

Project Update: December 2015

The terrestrial malacological fauna of the Cuban Archipelago is almost exclusive of it, being different to the La Española. Among its principal characteristics are the high diversity of taxonomic forms (mainly genus, species, subspecies and varieties), the abundance of many of its populations, the marked endemism and microlocalisation of numerous species and subspecies (Espinosa and Ortea, 1999).

Precisely the genus *Polymita*, Beck (1837), presents a marked endemism and a very restricted distribution, characteristics that make more vulnerable the population of the species of this charismatic genus. The beauty and chromatic variability of the shells make that this species be each time more threaten.

The zoological collections represented the faunistic patrimony of a country or region are a historic natural archive of multiple utility where the preservation of specimens and its associated information are the base of taxonomic, systematic, ecological, phylogenetic, biogeography, studies of the genetic populations and conservation, are fundamental part in the knowledge of the biologic diversity and in the advance of the biologic sciences.

Precisely for a major success in our country work and thus can compare the dates taken with the historic distribution that exists in collections, in this first phase of the project we devoted ourselves to the task of work hardly to gather together all the existing information of *P. versicolor* and *P. sulphurosa* as well as doing the revision of the collections of references. Were checked the collections in the National Museum of Natural History, The Museum Felipe Poey of La Habana University and the one in the Institute of Ecology and Systematic that has the larger quantity of samples and specimens type of the genus.

Among the principal results in the bibliographic search are that for *Polymita versicolor* we didn't find much information of scientific articles, just some scarce information about the historic distribution and the anatomic study done by De la Torre (1850), this species hasn't been worked much its ecologic studies are almost nulls, just have studies about reproductive biology developed in my thesis of master degree where is studied the morphology of the reproductive system as well as the results of the information about de project of *Polymita* BIOECO.

When we did the revision of the collections of references, found that *Polymita sulphurosa*, is one of the species of the kind of current distribution more restricted and threatened of the genre. The historic area of geographic distribution of the species has been framed to the region of Sagua de Tánamo even though its location type is referred to the Gibara (Morelet, 1849), where never were found any samples. De la Torre (1850) describes the species again and reassigns a new location type to it and refers to its area, where could has been found up to now in Cebolla, Cananova, Cañada Amarilla, hill of Miraflores and Cerro Yaguaneque in the municipality Sagua de Tánamo y Moa, Holguin Province.

In the historic collections appears that is distributes as far as Baracoa, but in the 16 years we have been visiting all these areas we haven't found any sample of *Polymita sulphurosa* its distribution up to now is very restricted just to the municipality Frank País, Sagua de Tánamo

and Moa. We had some field trips. From Baracoa to the Moa thorough all the coast area looking for the new reports of locations for *Polymita sulphurosa* and were not observed even dead shells.

Polymita sulphurosa

Were developed 3 expeditions to the locations of Cañada Amarilla, Cebolla and Cerro de Yaguaneque, in all the field trips we had meetings with farmers and chats in schools with the children. Were applied some surveys to know the knowledge level about the species in these communities. With them we knew that there exists an important illegal trade of its shells. They are sold at 1.40 pesos in national currency and also exists a great knowledge about the



Figure 1: *Polymita sulphurosa*, damages on the shell

species, so, people do not know the importance of it and that they are found only in these five areas, where they live.

In two of these places worked (Cebolla and Cerro Yaguaneque) were not observed alive individual of this species (just shells), there was only found after an exhaustive effort a young individual in Cañada amarilla (since 6.00 A.M to 1.00 P.M) and two consecutive days of work, it individual had damages on the shell.

The locality of Cañada amarilla has been one of the most worked places since years before and there was always more abundance. In the trips of this year there were observed two individuals, first and in the last one only one with its shell almost destroyed. Now Cañada amarilla is more antropical, there are more areas set out to pastures (to feed cows and horses) and there is just a small patch of forest and a palm forest prevailing *Roistonea regia*. Besides there was an intense drought in this zone that affected part of the vegetation that the species used as substrate,



Figure 2: Canada Amarilla - areas converted to grassland



Figure 3: Plants of guava dry (*Psidium guajava*)

many plants of guava (*Psidium guajava*) dried, which were the most preferred by *Polymita sulphurosa*. In it studied population the morph with combinations with green is the most frequent.

Summing up, the areas occupied by *Polymita sulphurosa* we visited have a high degree of human impact, due to the agricultural activities, the burn; tree felling of plants that form the habitat of the species, some of these causes have brought about these species populations of trees mollusc be very endangered. So it is necessary to continue with ecological studies that allow deepening in the life

history of this species, and tracing strategies of management for it's for conservation that may involve all the communities near its area of distribution.

In the last expedition we worked with scientists of the Foundation Antonio Nuñez Jimenez, to make a well fundamental proposal and declare these areas where are still some individuals of *P. sulphurosa* protected area. We are working on the formulation of this proposal. In these expeditions were georeferenced the points with the objective to make a map for the proposal of a possible protected area due to the importance that the conservation of *P. sulphurosa* has could be thought in a fauna Refuge. Now are starting to write the guide proposal to place the genus *Polymita* in the Appendix 1 of CITES. In it is working all the experts in terrestrial molluscs of the country.

Polymita versicolor

Now this species has been hardly worked in its ecology and reproduction. Due to the project we could find two populations by the road from Cajobabo to Maisí, one at 3 km from the camping site in Cajobabo and the other one near Boca de Jauco. During the fieldwork we could see that the individuals of this species are concentrated in a small area and they don't move or disperse so much in all the coast xeromorfo brushes. We made three journeys to the same locality were marked the individuals and when we came back the next month they were in the same area in were marked individuals were in lethargy daytime and they didn't estivate. We walked through a bigger area to check if we could find more alive individuals and we did not observed more out of the perimeter where we found that small population.

In this period were only worked two localities, Mina del Yeso, Baitiquirí, in San Antonio Sur and at 3 km of the camping Cajababo, in Imías. There were made all the ecologic studies, it was also made a list of the 32 species of plants that are part of the habitat of this species. Were measured the structural, physiologic and ageing sub niches of it.



Figure 4: *Polymita versicolor*, localities Cajobabo.

This species shell is not a very bright like the *P. sulphurosa* one but it's very colourful, globular and a little elevated with about three spirals with diameter of 18-24 mm maximum, the background colour is white, over it are emphasised spiral and axial lines coloured with combinations of brown, green and yellow. It is one of the species having more quantity of different bands. Their shells are very eye-catching because of the chromatic combinations.

The habitat of this species comprises the semi-desert and more arid zone of the country, that in San Antonio del Sur to Maisí, where we worked. We visited some areas that appear in the historic collections, but we didn't find any trace of it (alongside Jojo River, La Farola and some areas in Imías). *P. versicolor* lives in semi-desert conditions of intense solar radiation, high temperatures and scarce rains almost the entire year.

The vegetation is represented at the first line in front of the sea for the xeromorphic coast and sub coast brushes, bush formation that overtakes the 10 m high with plants characterised for sclerophyllous leaves, it means adapted to resist conditions of high temperature and scarce precipitations there can also be found different kinds of cactaceous. Upper from the bush there is a day bush, an evergreen microphyll forest different from the first vegetal formation for the presence of some highest trees in the area of Cajobabo where predominate; guayacán (*Guaiacum sanctum*), jatía (*Phyllostylon brasiliensis*) and the bacona (*Albizia cubana*) and in Baitiquirí appear the tuna (*Opuntia militaris*), black guayacán (*Guaiacum officinale*) and *Melocactus harlowii*.

Among the principal threats to this species we have that these localities are much closed to the Viaduct La Farola where exists an illegal strong trade of *Polymita* many tourism buses and isolated tourists stop in that zone and buy necklaces made in most of the time of *Polymita versicolor* and *Polymita picta* young individual's shells.

Besides during the work we found at 50 m of the community of Cajobabo a quarry that is used to extract ground. It has destroyed part of the vegetation where the species lives. Present threats for both species.



Figure 2: Real threats to *Polymita versicolor*

Despite of the problems of deterioration of their populations by the man in different ways such as the indiscriminate collection of their shells, the aggressive agriculture in the areas where these animals live. There are also other threats such as invading exotic species that are potential predators of this group.

In general the situation about the conservation of the genus *Polymita* is very serious, first because they have many natural as anthropic threats that affect in great way the populations of the genus, some species are more affected than others due to the restricted distribution they have. Now these species are not recognized by CITES and are sold in different websites out of the country for example:

[http://www.ebay.com//bhp/Polymita picta](http://www.ebay.com//bhp/Polymita_picta).

<http://www.cubacollectibles.com//>.

<http://www.shellmesh.com/products-page/polymita-picta>.

<http://www.tusimportaciones.com.co/buscador/>

<http://www.worthpoint.com/worthopedia/lot-of-12-cuban-polymita-shells-polymitas>

<http://www.lberusshells.com/>

Actually the situation of some species such as *P. sulphurosa*, *P. picta*, *P. venusta* and *P. versicolor* are now the most threatened. *Polymita sulphurosa* has a more drastic situation, its area of natural distribution is very restricted and has suffered strong antrópica modifications existing now only small patches of the native vegetation and up to now they are not found in any protected area.

The biggest negative impacts these species of the genus *Polymita* have suffered are the effects of the degradation and fragmentation of the natural habitats and in some species of very colourful shells are affected for the indiscriminate collections that have increased in the last days. The intense deforestation of our territory to condition agriculture lands (cane, fruit plantations), the extraction of wood from the forests and materials of construction in the quarries and the introduction of invading exotic species in the flora as well as in fauna, has provoked deep alterations. The global climate change seems that is also an influence in a negative way. In this year the increase of the temperature does not seem to be an immediate direct cause of impact for them but do alters the ecosystem and the habitat of these species having influence in changes in the reproductive cycles, its surrounding vegetation and the population size of them.

Environmental education

In this period were a total of three workshops (one in Cajobabo (were live *Polymita versicolor*) and two in Cañada amarilla and Cebolla; were live *Polymita sulphurosa*). This is the first time that are developed activities of environmental education in these localities. The knowledge about these two species among the people of these communities is nil. They just have seen them and knew some people came to buy these, but didn't know their sail was forbidden. These meetings with the communities opened to us possibilities for more fruitful exchanges with the objective to make aware many people in these communities to in certain way contribute to the conservation of this species and reduce illegal trade. With these workshops we could involve 673 persons among adults, children and young people that are more in contact in the trade of this charismatic species.

Were designed posters and postcards to share out around and in these localities. We worked in the design of new posters, with information in English to share out in airports, customs and tourist centres mainly in the province: Guantánamo and Holguín.

Were also published two interviews in the newspaper (Granma and Lomerío) about the immediate necessity of introducing measures to mitigate the illegal trade of the *Polymita* shells. Were broadcasted two programs in the local radio and local television also, were started the first films for an educative documentary about these species.

