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Research in Graubünden

**The morning chorus of songbirds in the mountain forest**

Noise changes the singing behavior of songbirds



*The Coal Tit is the smallest, native tit and is one of the “long sleepers” in the study. Image: Hans Lozza / Schweizerischer Nationalpark*

At the age of four, Julia Paterno harbored the desire to become a marmot researcher. During her school years, her education focused first on music, then on technology. Studying mathematics and geometry to become a teacher in Vienna did not meet her expectations, so she decided to study biology instead. Nevertheless, Paterno did not (yet) become a marmot researcher: her interest lies in songbirds. An internship at the Swiss National Park in 2019 inspired her so much that she developed a project idea together with Pia Anderwald from the National Park's research department and raised funds for its implementation. In her doctoral thesis, Paterno is investigating how natural and man-made influences, especially noise, affect the singing behavior of songbirds in mountain forests.

Her enthusiasm for songbirds is palpable: “It's wonderful to be outside in the morning around five, half past five and listen to the morning chorus. The thrushes start and then more and more songbirds join in. It's a huge orchestra.” According to Paterno, there have been few studies examining changes in song behavior in response to noise in semi-natural areas. This has been better researched in urban areas. The national park is suitable as a study area because, on the one hand, there are completely undisturbed areas and, on the other, the busy Ofen Pass road runs right through the middle of the national park.

Paterno describes her approach: “First, I divided various locations in the park and those in its surroundings into noise categories, which I defined beforehand. I chose six songbird species that are common in the mountain forest for my project. These are the “early risers” song thrush, mistle thrush, and robin, and the “late risers” alpine tit, coal tit, and chaffinch.” To record the bird calls, Paterno uses sound loggers: “These are recording devices that I program in the office and then set up in the forest. They record at set times. Morning chorus is a well-studied time when songbirds are very active, especially before breeding season. Birds communicate with each other through songs and calls. They use songs mainly for territorial defense and to attract females. Each bird species has an individual song pattern and there are even dialects. A chaffinch from Basel sings differently than a fellow chaffinch in Engadin.”

With the help of software, Paterno can visualize the sound recordings she made over several weeks during the breeding season in 2021 and 2022, and then evaluate them by hand: “In 2021, I relied on used batteries for the recorders. This was unfortunate because only 43 out of sixty worked. In 2022, I took new batteries, so 69 out of seventy devices worked.” Her musicality helps her tell bird calls apart and identify them. Paterno has already observed that chaffinches, for example, avoid street noise by starting to sing earlier. Among other things, noise can prevent birds from attracting mates or warning them of enemies.

Julia Paterno and Daniela Heinen



Julia Paterno. Image: Nina Brunner

## More information

The Swiss National Park (SNP) is the largest wilderness area and the only national park in Switzerland. Since its founding in 1914, it has pursued three overarching goals: Nature conservation, public relations/environmental education and research: [www.nationalpark.ch](http://www.nationalpark.ch). Link to sound recording songbirds: <http://bit.ly/4657IUJ>

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