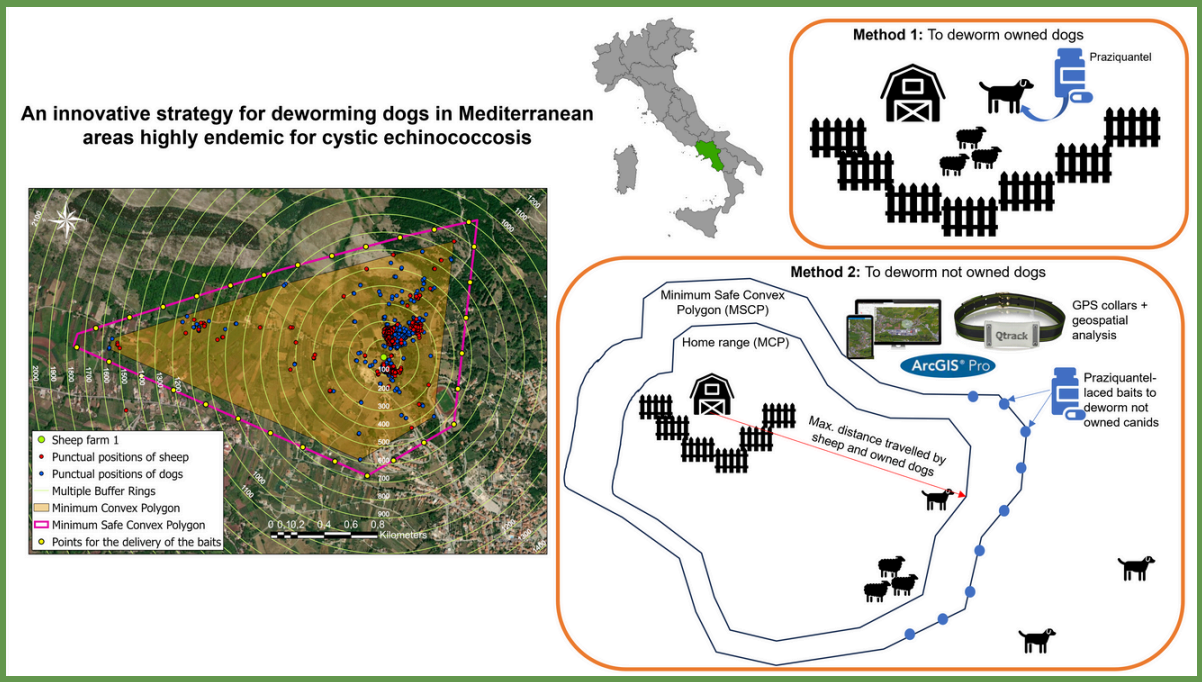
June 2024

Newsletter



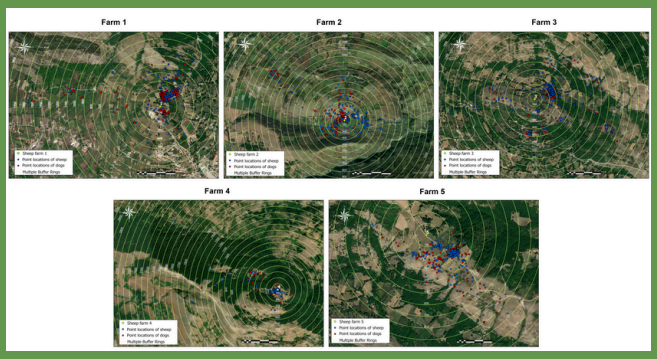
An innovative strategy for deworming dogs in Mediterranean areas highly endemic for cystic echinococcosis

Deworming of owned and non-owned dogs

One of the objectives of WP3 is to evaluate new approaches to control cystic echinococcosis (CE), based on the treatment of definitive hosts (owned and not owned dogs). In addition to the conventional control activities, an innovative strategy based on praziquantel-laced baits was designed for use in the treatment of not owned dogs or other canids in grazing areas identified by tracking animal movements through GPS dataloggers. Activities have been ongoing since August 2021, in a pilot area of southern Italy, highly endemic for CE, to evaluate whether is it feasible to extend the use of these technologies to other countries of Mediterranean area.

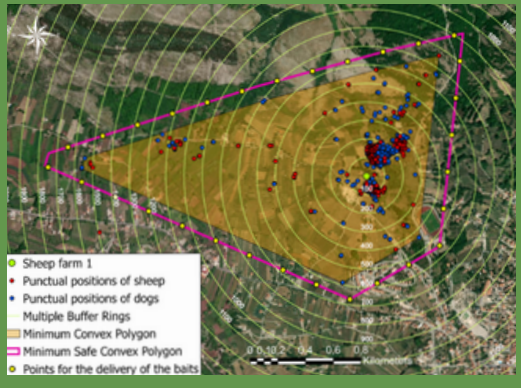
In Italy, five sheep farms were selected to start the treatments of dogs (owned and not owned) whereas other five sheep farms were selected to be used as control farms without any treatment activities of dogs. Specifically, the shepherd dogs in each sheep farm included in the study were orally treated with chewable tablets containing a combination of praziquantel (5 mg/kg) and milbemycin oxime (0.5 mg/kg) (Milbemax®- chewable tablets, Elanco Italia S.p.A). The intervention interval was set at 2 months for the entire duration of the project.

On each sheep farm selected for the treatment, 3 GPS datalogger collars (Qtrack GPS, 4G LTE Iot network technology, Austria) were attached to the sheep acting as “flock leader” and to 2 shepherd dogs to monitor animal movements. The movements of sheep and dogs were monitored at the same time, for one month in all the farms.The GPS devices were programmed to record the geographic coordinates of the animals every hour.



A total of 6,973 point locations were recorded. In each sheep farm, more than 90% of sheep and dog point locations resulted within 1,500 meters from the centroid of the farm but the core areas of roaming space used for sheep and dogs were found to be within 500 meters (70%) as shown in the adjacent figure. The spatial distribution of the point locations logged by GPS dataloggers are showed in red for sheep and in blue for dogs.

Based on the home range of the animals, the area with the highest risk of access from canids (Minimum Safe Convex Polygon) was estimated around the centroid of each farm, and a potential scheme for the delivery of praziquantel-laced baits for the treatment of not owned dogs gravitating around the grazing area was designed. Praziquantel-laced baits were at first manually released. The next step will be the use of unmanned aerial vehicles (UAVs), designed for the ECHINO-SAFE-MED project, for the delivery of baits to deworm stray canids.



The newly developed strategy could be part of an integrated control program against CE, combining anthelmintic dog treatment with livestock vaccination and public health information.