

Biological invasion is understood as introduction, establishment and expansion of organisms into new, non-native area. This is a natural process that is significantly compounded by human activities and is one of the factors that threaten biological diversity and stability of natural ecosystems. Understanding to the evolution and current status of invasive populations is especially important for planning a project to eradicate invasive species from certain areas to avoid their negative impact on the environment. One option for the research of the invasive populations and their history is the analysis of genetic material. This thesis summarizes the current knowledge on invasive populations of small mammals on the islands, with the focus on genetic studies. Specifically, the study of Norway rats (*Rattus norvegicus*) on Moturemu island and five archipelagos off the coast of Brittany; black rats (*Rattus rattus*) on Congo Cay, Madagascar, Guadeloupe Archipelago, Sainte Anne Archipelago and Canary Islands; Pacific rats (*Rattus exulans*) on Tetiaroa Atoll; house mice (*Mus musculus*) on Marion Island; house mice (*Mus musculus domesticus*) on Kerguelen Archipelago; red squirrels (*Sciurus vulgaris*) on Jersey island, West European hedgehogs (*Erinaceus europaeus*) in New Zealand; pygmy shrews (*Sorex minutus*) in Ireland and common shrews (*Sorex araneus*) on two archipelagos off the coast of Scotland.