

# Case study

## Salamander



**Disclaimer:** The case study presented below is for a **fictional** species and is intended for training purposes only. The information presented in this account is not intended to reflect accurate information for any real species or the current situation within any particular country. This case study must not be cited for any purpose outside of Red List training.

### Range:

The overall extent of this salamander's range extends across a wide area in central, southwestern and southern China (see figure 1), although its range is now very fragmented and is continually shrinking. Currently it is known to occur at altitudes between 100 and 1,700 m above sea level, however historically it was known to occur as high as 4,200 m.

The species has been recorded in Taiwan, however these animals are thought to be the result of introductions. An introduced population also exists in South Korea where it is known to hybridize with the native salamander species there.



**Figure 1:** Global distribution map for the species

### Population:

Historically the species was quite common. However over the last 40 years it has disappeared from many areas across its range resulting in a catastrophic decline in the global population. It is now very rare, with only 20-30 subpopulations remaining. Most of the known subpopulations appear to be small (although currently it is impossible to provide an estimate of maximum number of individuals in each of these), and there is no natural dispersal between them.

This animal is particularly difficult to find, which makes it extremely difficult to estimate population size with any accuracy. However it is likely that the population size has undergone a reduction of at least 80-90% over the last 40 years, based on evidence from trade data, observed shrinkage in its distribution, and habitat loss and degradation, along with the fact that the species was seen to be common several decades ago but is now very rare. There are no population data available to be able to estimate the rate of reduction over the last 10 years alone.

### Habitat & Ecology:

This is a very large species with some adults being recorded at more than 1 metre in length. Individuals typically reach maturity at around 5 years old. Longevity in the wild is not known for certain, but is suspected to be around 25 years. A few captive individuals have been known to survive to 50 years.

The species lives and breeds in large hill streams, usually in forested areas (100-1,700 m asl), where the animals occupy hollows and cavities under water. The salamanders spend their entire lives in freshwater. Females lay their eggs in a string in a burrow underwater that is occupied by a male. Larvae then develop in the streams. It is very sensitive to disturbance of its habitat, requiring deep water of high quality to breed successfully.



### **Use and Trade:**

The species is considered to be a delicacy and is collected for culinary and other commercial purposes (e.g., its skin is used in traditional medicine).

### **Threats:**

The main cause of the massive decline seen in this species is over-exploitation for commercial trade. Although it is now a legally protected species and captive populations exist to supply the food industry, the wild population continues to be harvested illegally. More than 50% of these salamanders currently found in commercial trade are believed to originate from the wild.

Habitat destruction (e.g., from construction of dams) and habitat degradation (e.g., water pollution from mines, stream siltation from commercial logging operations) also form a major threat to the species.

A more recent emerging threat is the introduction of captive-bred individuals (part of a well-intentioned programme to restock the wild population). Unfortunately, this process has already accidentally introduced diseases developed in salamander farms into at least three of the wild subpopulations.

### **Conservation Measures:**

The species has been listed on CITES Appendix I since 1975. In China it is a Class II state major protected wildlife species.

A national action plan has been implemented to improve wild populations through releasing captive-bred individuals, however this action plan has so far resulted in very few successes (so far less than 20 of the released captive-bred animals have successfully survived and bred with wild individuals) and it is causing some new problems for the species (e.g., introducing new diseases to the wild population). In spite of recent improvements to the action plan methodology, this process still requires further improvements, particularly regarding genetic screening and disease prevention.

This salamander occurs in over 50 nature reserves, some of which use the species as their main conservation target. Currently it is difficult to determine how successful these reserves are in terms of protecting this species.

Illegal harvesting continues to be a problem therefore it is important that this is more effectively monitored and current legislation enforced. Its natural habitat also needs more effective protection and restoration.