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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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Measurement of characters for batrachia

蛙类形态性状测定

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Foreword

The foreword of this standard states its proposing and administering bodies and the organizations and persons responsible for drafting it.

1 Scope

The Chinese national method for taking the body measurements of a frog. Frog farming and frog germplasm work both turn on morphology: a breeding line is described, a species is identified and a consignment is accepted or rejected on the strength of body proportions, and those proportions are only comparable if everyone measures from the same landmarks. Snout length can be taken to the front of the eye or to the front of the eye socket; head length can end at the jaw joint or at the back of the skull; tibia length can be

taken along the bone or across the folded leg. Each choice moves the ratio that a determination will finally rest on. This standard removes the ambiguity by naming twenty measurable characters and defining each one as a distance between two named points, all keyed to a single labelled figure of the animal, so that a measurement taken in one laboratory means the same in another. It establishes the terms and definitions used in the measurement of morphological characters of frogs, the measuring instruments required, the sampling, the operating procedure and the judgement of the results, and it applies to the routine measurement of frog body structure. The procedure covers the external observation of form, colour, spotting, tympanum, skin folds, warts, nuptial pads and spines, digit order, digital pads and webs; the measurement of body weight and of the measurable characters; the statistics of the character ratios that carry the comparison; the counting of the countable characters; and the dissection needed to observe the vertebral type and the internal vocal sacs. It is used by aquaculture breeders, germplasm testing stations and the inspection bodies that verify frog seed stock.

This standard establishes the terms and definitions, the measuring instruments required, the sampling, the operating procedure and the judgement of results in the measurement of the morphological characters of frogs.

This standard applies to the routine measurement of the body structure of frogs.

2 Normative references

The following documents contain provisions which, through reference in this standard, constitute provisions of this standard. For dated references, subsequent amendments (excluding corrections) to, or revisions of, any of these publications do not apply to this standard; however, parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these documents. For undated references, the latest edition of the document referred to applies.

GB/T 18654.2 Formulation of measurement for fish germplasm characters - Part 2: Sampling method.

3 Terms and definitions

The following terms and definitions apply to this standard. Each measurable character is defined as the distance between two named landmarks, and each definition refers to the numbered position of that character in Figure 1.

3.1 body length: the distance from the tip of the snout to the end of the vertebral column.

3.2 head length: the distance from the tip of the snout to the rear edge of the joint of the upper and lower jaws.

3.3 head width: the greatest distance between the jaw joints on the two sides of the head.

3.4 snout length: the distance from the tip of the snout to the front edge of the eye socket.

3.5 internasal space: the distance between the inner edges of the left and right nostrils.

3.6 interorbital space: the narrowest distance between the inner edges of the left and right upper eyelids.

3.7 upper eyelid width: the greatest width of the upper eyelid.

3.8 eye diameter: the diameter measured to the inner edge of the eye socket.

3.9 tympanum diameter: the greatest diameter of the tympanum.

3.10 forearm length: the distance from the elbow joint to the tip of the longest finger.

3.11 diameter of lower arm: the diameter at the thickest part of the forearm.

3.12 hindlimb length: the distance from the end of the vertebral column to the tip of the longest toe.

3.13 tibia length: the distance between the two ends of the tibia.

3.14 length of foot and tarsus: the distance from the tibiotarsal joint to the tip of the longest toe.

3.15 foot length: the distance from the proximal end of the inner metatarsal tubercle to the tip of the longest toe.

3.16 vocal sac: in most species of frog the male has, in the pharyngeal region, a sac-like projection formed by the expansion of the pharyngeal skin and muscle. One that can be seen externally is an external vocal sac, and one that cannot is an internal vocal sac. External vocal sacs are divided into single subgular external vocal sacs, paired subgular external vocal sacs and paired lateral external vocal sacs; internal vocal sacs are divided into single subgular internal vocal sacs and paired subgular internal vocal sacs.

3.17 finger (toe) order: the order of the fingers or toes from the longest to the shortest, written as a sequence of roman numerals, so that the sequence beginning with the third finger indicates that the third finger is the longest and, reading on, that the first finger is the shortest.

3.18 nuptial pad: a local swelling on the inner side of the base of the first finger of the male frog, present in a few species on the inner side of the second and third fingers as well, which is related to reproductive activity.

3.19 nuptial spines: the horny spines growing on the nuptial pad.

3.20 web: the skin membrane joining finger to finger or toe to toe.

Figure 1 is the schematic drawing of the measurement of frog body characters. A single frog is drawn from above with the limbs extended, and the numbered leader lines mark, on

the animal itself, each of the characters defined in this clause, together with the tibiotarsal joint, the inner metatarsal tubercle and the end of the vertebral column that serve as landmarks. The legend beneath the figure lists the numbers against the names of the characters.

4.1 Verification of measuring instruments

All measuring instruments shall have been verified by the relevant department and shall be used within the period of validity of that verification.

4.2 Length measuring instruments

The length measuring instruments are: a) a straight rule; b) a set square; c) a vernier caliper; d) a calliper gauge. The reading value required of each is stated in this clause.

4.3 Mass measuring instruments

The mass measuring instruments are: a) an electronic balance; b) a pharmaceutical balance; c) an electronic scale; d) a larger electronic scale. The sensitivity required of each is stated in this clause.

4.4 Other equipment

Dissecting instruments.

5 Sampling

Sampling shall be carried out in accordance with the provisions of GB/T 18654.2.

6.1 Observation of external form

Observe with the naked eye the body form, the body colour, the colour spots, the tympanum, the skin folds, the warts, the nuptial pads and nuptial spines, the finger and toe order, the finger and toe pads, and the presence and the degree of development of the webs between the fingers and toes, together with the other external features. Describe them accurately and record them.

6.2.1 Measurement of body weight

Blot the water adhering to the surface of the frog and weigh it on an instrument of a suitable range chosen according to the size of the animal.

6.2.2 Measurement of the measured values

Place the frog belly downwards on a horizontal and stable table top and measure the values with the calliper gauge, the vernier caliper, the straight rule and the set square,