

Inclusion of all species of Cuban land snails in the genus *Polymita* in Appendix I

Proponent: Cuba

Summary: The genus *Polymita*, commonly known as Cuban land snails, contains six species; *P. brocheri*, *P. muscarum*, *P. picta* (the largest species of the genus), *P. sulphurosa*, *P. venusta* and *P. versicolor*. All are endemic to Cuba. They are arboreal and adapted to live on a variety of plants including coffee trees and coconut palms. Shell size is 2 to 3cm. In the wild, *Polymita* are estimated to live between 12 and 19 months, reaching sexual maturity at between nine and ten months. Clutch size varies, but is generally from 30 to 100 or more. Individuals (which are hermaphrodite) breed only once.

The shells of *Polymita* are beautiful with a wide range of colours, and are sold as handicrafts (such as necklaces) or to shell collectors.

Potential distribution maps (provided in the Supporting Statement) for each species have been calculated based on known distribution maps that have had suitable habitat that no longer exists and extirpated sub-populations removed; these provide the basis for the estimated of area of distribution provided below.

Polymita brocheri has a current distribution estimated at just over 50km² of fragmented habitat; original distribution is estimated at ca. 70km² (ca. 30% reduction). Population can reportedly be locally abundant (3.5 individuals per m²); density overall has been calculated at 0.1 individuals per m²¹. It is reported to be used domestically for fishing bait¹. Not known to be present in any protected area³.

Polymita muscarum has a current distribution estimated at ca. 3600km²; original distribution is estimated at ca. 8000km² (56% reduction). Population size is unknown. Inland populations have reportedly been greatly reduced or have disappeared and the species is now largely confined to a narrow strip of coastal vegetation where development for tourism has led to habitat fragmentation. In 22 coastal towns the population was at a very low density (0.002 to 0.3 individuals per m²). Known to occur in at least one protected area³.

Polymita picta has a current distribution estimated at ca. 2200km², marginally reduced from the estimated original distribution (ca. 2400km²). Population size is unknown. Surveys of 39 localities found an average density of between 0.01 and one individual per m²¹. Populations not targeted for harvest had higher reported densities than unexploited populations⁴ but it is not clear whether this was due to surveys taking place at different times of the year, or a genuine indication of harvesting impact. Local extinctions of populations have been reported¹. The species is not present within any protected areas³ and it is impacted by habitat modification and fragmentation, as well as pesticide use in coffee plantations which is known to have caused a mass die-off in one plantation¹.

Polymita sulphurosa is believed to have an extremely limited distribution, potential habitat within its range comprising patches totalling a few square kilometres (there are differing estimates of 1.3 to 2.5km² and ca. 7km²)^{2, 3}. Original range has been estimated at ca. 200 km² (98% reduction). Remaining habitat suffers a severe level of fragmentation. Studies conducted from 1995 to 2004 at different times of year found populations at only 25% of localities reported in the literature. Reported densities are low (estimates of 0.08 to 0.4 and 0.001 to 0.1 individuals per m²¹). An expedition in 2015 located only one individual in one patch of 1.31km². Habitat is impacted by intense land use for sugarcane agriculture, livestock grazing and subsistence crops. Depleted populations are believed to be at risk from over-harvest, continuous habitat fragmentation and incidental killings⁴. The species is not present in any protected areas³.

Polymita venusta has a current distribution estimated at ca. 8000km² and the habitat is fragmented; original distribution is estimated at ca. 20,000km² (ca. 60% decrease). Studies at three sites found population density to fluctuate greatly over time. In some areas only relict populations are found, in areas of low agricultural interest. Known to occur in at least one protected area³.

Polymita versicolor has a current distribution estimated at ca. 100km² and the habitat is fragmented; original distribution is estimated at ca. 130km² (ca. 25% decrease). Average population density at four locations has been estimated at 0.02 individuals per m²¹. Local extinctions have been reported, ascribed to changes in land use for agriculture, gypsum mining, grazing and housing development and, in one case, possibly to over-collection. Known to occur in at least one protected area³.

International exports were reported in the 1940s to be high (estimated at 0.5 million per year), and although an export ban (domestic and international trade prohibited without licenses) was introduced in 1943, trade

continued to the USA and Canada until the 1960s. In the last 20 years, only two legal exports have been recorded (55 shells and 35 live specimens). Between 2012 and 2016, Cuban Customs made 15 seizures totalling more than 23,400 shells being exported to the USA. One expert noted that the bulk of the trade goes to Europe and from there to Asia⁴.

Species that are illegally traded in the greatest numbers are said to be *P. picta*, *P. sulphurosa*, *P. versicolor* and *P. venusta*, although all species can be found in international trade, and the most attractive and varied morphs are selected for harvest¹. Most international trade is in fresh shells taken from the wild, rather than recycled from old collections^{1,4}, and the main demand now is said to be from tourists¹. Collectors will gather live snails and empty shells when harvesting¹: it is not clear what proportion of shells is from live snails. The majority of live snails are collected before they reach maturity^{1,5}.

Polymita brocheri has a distinctive shape to its shell, which differs from that of the other species. Some of the other species have distinctive patterning and colouration, making them relatively easy to identify, but in some species (e.g. *P. venusta* and *P. picta*) there is considerable intraspecific variation, so that enforcement agents may have difficulty identifying specimens to species level with confidence^{5,6}. Photographs to facilitate their identification are available.

Analysis:

Polymita sulphurosa has a very limited and fragmented range in which it appears to be rare, with evidence of marked historic decline in area of distribution. It would appear to meet the biological criteria for inclusion in Appendix I.

Polymita brocheri (52km²) and ***P. versicolor*** (99km²) have relatively small ranges. An average population density of 0.1 individuals per m² (equivalent to 100,000 per km²) has been estimated for *P. brocheri* and of 0.02 individuals per m² (equivalent to 20,000 per km²) for *P. versicolor*. Even if these species are only found at these densities in a portion of their ranges, these figures indicate that their populations are not small. Declines in population have been deduced largely on the basis of reduction in available habitat, but indications are that these declines have not been marked in the sense of Res. Conf. 9.24 (Rev. CoP16). These species would not appear to meet the biological criteria for inclusion in Appendix I in Annex 1 of Res. Conf. 9.24 (Rev. CoP16).

The three remaining species, ***P. muscarum*** and ***P. venusta***, ***P. picta***, have relatively extensive areas of distribution (2200 to 8000km²) and, on the basis of population density figures, very large populations. All are believed to have undergone population declines largely as a result of declines in available habitat, but these are unlikely to be near the guidelines in Annex 1 of Res. Conf. 9.24 (Rev. CoP16) (in this case a reduction of 50% or more in ten years, generation time being ca. one year). These species would not appear to meet the biological criteria for inclusion in Appendix I in Annex 1 of Res. Conf. 9.24 (Rev. CoP16).

All species are potentially affected by trade (which is illegal) and therefore appear to meet the trade criterion for inclusion in Appendix I.

Reviewers: R. Kramer.

References:

Information not referenced in the Summary section is from the Supporting Statement.

¹ Hernández, N. (2016) *In litt.* to the IUCN/TRAFFIC Analyses Team, Cambridge, UK.

² Perez, E., Osa, E., Matamoros, Y., Shillcox, J. & Seal, U.S. (1998) *Conservation Breeding Specialist Group (SSC/IUCN). Report of Conservation Assessment and Management Plan Workshop For Selected Cuban Species*: Cbsg, Apple Valley, Minnesota 55124, USA.

³ Mauriño, E. R. (2001) Proyecto de investigación - Ecología y conservación del molusco gasterópodo *Polymita sulphurosa* en Cuba. *Cuadernos de biodiversidad*. 7:14-17.

⁴ González, A. (2016) *In litt.* to the IUCN/TRAFFIC Analyses Team, Cambridge, UK.

⁵ Torres, M.M. (2016) *In litt.* to the IUCN/TRAFFIC Analyses Team, Cambridge, UK.

⁶ Cowie, R. (2016) *In litt.* to the IUCN/TRAFFIC Analyses Team, Cambridge, UK.