

AmphibiaWeb Species Account Guidelines

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### I. INTRODUCTION: How to get your account published quickly

Thank you for contributing to AmphibiaWeb.org! Since our inception in 1999, AmphibiaWeb has relied on the contributions of amphibian-lovers around the world. Without your participation we could not be the reliable source of amphibian biology, conservation, and taxonomy that we are today.

Credit will be given to all authors for the sections they contribute to. As such, please provide us with the name you would like to see your work published under.

Type of information to include: Below are guidelines for what information to look for and include in your species account. Not all this information is always available, but these guidelines will help you identify what to research for and include. Additionally, if something is not on this list but strikes you as potentially useful, please include it.

Note: This is not a term paper, and we will not publish accounts that are not in our format. We will also not publish any accounts that use inappropriate literature sources (e.g., pet trade forums), or plagiarize.

Where to find information to include: With few exceptions, we only accept primary literature. This means that your information should come from peer-reviewed scientific journals. Acceptable secondary sources include the IUCN webpage (<http://www.iucnredlist.org/>) for your focal species, field guides written by experts, and local conservation websites that report current conservation measures. Most other sources are not appropriate, as we cannot confirm their authenticity. News articles are also not appropriate.

Places to start your search include BIOSYS, Web of Science, Google Scholar, and the bibliography from the IUCN webpage of your focal species. Additionally, the website, Amphibian Species of the World (<http://research.amnh.org/vz/herpetology/amphibia/>) will give you the citation for the original description of the species and any subsequent name changes. Typically, a search for your focal species at any of these sites will lead you in the right direction.

Tips to minimize time to publication:

* Check the species pick list: If you do not [sign up for a species](https://docs.google.com/spreadsheets/d/1xHtXhiIzmcOAvFkxOzivxK_iahu6wBqNmzcWcRPNuUs/edit?usp=sharing) (see end of document for full link) there is the potential that someone else will write an account on the same species. In those instances, we will try to combine the accounts and give credit to both parties; but priority is given to those who sign up. That means if you don’t cover unique information, you will not be given credit for that account.
* Avoid plagiarism: As an author, it is your responsibility to rephrase and cite your source (see example below). Morphological descriptions have a very specialized vocabulary and often you will have to use the exact terms in the article/book, but you should at least be able to rewrite the sentence. In many cases just turning the sentence from the primary literature into a grammatically correct complete sentence is enough. For example:

“The tympanum is indistinct” can be rewritten as, “The tympanum is not obvious”

* In-text citations: With few exceptions (for example the IUCN Red List website) please limit your references to primary literature. Cite all your sources of information in the body of the text, with the parentheses inside the sentence. We do not use commas in our references. For example:

*Agalychnis callidryas*, the Red-Eyed Tree Frog, is a slender, colorful, medium-sized frog. Females have a snout-vent length up to 77 mm and males up to 59 mm (Savage 2002).

Please use the following format for your in-text citations:

If your citation has a single author: (Savage 2002).

If your citation has two authors, cite them as (Duellman and Trueb 1994).

If three or more authors: (Wake et al. 2007).

In the rare event that you have two in-text citations that will appear the same, please also include the journal and/or part of the title rather than “a” and “b” to differentiate the literature. For an extreme example:

Nishikawa, K., Matsui, M. (2008). A comparative study on the larval life history in two populations of *Hynobius boulengeri* from Kyushu, Japan (Amphibia: Urodela). *Current Herpetology*, 27(1): 9-22.

Nishikawa, K., Matsui, M. (2008). A note on the clutch size and shape of egg sacs of *Hynobius boulengeri* from the Sobo-Katamuki Mountains, Kyushu, Japan (Urodela: Hynobiidae). *Current Herpetology*, *27*(1), 29-34.

Normally, both would be cited as (Nishikawa and Matsui 2008). In most cases, including the journal would remedy the situation. However, in this case, where both papers are also published in the same journal, they are respectively cited as:

(Nishikawa and Matsui 2008 Curr. Herp – Comparative Study)

(Nishikawa and Matsui 2008 Curr. Herp – Notes on Clutch)

Note: this format is for the body of the text. Please see the reference section on page 8 for how to report all your references.

How to write a good account with limited time: If you would like to write an account but have very limited time, we suggest finding a newly discovered species with only one primary literature publication. You can find the newest species (discovered after our pick list was complied) at <https://amphibiaweb.org/amphibian/newspecies.html>, but if you do this, please add the species to the species pick list with your claim.

Please note newly described species that are split from another and more widely distributed species may have information published on it from its previous name. Therefore, it is worth scanning several articles of newly published species to see how much information is reported. The less information reported, the less time consuming your account will be to write.

### II. HEADER INFORMATION

a. Genus: The first part of the species name.

b. Species: This is short for species epithet and refers ONLY to the second part of the species name.

c. Species Authority: The full citation of the paper originally describing the species regardless of if the species name has changed or if it has been rediscovered.

d. Common Name: Any names that are not scientific names. Not all species have a common/vernacular name.

e. National Status: Any threat statuses that are at the country level for your species. These are not commonly given.

f: Regional Status: Any threat statuses at a level smaller than country (e.g. State, Province, Municipality, etc). These are not commonly given.

### II. DESCRIPTION

This section covers the external structures, comparisons with other species, coloration, and intraspecific variation of adult amphibians. Larval information should be put in the “Larva” section (section V. of the guidelines). The description of eggs, egg masses, and calls should be put in the “Life History” section (section IV. of the guidelines).

It may be helpful for you to use the AmphibiaWeb glossary in this section: <https://amphibiaweb.org/education/glossary.html>

#### a. Description:

The information from this section is typically combined from sections in the primary literature titled, “Description of the Holotype”, “Variation”, and sometimes the “Diagnosis” (see our more complete description of Diagnosis below).

* Start with the body size range of each sex (if possible), in millimeters (abbreviate as mm in the account):
  + Frogs - the snout-vent length or snout-urostyle length.
  + Salamanders - the snout-vent length (sometimes also called the standard length) and total length (which includes the tail).
  + Caecilians - the total length (including the tail if one is present).
* Follow body size with external body structures, working from head to vent or tail, then describe the forelimbs, hands, hindlimbs, and feet. Include everything about external morphology (e.g., do not include teeth or tongue morphology or osteology unless those are diagnostic characters) that your research uncovers.

#### b. Diagnosis:

For our purposes, this section is a comparison of your focal species to other similar species. Unfortunately, the “Diagnosis” section in many primary sources is a list of the species’ characters, which is more appropriate for the “Description” subsection. However, there is often a comparison either in the “Results” or “Discussion” section of most species descriptions.

#### c. Coloration:

Coloration is typically described “in life” or “in preservative.” Sometimes the preservative is specified. It is vital that in your description of coloration you include what condition (live or preserved) your species is being described as colors fade or change in preservative. If both options are given, please report both. If it is unclear, please state that.

#### d. Variation:

Sometimes variation is not given, but any variation in the primary literature, excluding size ranges, should be included here. This is also the section that one should describe any existing sexual dimorphism (size can be included here as well as color and physical structures).

### III. DISTRIBUTION AND HABITAT:

Species descriptions have this in their “distribution” sections, but the information can also be found in the holotype and paratype information at the beginning of a species description. If you cannot find this in the primary literature, the IUCN Red List website will often have this information.

* First state the countries the species is found in and the specific regions of those countries when applicable
  + e.g., the Pacific coast of Costa Rica, eastern Panama, the Atlantic versant [slope] of Costa Rica.
* Then describe the habitat itself briefly
  + e.g., lowland tropical forest, premontane or montane rainforest, grassland, swamp etc.
* Include the elevational range at which the species occurs
  + e.g., 500 m or 1,200 m asl—above sea level.

### IV. LIFE HISTORY, ACTIVITY, and SPECIAL BEHAVIORS

This section is sometimes absent from the literature. Please fill it out as best as you are able. Traits that are common for all the orders are listed below and more order specific traits are broken down below that.

* Is the amphibian nocturnal or diurnal?
* Is the species common or rare?
* Where can the species usually be found in the habitat? e.g., Arboreal, terrestrial, fossorial, aquatic or semi-aquatic
* Does it associate with water bodies? If so, what type (streams, ponds/lakes, pools, etc.) and what characteristics does that body of water have?
* At what age do they sexually mature?
* When is the breeding season?
* What does reproduction look like? Does the female lay eggs or is she ovoviviparous or viviparous? If the female lays eggs, where does she lay them and do the eggs hatch as larva or are they direct-developing?
* How many eggs are in a typical clutch (usually given as a number range), and what color and size are the individual eggs?
* How long does development take, from oviposition to hatching?
* Is there parental care? If so, who performs the parental care and how do they do it? Examples of parental care include forming nests, guarding clutches, and providing nutrition to larvae.
* What do the adults eat?
* What eats them (who are the predators)? Is there any unusual anti-predator behavior?
* Do they have aposematic body coloration (warning of toxicity)?

#### a. Frogs

* Do they call?
  + Which sex of the species calls? When do they call (e.g., day/evening/night/etc.)? Where do the males call from (e.g., perches in the vegetation/trees, from cover underneath rocks/logs/leaf litter, adjacent to the water)? Do the males have different calls for territorial defense (male-male), advertisement (male-female), and courtship (male-female)? Describe the calls, including what they sound like, the frequency (Hz), pulse rate (pulse/ms), and duration.
* If the frogs are territorial, is territorial defense strictly auditory or do the males undergo physical combat and wrestling?
* What type of amplexus (the breeding position) do males use?

#### b. Salamanders

* Describe any sounds they produce.
* What is courtship behavior like for these salamanders?
* What does the spermatophore look like?
* Does metamorphosis occur? If so, is it complete or partial? Or is this species paedomorphic/neotenic (retaining juvenile morphology such as external gills, into adulthood)? If the species is paedomorphic, is it obligate paedomorphosis (unable to metamorphose under any conditions), or facultative (able to transform under some conditions)? Is this species a direct developer?

#### c. Caecilians:

Many caecilians have limited information and little life history information available. However, please describe anything you find in the literature. This may include:

* Do they display parental care?
* Do they migrate?

### V. LARVA

This section covers the external structures, comparisons with other species, coloration, intraspecific variation, life history and behavior of the larval stage (typically post-hatching and pre-adult metamorphosis). Some species do not have larvae and instead are direct-developing, hatching or being born in later stages of development.

Some direct developing amphibians are free-living as later stage larvae rather than miniature adults. If they are, please add that information in this section. If they direct develop into miniature adults, please state that then continue to the next section.

#### a. Description:

Important features, when available, to include are:

* Stage of larval description.
* Body size (preferably in ranges): Total length; body length and width; tail length, width, and height/depth. Also include fin height when applicable.
* Body shape (e.g., robust, slender).
* Head features (e.g., snout shape, nostril description, eye shape and placement).
* Gill description when applicable.
* For tadpoles:
  + Mouth parts description (e.g., keratinized beaks, an oral disc, denticles, papillae) and placement (e.g., terminal, anteroventral, ventral).
  + Spiracle description and placement (e.g., sinistral = on the left, medially = in the middle, etc.)
  + Vent description and placement (e.g., dextral = on the right) located.
  + Starting point of fins and fin shape.

#### b. Diagnosis:

Comparisons with similar larva

#### c. Coloration:

In life or in preservative

#### d. Variation:

Can include developmental variation between larval stages

#### e. Life History:

* Where can the larvae usually be found in the habitat? e.g., arboreal, terrestrial, fossorial, ponds or lakes, or streams, treeholes (phytotelmic)
* What habitat do the larvae prefer?
* How long until metamorphosis?
* What do the larvae eat?
* What predators feed on the larvae?

In Caecilians:

* Where do the larva develop (e.g., in the oviducts or in eggs)?
  + If they develop in the oviducts, how long until they become free-living?

### VI. TRENDS and THREATS

It is not unusual for this information to be missing from the primary literature. However, some primary literature will give potential threats and others will also provide IUCN Red Listing Status recommendations and justifications. If this is the case, please include all of the information, including recommended threat status in this section.

Additionally, if the species has been accessed by IUCN, you can often find trend and threat information at the IUCN Red List website ([http://www.IUCNredlist.org/](http://www.iucnredlist.org/)). Please cite the IUCN account if you refer to their information (for information on how to cite IUCN, please see the “References” section of this document). Some questions you can answer are:

* Is the population stable or declining?
* What factors might be playing a role in declines (habitat loss or fragmentation, deforestation, urbanization, agriculture, chytrid/disease, small population size, etc.)?
* Does the species occur within any protected areas (national parks, etc.)? If so, please name the protected area.
* What conservation activities or work is occurring for this species?

### VII. RELATION TO HUMANS

Describe any uses of this species by humans. In some cultures, humans associate with certain amphibian species in special ways. For instance, amphibians may be thought of as good or bad omens, exploited as a food source, used for traditional medicine, used to help acquire foods, or kept in the pet trade.

For many species, there is no information available for this section.

### VIII. COMMENTS

This is a catch-all section for information that doesn’t fit in the other categories. Below is a list of information that should be include when available:

#### a. Phylogenetic Relationships:

State if the species description is based on morphology or molecular information. For molecular information:

* + Based on genetics, include the methods of analysis (Bayesian Inference, Maximum Likelihood, Maximum Parsimony, etc) and which genes the analyses were based on.
  + If you are confused about how to interpret the phylogenetic tree, please see our [Phylogenetic Primer](https://amphibiaweb.org/taxonomy/index.html)
* Based on karyotypes, state the number, shape, and size of chromosomes. However, karyotype may also be stated when the chromosomes are more or less numerous than expected.

Examples of phylogenetic statements:

* Simple:

Maximum Likelihood and Bayesian Inference analyses were conducted using the 16S and 12s rRNA mitochondrial genes. They was found that *M. scule* is sister to *M. ature*, and together they form a clade that is sister to *M. mun* (Tu et al. 2018, Scherz et al. 2019).

Maximum Likelihood and Bayesian analyses of 16S, cytB, and ND4 mtDNA, and Rag1 nDNA, found that *T. pinicola* is most closely related to the clade composed of *T. grandis, T. omiltemi* and *T. tlaxiacus*. The next most closely related species is *T. longicaudus* (Rovito et al. 2013). However, none of the species in Rovitio et al. (2013) were named until the 2016 Parra-Olea study, which formally separated them from *T. minutissimus* (Parra-Olea et al. 2016).

Bayesian Inference and Maximum Likelihood analyses of 16S and CytB have poor resolution for *N. matama*, which forms a polytomy with *N. picadoi* and a clade compose of *N. abscondens* and *N. gamezi* (Boza-Oviedo et al. 2012). A later study using Bayesian inference and maximum likelihood analyses on 16S, CytB, and COI sequences had consistent results (Arias and Kubicki 2018).

* Complex:

*Amolops aniqiaoensis* is a member of the *A. monticola* species group (Jiang et al. 2016, Yuan et al. 2018), however it is unclear where it belongs within the group. A 2016 Bayesian Inference on COI mtDNA sequence found that *A. aniqiaoensis* was sister to *A. mengyangensis*, and together they were sister to a clade composed of *A. bellulus* and *A. nyingchiensis* (Jiang et al. 2016). This was supported by a 2020 study using Bayesian Inference and Maximum Likelihood analyses on 16S, COI, and ND2 mtDNA, but which did not include *A. mengyangensis* (Wu et al. 2020). However, a 2022 study using Maximum Likelihood on 16S mtDNA found that *A. aniqiaoensis* was sister to a clade composed of *A. adicola* and *A. monticola* with *A. mengyangensis* being more distantly related than *A. bellulus* and *A. nyingchiensis* to *A. aniqiaoensis*. This study also placed one sample of *A. aniqiaoensis* as sister to *A. konimaensis* (Saikia et al. 2022).

#### b. Etymology:

The meaning of the scientific name (e.g., for the red-eyed tree frog, *Agalychnis callidryas*, the specific epithet “*callidryas*” derives from two Greek words, *kallos*, or beautiful, and *dryas*, or tree nymph). Typically there is only information for the species epithet (second part of the name).

#### c. Synonyms:

If applicable, state names your focal species may have also been known by.

d. Other interesting information

Any other information that doesn’t fit in the other sections.

### IX. CAUSES OF DECLINE

Please bold all the causes that may be causing decline in the species.

### X. REFERENCES

In this section, please give us the full citation for all references using APA format. For primary literature, this includes all authors (in the order that they are published) with the format of last name, followed by first and middle initials, the year of publication, the title of the article, the journal it is found in, followed by the volume, issue, and page numbers. For example:

Mullally, D. P., Cunningham, J. D. 1956. Ecological relations of *Rana muscosa* at high elevations in the Sierra Nevada. *Herpetologica*, 12, 189-198.

For books, please give us the authors of the chapter (if available) in the same format as for primary literature, chapter name (if available), book title, editors, publisher, and place of publication, pages referenced. For example:

Hansen, R. W., Papenfuss, T. J. (1994). Shasta Salamander. in C. G. Thelander, (Ed). *Life on the Edge: A Guide to California's Endangered Natural Resources Volume I: Wildlife* (pp. 256-257)*.* Santa Cruz, California: Biosystems Books.

For IUCN, please copy and paste the provided “Citation” at the top of the focal species page, below the species name, and include the date downloaded.

For all other websites, please give the names of the author(s) with “last name, first name” if available, followed by the name of the website, followed by “Accessed [date you visited the site] from [the html address of the site]”.

### XI. NOTES ON TAXONOMY

Amphibian taxonomy is undergoing lots of changes and new research is keeping it in flux. This may make searching for your species difficult. You can try searching for species epithets to find older literature, but double check the family and genus names on AmphibiaWeb to ensure you are obtaining literature for the correct species. Sometimes you can even find the primary literature that led to the species name change.

You can also look up your species on the Amphibian Species of the World website (<http://research.amnh.org/herpetology/amphibia/index.php>), which is run by Dr. Darrel Frost, a retired herpetologist from the American Museum of Natural History. The site tracks most taxonomic changes in amphibians.

### XII. CONTACT INFORMATION and SUBMITTING ACCOUNTS

Once you have completed your account please upload it in a Word DOC or TXT format to:

<http://amphibiaweb.org/data/upload.html>

Please do not send PDFs of your account as we do additional edits at AmphibiaWeb before publishing.

However, please also submit all PDFs and/or images of references that you have so that we can edit your accounts more quickly.

Thanks again and if you have any questions, please feel free to e-mail an AmphibiaWeb Team member:

Michelle Koo - (AmphibiaWeb Assoc. Director) [mkoo@berkeley.edu](mailto:mkoo@berkeley.edu)

Ann Chang - (AmphibiaWeb Research Coordinator) [anntchang@berkeley.edu](mailto:anntchang@berkeley.edu)

First compilation by K.Whittaker

Updated by A. Gomez, M. Koo, 1 Dec 2014,

A. Chang, 6 Jan 2016, 24 Aug 2016, 19 Dec 2017, 3 Dec 2018, 9 Dec 2019, 24 August 2022

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### XIII. SUBMISSION CHECKLIST

Before you submit, did you:

* Fill out all sections of the account to the best of your ability?
  + Description
  + Distribution and Habitat
  + Life History, Activity, and Special Behaviors
  + Larva
  + Trends and Threats
  + Relation to Humans (often empty)
  + Comments
  + Causes of Decline
  + References
* Use in-text citations for all paragraphs and in the correct format?
* Is your account in Word DOC or TXT format?
* Do you have references to submit?
* Do you have your name, email, and affiliation on your account?

### XIV. FULL LINK ADDRESSES

The species pick list: <https://docs.google.com/spreadsheets/d/1xHtXhiIzmcOAvFkxOzivxK_iahu6wBqNmzcWcRPNuUs/edit?usp=sharing>

Uploading accounts: <http://amphibiaweb.org/data/upload.html>

AmphibiaWeb glossary: <https://amphibiaweb.org/education/glossary.html>