengeri*), northern India and Sikkim (*liebighi*, *gammei*, *annadalei*), northern Burma (*feae*), and North Viet Nam north of 21°N (*yunnanensis*, *verrucospinosa*, *spinosa*, *phrynoides*, and *mediolin-eata*). Only one previously recorded locality, at Bach Ma (16°30'N), South Viet Nam (Bourret, 1941), for a species of this group lies south of the main range.

The Thai locality is in a small range of low mountains separated by about 50 km. from another range that runs northward toward Laos and eastward along the Thai-Cambodian border before turning northward again toward Laos and northern Viet Nam. Presumably, the species group has used these montane corridors to reach southeastern Thailand. Probably additional undiscovered populations exist in the streams of these mountains in Thailand and Laos.

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