# Internship 2020-2021 Master 2

**Title of the internship:** ***Integrating genetics into conservation management of the Corsican endemic snail Tyrrhenaria ceratina***

**Supervisor(s):**
Annie GUILLER[1] (PU) : annie.guiller@u-picardie.fr, 33 (0) 22 82 75 76
Michel DELAUGERRE[2] (Chargé de Mission) : M.DELAUGERRE@conservatoire-du-littoral.fr
Pedro POLI[1] (PhD 2017-2021) : pedro.poli@u-picardie.fr

**Institute:** [1] EDYSAN UMR CNRS 7058, Université Picardie Jules Verne ; [2] Conservatoire du littoral, Délégation Corse ; DREAL de Corse.

**Summary.** The internship is part of the national recovery plan (NRP [1, 3]) for the Corsican endemic snail *Tyrrhenaria ceratina* which aims at promoting actions enhancing (i) the protection of the only known population in the world which range is less than two hectares, (ii) the restoration of its habitat. The genetic approach proposed here supports the demographic study recently carried out to provide assistance for monitoring the species [4]. It is designed to evaluate the genetic potential of the relict and threatened (meta)population of Campo dell'Oro (near Ajaccio) through assessment of genetic diversity and population structure. The signature of the molecular markers used should provide information:

- to characterize the spatial and temporal distribution of lineages, infer the demographic history of the (meta)population, measure time lag between environmental changes and genetic response, map potential reservoirs of diversity (***Phylogeography***);
- to describe the population genetic structure and shed light on the underlying mechanisms (evolutionary forces) responsible for divergences observed (***Population genetics***). This assessment is essential to predict the long-term survival of the population and therefore propose adequate conservation strategies.

Metrics describing significant landscape characteristics for the species will be used to measure the influence of matrix permeability on the movement of individuals. Structural (migration corridor) *vs* functional (gene flow) connectivity will be compared for assessing the human effects via habitat fragmentation on the (meta)population of Campo dell'Oro. This step aims to trace corridors necessary to maintain / restore the (meta)population (***Landscape genetics***).

**Methodology**. Individuals (mucus) previously collected in 6 sites of Campo dell'Oro will be analysed using sequences (mitochondrial and nuclear genes) and multilocus microsatellite genotypes. DNA extraction and PCRs will be performed in Amiens while sequencing and genotyping will be carried out in Rennes.
The internship includes the collection of empirical data, genetic and statistical data analyses and internship report writing.

**Other informations:**

**Insertion within an ongoing research project:**

[1] Plan National d'Action http://www.corse.developpement-durable.gouv.fr/agir-pour-l-helix-de-corse-tyrrhenaria-ceratina-a1602.html

**Publications on the field of research** (up to 3) :

[2] Bouchet P., Ripken R. & Recorbet B., 1997. Redécouverte de l'escargot de Corse *Helix ceratina* au bord de l'extinction. *Revue d'Ecologie (La Terre et la Vie)*, 52: 97-111.
[3] Charrier M., Chevalier L., Paradis G. & Recorbet B., 2005. Field observations on spatial distribution and diet in the terrestrial snail *Tyrrhenaria ceratina*, an endemic species from Corsica. Notiziario S.I.M., *Supplemento al Bollettino Malacologico*, 23 (5-8): 8.
[4] Cucherat X., 2019. Mission d'assistance pour le monitoring de l'hélix de corse (*Helix ceratina*). Arion.idé/CEL Corse. Gondecourt. 29 pp + 5 annexes.

**Required study level**: We seek a highly motivated and curious candidate. Strong interest in molecular biology, population genetics, landscape ecology, evolution and biostatistics are recommended, meaning that a good background in those domains is desired, but not mandatory. Those skills will be developed during the internship.

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**Supervision**

The student will be hosted at the research unit EDYSAN (*Ecologie et Dynamique des Systèmes Anthropisés*, UMR 7058 CNRS – UPJV), 33 rue Saint Leu, 80000 Amiens, France, https://www.u-picardie.fr/edysan/

**Duration**: 6 months; starting date (flexible): January 2021

**Salary**: traineeship grant (600.6 €/month)

**Application**

Applications (letter, CV and 2 contacts for references) should be sent to Annie GUILLER and Michel DELAUGERRE before the 15th of October 2020.