

**Species in the *Ex Situ* Research Rol 33 species**

Species undergoing specific applied research that directly contributes to the conservation of the species, or a related species, in the wild (this would include clearly defined 'model' or 'surrogate' species).

Species	Extinction Risk	Phylogenetic significance	Biological Distinctiveness	Threat mitigation	Husbandry Analogue	<i>Ex situ</i> research	Captive breeding	<i>Ex situ</i> research requirements
<i>Philautus femoralis</i>	Endangered (EN)	5.830924432	Aspect of biology	Threats cannot/will not	Yes	Yes	Yes	Egg/larva dessication
	Morningside and Corbett's Gap records are wrong in the GAA. Species from these locations are different/new species. Three new locations from Anslern de Silva (kalds@slt.lk) since the past review (in total 5 locations for the final/real species). Mendis Wickramasinghe - all current confirmed locations within one cluster. May qualify for CR. Very sensitive to environmental parameters which makes them very susceptible - maybe irreversible threat. Habitat disappearing with no time for mitigation. Unique breeding strategy of direct development species sticking eggs under leaves with green yolk (Mohomad Bahir publcn.) Educational value: Attractive species, colourful and reproductive biology uniqueness. Hubb. analogue for <i>P.mooreorum</i> and <i>P.popiae</i> .							
<i>Nannophrys naeyakai</i>	Endangered (EN)	15.77227163	Aspect of biology shared with <6 other species	Threats cannot/will not be reversed in time	No	Yes	No	Reproductive biology unk, tolerance to dessication and aestivation.
	Galloya National Park is an additional protected area. Unknown the status/declining because nobody works on it. Threats seems to be increasing. Species isn't effectively protected. Threats can't be changed. The biology is unknown but probably the same as the other <i>Nannophrys</i> , as are the ecological requirements. Local education awareness - only spcies occurring in the dry zone and the importance of not making fires.							
<i>Adenomus kelaartii</i>	Endangered (EN)	9.632530664	No aspect of biology known to be exceptional	Threats cannot/will not be reversed in time	Yes	No	Yes	
	German researchers published the reproduction biology (comments of being illegally collected). Restricted to pristine clean water streams. Found dead specimens with malformation. Within a protected area there are evidences of decline (Knuckles, Anslern de Silva's study site (location site for the species). Some of the protected areas suggest populations are stable. Attractive for display and good flagship species. Good analogue for <i>A. dasi</i> husbandry and education message.							
<i>Philautus lunatus</i>	Critically Endangered (CR)	5.715801419	No aspect of biology known to be exceptional	Threats unknown	No	Yes	No	Reproductive biology and ecology.
	Known from more than one specimen in the type locality. This is under threat. Further locations outside protected areas. No data on population.							

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<i>Philautus nemus</i>	Critically Endangered (CR)	6.318601036	No aspect of biology known to be exceptional	Threats unknown	No	Yes	No	Reproductive biology and ecology.
				At least 3 locations in two different districts in the new distribution. But the populations are very small. We don't understand really the threats, more research is necessary. No data on population size.				
<i>Philautus poppiae</i>	Critically Endangered (CR)	5.830924432	No aspect of biology known to be exceptional	Threats unknown	No	Yes	No	Reproductive biology, life history, climate tolerance, cause of malformations.
				Handapan Ella plains protected. Sympatric with <i>P. ocellatus</i> . Records of individuals with malformations (Madhava Meegaskumura and Mendis Wickramasinghe). Additional threats:drought. But generally the threats are unknown and require more research about it. Pretty display frog				
<i>Nannophrys marmorata</i>	Critically Endangered (CR)	15.77227163	Aspect of biology shared with <6 other species	Threats are reversible in time frame	No	No	No	
				Record of 21 dead specimens in one location (Knuckles, Pitawala Pathana). Record of another local extinction (3 years ago) owing to Forestry Department habitat modifications (Mohomad Bahir knows the record site - goodwillserve@gmail.com) but apparently has been recorded recently (wet season). Easy to reverse the threat (return the rocks back and protect the the microhabitat). In situ work is possible to reverse the threats. Tadpoles with semi-terrestrial behaviour; living on wet rock films (only a few species have this adaptation). There is a tourism development that use the frog as an attraction but it's not dependant on the frog. Educational potential: uniqueness of the tadpoles, Knuckles area should be using the species as a flagship to protect them and the habitat.				
<i>Polypedates eques</i>	Endangered (EN)	5.960530454	No aspect of biology known to be exceptional	Threats unknown	No	Yes	Yes	Clinical trials for effect of cestode parasitisation.
				Possible the Knuckles populations are a different species. Concerns related with effects of parasitisation on the species (Anslem de Silva -kalds@slt.lk).				
<i>Microhyla karunaratnei</i>	Critically Endangered (CR)	17.05770166	No aspect of biology known to be exceptional	Threats are reversible in time frame	No	Yes	No	Reproductive biology unk and larval ecology.
				Disagreement between possibility of reversing the threats in time. Sites where it is found are ecologically very different. Anslem de Silva- has recorded this spp. in long cultivated plantations but currently no clear understanding of stability of populations. Propose need for research to continue monitoring populations inhuman modified habitats (Anslem de Silva - kalds@slt.lk).				

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<i>Philautus macropus</i>	Critically Endangered (CR)	5.715801419	No aspect of biology known to be exceptional	Threats are reversible in time frame	No	Yes	No	Life history, reproductive biology and temperature tolerance.  Highland frog living on the peaks. Its believed the area of occupancy is bigger. Potentially downlist to Endangered.
<i>Philautus ocularis</i>	Critically Endangered (CR)	5.715801419	No aspect of biology known to be exceptional	Threats are reversible in time frame	No	Yes	No	Climate tolerance and reproductive biology.  Species could be affected by climate change.
<i>Philautus simba</i>	Critically Endangered (CR)	6.318601036	No aspect of biology known to be exceptional	Threats are reversible in time frame	No	Yes	No	Reproductive biology/life history.  High elevation species.
<i>Philautus asankai</i>	Endangered (EN)	5.857904874	No aspect of biology known to be exceptional	Threats are reversible in time frame	Yes	No	Yes	Species is dispersing into human modified habitats. Good analogue for breeding <i>P. hoffmanni</i> . Good display species (colourful and display during the day).
<i>Philautus limbus</i>	Endangered (EN)	5.678051609	No aspect of biology known to be exceptional	Threats are reversible in time frame	No	Yes	No	Reproductive biology and ecology.  Different colour varieties shown to be one species by genetic work (Madhava Meegaskumbura - madhava_m@mac.com). Found throughout southwestern hills but in one locality after 5 days of survey only one specimen was found.
<i>Philautus mooreorum</i>	Endangered (EN)	5.830924432	No aspect of biology known to be exceptional	Threats are reversible in time frame	No	Yes	No	Reproductive biology and climate tolerance.  Multiple locations in Knuckles Peaks but doesn't effect overall occurrence. Climate change issues affecting the species too.
<i>Philautus pleurotaenia</i>	Endangered (EN)	5.857904874	No aspect of biology known to be exceptional	Threats are reversible in time frame	Yes	Yes	No	Life history  Two new locations to add in the distribution (total of four) - only known protected area frogs are actually found outside. Good display spp as colourful. Husbandry analogue for <i>P. hoipolloi</i> .

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<i>Philautus tanu</i>	Endangered (EN)	5.857904874	No aspect of biology known to be exceptional	Threats are reversible in time frame	No	Yes	No	Life history/reproductive biology - smallest Philautus (frog?)
All sites are protected, though a forest edge species - see draft Red List Assesment.								
<i>Philautus zorro</i>	Endangered (EN)	5.830924432	No aspect of biology known to be exceptional	Threats are reversible in time frame	Yes	No	Yes	
New threat domestic/feral cats. Husbandry analogue for <i>P.cuspis</i> .								
<i>Ramanella palmata</i>	Endangered (EN)	19.26718839	No aspect of biology known to be exceptional	Threats are reversible in time frame	No	Yes	No	Reproductive biology unk.
Lead contamination of water a new threat, blowing in from the cities and pesticides.								
<i>Nannophrys ceylonensis</i>	Vulnerable (VU)	15.77227163	Aspect of biology shared with <6 other species	Species is effectively protected	Yes	Yes	No	Reprod biology unk, tolerance to dessication and aestivation.
Found in several protected areas and in one of them the threats could be reversed. No evidence of declining inside the protected areas. Tadpoles with semi-terrestrial behaviour; living on wet rock films (only a few species have this adaptation). Analogue for <i>N. marmorata</i> . Educational value: uniqueness of the tadpoles, impact of hydrological initiatives, resistance to dry conditions.								
<i>Philautus microtypanum</i>	Endangered (EN)	5.678051609	No aspect of biology known to be exceptional	Species is effectively protected	Yes	Yes	Yes	Climate tolerance
Multiple locations (more than 10) have been recorded since the last review. Widespread and consider to review the Red List. Highland specialist. Analogue species for <i>P.steineri</i> .								
<i>Philautus mittermeieri</i>	Endangered (EN)	5.857904874	No aspect of biology known to be exceptional	Species is effectively protected	Yes	Yes	No	Reproductive biology and ecology.
Forest generalist from the lowlands. Known from diverse locations now. Common in some locations in southwest. Husbandry analogue for <i>P.decoris</i> .								
<i>Philautus reticulatus</i>	Endangered (EN)	5.715801419	No aspect of biology known to be exceptional	Species is effectively protected	Yes	No	No	
Common in lowland rainforest but in restricted places. Good analogue species for <i>P. papillosus</i> . Educational value: canopy species and largest Philautus species in Sri Lanka. Displays well.								

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<i>Philautus schmarda</i>	Endangered (EN)	5.857904874	No aspect of biology known to be exceptional	Species is effectively protected	Yes	No	Yes	
								There is a larger distribution than is reported in GAA (Mohomad Bahir - goodwillserve@gmail.com). Husbandry analogue for two new <i>Philautus</i> spp. Unique spiky appearance.
<i>Philautus viridis</i>	Endangered (EN)	5.830924432	No aspect of biology known to be exceptional	Species is effectively protected	Yes	No	Yes	
								Protected areas Agra Bopath, Horton Plains, Peak Wilderness (Mohomad Bahir - goodwillserve@gmail.com). More locations have been recorded outside the protected areas - forest and anthropogenic sites. Husbandry analogue for <i>P.stuarti</i> . Common, large colourful.
<i>Polypedates longinasus</i>	Endangered (EN)	5.960530454	No aspect of biology known to be exceptional	Species is effectively protected	Yes	No	Yes	
								Widespread in the southwest, common and locally spread even to gardens. Husbandry analogue for <i>P.fastigo</i> .
<i>Philautus hallidayi</i>	Vulnerable (VU)	5.857904874	No aspect of biology known to be exceptional	Threats are reversible in time frame	No	Yes	Yes	Tolerance to insecticides etc
								Located along stream beds of tropical forest. Very uncommon in small sites. Educational value: in a large display exhibit of amphibians it would be a good example for rock/camouflage species and unique lifestyle on rocks.
<i>Ramanella nagaoi</i>	Vulnerable (VU)	19.26718839	No aspect of biology known to be exceptional	Threats are reversible in time frame	Yes	No	No	
								There are several new locations recorded since the last review (even in lowlands). Approximately 10 new locations. Locally very common. Populations depend a lot on the availability of tree holes in the forest. There is competition with tree breeding crab for the tree holes. If there is not logging the habitat is good for them. Contact person Madura de Silva (sampathgwlc@yahoo.com). Pilot study of creating artificial holes for breeding. Studies running on tadpole feeding. Commensalism between a tarantula and the frog (debris of the spider feed the tadpoles). Analogue species for <i>R. palmata</i> . Educational value: easy to display the eggs and tadpoles therefore an opportunity to demonstrate the breeding biology and an example of conservation intervention.
<i>Ichthyophis glutinosus</i>	Data Deficient (DD)	15.65622821	No aspect of biology known to be exceptional	Species is effectively protected	Yes	No	Yes	
								Husbandry analogue for <i>I.pseudangularis</i> and <i>I.orthoplicatus</i> . Education - explanation that its an amphibian, amphibian classification, one of first speceis described in Sri Lanka.

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<i>Philautus alto</i>	Vulnerable (VU)	5.830924432	No aspect of biology known to be exceptional	Species is effectively protected	Yes	No	Yes	
				Being bred in captivity. Good analogue for breeding species of highland <i>Philautus</i> .				
<i>Polypedates cruciger</i>	Least Concern (LC)	5.960530454	No aspect of biology known to be exceptional	Threats unknown	Yes	Yes	Yes	Helminth parasitisation and fly infestation of day-produced foam nests.
				Parasitic flies and helminths affecting the nests, deformities recorded. Mating time apparently moving to early morning instead of night - published work. Husbandry analogue <i>P.fastigo</i> and <i>P.longinasus</i> . Large foam nesting tree frog - easy to keep.				
<i>Philautus abundus</i>	Least Concern (LC)	5.678051609	No aspect of biology known to be exceptional	Species does not require conservation action	Yes	No	No	
				Good analogue species for <i>Philautus</i> genus in general esp. <i>P.procax</i> . Good for exhibit species too, large and colourful.				
<i>Philautus hoipolloi</i>	Least Concern (LC)	5.857904874	No aspect of biology known to be exceptional	Species does not require conservation action	Yes	No	No	
				Educational value: very colourful species and ideal for display exhibits. 12 colour morphs. Husbandry analogue for <i>P.pleurotaenia</i> .				