A NEW SPECIES OF EUP SOPHUS
(ANURA: LEPTODACTYLIDAE) FROM
CONTULMO, NAHUELBUTA RANGE,
SOUTHERN CHILE

Juan Carlos Ortiz, Héctor Ibarra-Vidal, and J. Ramón Formas

Abstract. — Eupsophus contulmoensis, a new species of leptodactylid frog is
named from the locality of Contulmo, Nahuelbuta Range, Southern Chile. This
species is distinguished from its congeners by the dark-purple dorsum and the
bright yellow coloration of its belly. This frog displays lumbar amplexus and
is known only from the type locality.

The Nahuelbuta Range is that part of the
Chilean Coastal Range bounded to the
northeast by the Biobio river and to the
south by the Imperial river (see Fig. 1). This
mountainous area of southern Chile is ap-
proximately 175 km in length and reaches
1530 m at its greatest elevations (Alto de
Nahuelbuta). The Nahuelbuta Range is cov-
ered by Nothofagus temperate forest and at
elevations of more than 1000 m the conifer
Araucaria araucana is present.

In this area three endemic anuran species
are found (Telmatobufo bullocki, Alsodes
vanzolini, and Alsodes barrioi) (Schmidt
1952, Formas 1981, Veloso et al. 1981). Nonendemic species include: Bufo rubro-
punctatus, Pleurodema thaul, Rhinoderma
darwinii, R. rufum, Hylorina sylvatica, Ba-
trachyla leptopus, B. taeniata, Eupsophus
roseus, and E. vittatus.

The Nahuelbuta Range shows a high de-
gree of human-induced disturbance (pine
groves of Pinus radiata) and little original
forest remains. One of these areas is the
Natural Monument of Contulmo (37°02'S;
78°12'W), where a series of herpetological
collections were made between 1986 and
1987. As a result of this fieldwork a new
species of frog of the genus Eupsophus was
collected.

Eupsophus contulmoensis, new species

Holotype. — MZUC (Museo de Zoología,
Universidad de Concepción, Chile) 17141,
adult female collected by Hector Ibarra-Vi-
dal, 10 Jul 1987 at Contulmo, Malloco
Province, Nahuelbuta Range, alt. 700 m, 15
km W (by road) of Purén, Chile (Fig. 1).

Paratypes. — Four adults (MZUC 17142,
17145, 17148, 17149) and one subadult
(MZUC 17144) collected at the type loca-
ality.

Diagnosis. — A medium-sized species of
Eupsophus (34.0–42.5 mm SVL), distin-
guished from its congeners (E. roseus, E.
migueli, E. calcarius, E. insularis and E.
vittatus) by the dark purple dorsal pigmen-
tation and bright yellow belly; upper part of
the iris bronze-yellow in life and inner pal-
mar tubercle prominent.

Description of adult (based on five fixed
specimens). — Head slightly wider than long.
Snout rounded in dorsal and lateral view,
canthus rostralis concave, loreal area slight-
ly concave, nostrils located laterally, at
middistance between snout tip and orbit;
eye length greater than distance between eye
and nostril; interorbital distance smaller
than eye length but greater than internarial
distance. Tympanic membranes present and well developed. Supratympanic fold absent. Tongue round, notched at tip. Choanae rounded, dentigerous processes of vomers lying below the choanae; each process bearing five or six sharp teeth.

Forelimbs slender, first finger equal in length to second, third finger much longer than fourth; digital length in decreasing order 3-4-2-1. Palmar webbing absent; tips of fingers rounded and slightly protuberant. Inner palmar tubercle prominent; outer palmar tubercle ovoid and well developed; subarticular tubercles rounded and moderate in size; supernumerary palmar tubercles absent. Toes long, slender; tips of toes round; third and fifth equal in length; toes in decreasing order of length 4-(3,5)-2-1. Inner metatarsal tubercle ovoid and prominent; supernumerary tubercles absent; outer metatarsal tubercle tiny. Rudiment of web between toes.

Anal opening rounded and directed postero-ventrally at dorsal level of thighs.

Dorsal and ventral skin smooth. Two faintly marked folds extending from posterior part of eye to the midlateral part of body.

Pectoral girdle arciferal; omosternum cartilaginous with short thin stem; tip sharply acute; sternum rectangular in shape with slight median constriction, its tip rounded and almost completely calcified. External measurements are shown in Table 1.

Color and color patterns.—In life dorsal ground color of head and body dark purple, two specimens (MZUC 17142, 17148) with yellow vertebral line (Fig. 3); dorsal limb surfaces dark purple with small yellow irregular spots; throat dark brown with minute irregular yellow spots; ventral surface brown and marbled with yellow; two specimens (MZUC 17141, 17144) with immaculate bright yellow abdomen; ventral surface of limbs with yellow irregular spots; yellowish irregular marks on side of head and body; upper part of iris bronze-yellow.

In alcohol dorsal surfaces dark brown and
Table 1.—Measurements of the type series of *Eupsophus contulmoensis* (mm).

<table>
<thead>
<tr>
<th></th>
<th>Holotype</th>
<th>MZUC 17144</th>
<th>MZUC 17145</th>
<th>MZUC 17148</th>
<th>MZUC 17149</th>
<th>MZUC 17144</th>
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<tbody>
<tr>
<td></td>
<td>female</td>
<td>45.2</td>
<td>39.4</td>
<td>43.0</td>
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<tr>
<td>Snout-vent length</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Tibia length</td>
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<td>24.5</td>
<td>23.5</td>
<td>23.4</td>
<td>21.4</td>
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<tr>
<td>Foot length</td>
<td></td>
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<td>33.3</td>
<td>30.8</td>
<td>33.8</td>
<td>31.6</td>
</tr>
<tr>
<td>Head length</td>
<td></td>
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<td>13.8</td>
<td>13.9</td>
<td>14.8</td>
<td>15.4</td>
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<td>Head width</td>
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<td>16.2</td>
<td>16.2</td>
<td>17.2</td>
<td>15.7</td>
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<td>Interorbital distance</td>
<td></td>
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<td>4.5</td>
<td>4.7</td>
<td>5.1</td>
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<td>Interanal distance</td>
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<td>Diameter of eye</td>
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<td>5.1</td>
<td>5.4</td>
<td>5.6</td>
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<td>Diameter of tympanum</td>
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<td>2.6</td>
<td>2.2</td>
<td>2.7</td>
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<tr>
<td>Eye-nostril</td>
<td></td>
<td>4.4</td>
<td>4.1</td>
<td>2.9</td>
<td>3.4</td>
<td>2.7</td>
</tr>
</tbody>
</table>

Vertebral line whitish; ventral areas brown and whitish spotted.

**Distribution.**—Known from the type locality.

**Etymology.**—The specific name of this frog is after the type locality.

**Natural history.**—The type locality, Con- tulmo, is a small natural reserve (approximately 1 km²), in the Nahuelbuta Range, where the original *Nothofagus* forest yet survives. Contulmo is situated in the mediterranean perhumid region (di Castri 1968). The annual mean temperature is 12.6°, the relative humidity is 82% and the annual mean rainfall is 1896 mm (Hajek and di Castri 1975). The following trees occur there: *Nothofagus oblicua*, *N. dombeyi* (Fagaceae), *Eucryphia cordifolia* (Eucryphiaceae), *Persea lingue* (Lauraceae), *Laurelia phillipiana* (Monomiaceae), and *Aetoxicum punctatum* (Aetoxicaceae). The climber *Lapageria rosea* (Phileseaceae) was observed on logs. Ferns (*Lophosoria quadripinnata, and Ctenitis spectabilis*) and the moss *Dendroligotrichum dendroides* were collected on the ground. During winter, frogs were collected under decaying logs and stones near streams.

The following species of amphibians were also collected at the type locality: *Eupsophus roseus, E. vittatus, Batrachyla leptopus, and Rhinoderma darwini*.

A female collected in spring (Nov 1987) had 65 white oocytes (1.14–2.28 mm diameter) in its ovaries, and a male had testes 4.6 mm in length. Mature males did not have nuptial asperities in winter, however the gular areas were darker than in the animals collected. In the laboratory inguinal amplexus was observed.

The stomach contents of two *Eupsophus contulmoensis* collected on 7 Nov 1987, were examined. Both specimens were killed just after capture. The following food items were identified: Oligochaeta (4), Aranea (3), Diplopoda (2), Coleoptera (2), Diptera (1), Collembola (1), and Formicidae (1). Two specimens collected in 5 Sep 1987 had empty stomachs.

**Comparisons**

*Eupsophus contulmoensis* is a frog of moderate size ($\bar{x} = 42.0$ mm snout–vent length) as are *E. calcaratus* ($\bar{x} = 35.1$ mm, Formas & Vera 1982), *E. migueli* ($\bar{x} = 35.5$ mm, Formas 1978), *E. roseus* ($\bar{x} = 36.0$ mm; Cei 1962), and *E. insularis* ($\bar{x} = 39.3$ mm, Formas & Vera 1982). These species are notably smaller than *E. vittatus* ($\bar{x} = 59.4$, mm Grandison 1961). *Eupsophus contulmoensis* and *E. insularis* differ in the dorsal color and in the shape of the tip of the sternum. The latter species is dark brown with yellow irregular spots on the dorsum and the sternum is truncated whereas *E.
Fig. 3. Color pattern variation in *E. contulmoensis* (not to scale). Dorsal patterns (above) and ventral patterns (below) of the specimens MZUC 17144, 17148.

*contulmoensis* is dark purple dorsally with a rounded sternum. The upper part of the iris is bronze yellow in *E. contulmoensis* and the dorsal area is unmarked, while in *E. roseus* the upper part of the iris is orange and an hour-glass shaped mark is present on its dorsum. *Eupsophus contulmoensis*, *E. migueli* and *E. calcaratus* have a similar colored upper iris (bronze yellow), but these species differ in the ventral color and pattern. The belly of *E. migueli* is wine red with irregular white spots whereas the ventral area of *E. contulmoensis* is dark brown with bright yellow irregular spots. In *E. calcaratus* the spots are also present. On the other hand the dorsum of *E. migueli* and *E. calcaratus* exhibits a typical hour-glass pattern that is absent in *E. contulmoensis*.

Acknowledgments

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