

A framework for evaluating the effectiveness of conservation attention at the species level

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SUPPLEMENTARY MATERIAL 1 List of the 35 species assessed by respondents.

Chinese giant salamander *Andrias davidianus*
Mist belt moss frog *Anhydrophryne ngongoniensis*
Cave squeaker *Arthroleptis troglodytes*
Bactrian camel *Bactrianus ferus*
Hirola *Beatragus hunteri*
Aders' duiker *Cephalophus adersi*
Short-tailed chinchilla *Chinchilla brevicaudata*
Seychelles sheath-tailed bat *Coleura seychellensis*
Black rhinoceros *Diceros bicornis*
Monito del monte *Dromiciops gliroides*
Asian elephant *Elephas maximus*
Long-eared jerboa *Euchoreutes naso*
Hewitt's ghost frog *Heleophryne hewitti*
Red slender loris *Loris tardigradus*
Black warrior waterdog *Necturus alabamensis*
Pygmy slow loris *Nycticebus pygmaeus*
Yellow-tailed woolly monkey *Oreonax flavicauda*
Red Hills salamander *Phaeognathus hubrichti*
Vaquita *Phocoena sinus*
Sperm whale *Physeter macrocephalus*
Ganges river dolphin *Platanista gangetica*
Javan rhinoceros *Rhinoceros sondaicus*
Darwin's frog *Rhinoderma darwinii*
Chile Darwin's frog *Rhinoderma rufum*
Golden-rumped elephant-shrew *Rhynchocyon chrysopygus*
Volcano rabbit *Romerolagus diazi*
Hispaniolan solenodon *Solenodon paradoxus*
Somuncura frog *Somuncuria somuncurensis*
Gardiner's Seychelles frog *Sooglossus gardineri*
Seychelles palm frog *Sooglossus pipilodryas*
Seychelles frog *Sooglossus sechellensis*
Thomasset's frog *Sooglossus thomasseti*
Mountain tapir *Tapirus pinchaque*
Malabar civet *Viverra civettina*
Lake Oku clawed frog *Xenopus longipes*

TABLE S1 The five scoring systems that were originally applied to 10 returned questionnaires, but that were not selected as the final scoring system, and the notable features of each. The Level (the state or condition of each Factor at each Stage; Tables 1–2) and Scope (the extent of a species' range across which a specified Level of a Factor is present; see text for full definitions of Level and Scope) of scores are multiplied to achieve a total score. Systems A, where Level scores are consecutive integers (0–3) and those for Scope are proportional (with a maximum possible score of 1), and C, where the maximum proportional score for Scope is 0.75, produced scores that ascribed greater weight to achieving a higher Level than achieving greater Scope. System B, where Level scores are proportional (maximum score is 1) and Scope scores are consecutive integers (0–3), showed a greater spread at the lower end amongst total scores, and thus it was easier to differentiate scores among those species with lower overall scores than in systems A and C–E. In system E, where Level scores are more widely spaced (0, 1, 4, 13) and Scope scores are proportional (maximum score possible is 0.75) the total score for a species does not decrease when a higher Level attainment of a factor is accompanied by smaller Scope.

Scoring system	Level scores	Scope scores	Notable features
A	0 = 0 L = 1 M = 2 H = 3	0 = 0 L = 0.25 M = 0.75 H = 1	Emphasis on achieving higher Level rather than Scope. H = 1 implies complete coverage of range.
B	0 = 0 L = 0.25 M = 0.75 H = 1	0 = 0 L = 1 M = 2 H = 3	Use of proportions for Level is unintuitive. More sensitive to difference between lower total scores.
C	0 = 0 L = 1 M = 2 H = 3	0 = 0 L = 0.25 M = 0.5 H = 0.75	Emphasis on achieving higher Level rather than Scope.
D	0 = 0 L = 0.25 M = 0.5 H = 0.75	0 = 0 L = 1 M = 2 H = 3	Use of proportions for Level is unintuitive.
E	0 = 0 L = 1 M = 4 H = 13	0 = 0 L = 0.25 M = 0.5 H = 0.75	Unlike A–D, species cannot score higher by having a lower Level across a greater proportion of their range (rather than a higher Level across less of the range).

TABLE S2 Worked example of the framework (Table 2) based loosely on the Hispaniolan solenodon *Solenodon paradoxus*, showing how the Level (the state or condition of each Factor at each Stage; Tables 1–2) and Scope (the extent of a species' range across which a specified Level of a Factor is present; see text for full definitions of Level and Scope) correspond to the current conservation situation, and how this translates into the total score for this species (the scoring system is described in Table 3). The scores for Level and Scope are in parentheses after the description of each Stage for each Factor. In this example many initiatives are only in place in one of the two range countries (Haiti and Dominican Republic); the highest Level attained overall is recorded and the Scope adjusted downwards accordingly. The total score in this example is 130 out of a possible total of 216 (3[stage] x 8[factor] x 9[score]), which is 13 when modified to a 20 point scale. The score by stages (input–output–outcome) is 70–64–46 out of a possible 72–72–72, which is 14–13–10 when modified to a 20-point scale (i.e. maximum score would be 20–20–20).

Factor	Stage Input*	Output*	Outcome*
Engaging stakeholders	Stakeholders identified	Meetings/forums held, partnerships formed, involving:	Partnerships active
Description of current situation	Representatives from a range of stakeholders including governments, conservation NGOs, national universities & community groups across all the range countries of the species have got together to form an agreement to engage natural resource management & wide-ranging conservation projects.		
Level	Experts, international NGOs, national/local government & other local stakeholders; e.g. local residents (H)	Experts, international NGOs, national/local government & other local stakeholders; e.g. local residents (H)	Experts, international NGOs, national/local government & other local stakeholders; e.g. local residents (H)
Scope	>75% (H)	>75% (H)	>75% (H)
Score	HH = 9	HH = 9	HH = 9
Management programme	Targets set	Identifying actions to meet targets outlined	Identified actions carried out
Description of current situation	Several conservation scientists have identified a need to create a management programme, & some individuals have outlined their suggestions for moving the species towards a more favourable conservation position, according to research that has been undertaken previously.		
Level	Informal efforts (L)	Informal efforts (L)	None/unknown (0)
Scope	<25% (L)	<25% (L)	None (0)
Score	LL = 1	LL = 1	00 = 0
Education & awareness	Education programmes planned	Education programmes delivered	Changed behaviour

Factor	Stage		
	Input*	Output*	Outcome*
Description of current situation	Awareness of the species & the anthropogenic threats it faces has been targeted through national & international press campaigns, educational talks, school visits to zoos & documentary coverage. National level efforts have only occurred substantially in one of the two range countries. The programme design has been augmented by work of a non-native education specialist who spent time training individuals in zoos & schools to deliver the programme. Whether or not the initiatives have had the desired effect has yet to be measured quantitatively, although anecdotal reports suggest more people are aware of the species now than 5 years previously.		
Level	Dedicated programmes (with in-country educators) (H)	Dedicated programmes (with in-country educators) (H)	None/unknown (0)
Scope	25–75% (M)	25–75% (M)	Not applicable
Score	HM = 8	HM = 8	0 = 0
Funding & resource mobilization	Funding/resources sought	Funding/resources secured	Long-term funding stability
Description of current situation	Most work currently being undertaken is funded through a bilateral agreement, between two conservation NGOs, lasting for 4 years. This has been used to leverage some small-scale funding for local initiatives that are underway but lacking sufficient funds. Several funding applications have been unsuccessful, & there is not currently any funding to replace the scale of the bilateral agreement when that runs out.		
Level	From at least one organization's long-term (3 years or more) commitment (M)	From one-off projects (L)	None/unknown (0)
Scope	>75% (H)	<25% (L)	None/unknown (0)
Score	MH = 6	LL = 1	00 = 0
Addressing threats	Identifying threats	Ways of addressing threats identified for:	Some solutions/mitigations being implemented for:
Description of current situation	In one of the two range countries threats have been identified, including the main pressure of predation by animals associated with humans (rats, dogs, cats), which is thought to occur as a result of human settlements expanding into the species' habitats. Better food storage, waste disposal, & raising awareness of population control of domestic pets are vital to address these threats. An awareness programme has been undertaken & discounted cost sterilization of domestic pets.		
Level	Direct threats & indirect threats (that interact with & ultimately affect direct threats) known (M)	Direct threats & indirect threats (that interact with & ultimately affect direct threats) (M)	Direct threats & indirect threats (that interact with & ultimately affect direct threats) (M)
Scope	25–75% (M)	25–75% (M)	25–75% (M)
Score	MM = 5	MM = 5	MM = 5
Communication	Species news & data collated & stored centrally	Regular updates to stakeholders (e.g.	Widely disseminated reports; acknowledged by

Factor	Stage		
	Input*	Output*	Outcome*
	(all information in one [or more] location[s])	newsletters, consultations)	recipients (e.g. cited; used to update existing information/plans)
Description of current situation	All stakeholders in the partnership have contributed their data to a central database that is available on the internet & in local libraries. Scientists working on the species are also contributing some of their data. The partnership produces a newsletter every 6 months, in all languages spoken by local stakeholders, & English. Documentaries & radio programmes also give updates. Reports produced annually by the partnership are submitted to national & local governments, & the content of these has been used by politicians to aid policy design on settlement expansion, to the benefit of the species.		
Level	Annually OR reporting in CMS/CBD/CITES reporting cycles (H)	Twice per year or more & available in species range countries' languages (H)	Reports cited by others & the information in reports is used to update other documents/plans (H)
Scope	>75% (H)	>75% (H)	>75% (H)
Score	HH = 9	HH = 9	HH = 9
Capacity building	Target people/organizations identified	Programme undertaken	Increased capacity in-country
Description of current situation	Involvement of universities in the partnership has encouraged a focus on training, although this is only the case in one of the two range countries. Specific courses have been given on GIS, presentation skills, writing funding proposals, field skills & education techniques. Host country individuals working on projects under the umbrella of the partnership receive regular appraisals to identify any further training needs. Some of those trained during the early stages of the partnership are now widening the reach of training courses by providing some training themselves. Two new conservation NGOs have been set up by individuals trained through the partnership and are now working towards conservation of the species & on wider environmental issues in the host country.		
Level	Capacity/training required by each participant (organization/people) identified (H)	Training people to train others (H)	Increased local specialized contribution to species conservation & training of local people/organizations by local people/organizations (H)
Scope	25–75% (M)	25–75% (M)	25–75% (M)
Score	HM = 8	HM = 8	HM = 8
Status knowledge	Identifying gaps in current knowledge	Undertaking work to address knowledge gaps	Improved knowledge
Description of current situation	A lack of knowledge of habitat use & other ecological factors, & uncertainty as to the species' range extent, is being addressed through several MSc & PhD projects by students from both the host countries, & other countries further afield through contacts within the partnership. Because of visa entry & research restrictions this is only currently occurring in one of the host countries. Predictive species distribution maps are now available but these are only calibrated in one host country; field data are urgently required from the other host country, to test whether the predictions can be extrapolated there.		
Level	Current knowledge reviewed & gaps identified (M)		One or more identified knowledge gap(s) has been filled (L)

	Stage		
Factor	Input*	Output*	Outcome*
Scope	25–75% (M)		25–75% (M)
Score	MM = 5		LM = 2

*H, high; M, medium; L, low; 0, not present or not applicable