Eradication of a non-native grass Poa annua L. from the Western Shore of Admiralty Bay, King George Island, South Shetland Islands – update 2020/2021

**Eradication of a non-native grass *Poa annua* L. from ASPA No 128 Western Shore of Admiralty Bay, King George Island, South Shetland Islands – update 2020/2021**

**Information Paper submitted by Poland**

***Summary***

The paper presents the results of research study on the eradication of non-native species *Poa annua* from ASPA No 128 Western Shore of Admiralty Bay and from Arctowski Station are presented. Follow-up activities from the 2020/2021 Antarctic season .

***Background***

The non-native grass *Poa annua* L. was accidentally introduced at the Polish Antarctic Arctowski Station during 1980s. Its presence was initially recorded in the austral summer of 1985/86, first in sites disturbed by human activities, later on the deglaciated moraines of the Ecology Glacier, inside ASPA No 128 Western Shore of Admiralty Bay, about 1.5 km from the station.

In accordance with Annex II of the Protocol on Environmental Protection to the Antarctic Treaty, as well as the CEP non-native species manual, and the Management Plan of ASPA No 128, measures to eradicate *P. annua* from the area were taken. Progress was reported to ATCM XXXVIII/CEP XVIII (IP78), ATCM XXXIX/CEP XIX (IP60), ATCM XL/CEP XX (IP47) and ATCM XLII/CEP XXII (IP150).

***Research study on P. annua eradication***

The eradication program was preceded by detailed investigation of the biology of *P. annua* in accordance with guidelines regarding the eradication/control of alien species (Galera et al. 2016). The distribution, morphology, ecology, genetics, physiology, expansion history, and potential sources of introduction of the species were determined. Authors concluded that the species is expanding from the anthropogenic sites to native communities and presents a potential threat to native flora. Spatial and temporal dynamics of *P. annua* spread is deemed sufficient to declare this species invasive at the scale of Point Thomas Oasis. At the same time, it was not exceptionally intense in comparison with other alien plant invasions worldwide, which make the control/eradication effort a realistic goal.

Point Thomas Oasis and ice-free areas of ASPA No 128 were surveyed, and the location of *P. annua* tussocks were mapped. Thereafter, non-native plants were gradually removed, beginning with those found in the area as well as those closest to moss carpet formations. The removal was conducted carefully by hand, in such a manner as not to disturb native plant species. It was estimated that the negative impact of the eradication program on native flora was negligible.

Earlier research indicated that the structure of the soil seed bank is highly associated with the location of tussocks. Therefore, additional topsoil (0-10 cm) removal from underneath the tussocks should efficiently restrict population recovery from the soil seed bank. Authors also noted that the biology of the species (i.e., autogamy, seed persistence, small seed size, minimal requirements for germination, short life cycle, small plant size) may still hamper effective total eradication.

Authors estimated that it was the largest non-native plant eradication conducted so far in Antarctica.

***Follow-up activities taken in 2020/2021 season***

In the 2020/2021 season, the vicinity of the Henryk Arctowski Polish Antarctic Station was thoroughly checked for the presence of tussocks and seedlings of this invasive species.

Eradication was carried out in accordance with the methods used in the multi-year research program “The causes, course and consequences of the expansion of *Poa annua* L. in Western Antarctica, a multi-aspect population study” which was carried out in 2014 – 2017 (Galera et al. 2016). The removal was conducted by hand by a trained member of the station staff, ensuring not to disturb native plant species. In the 2020/2021 season, 1620 tussocks were removed from the vicinity of the station. Each tussock was dug up with the roots and surrounding soil. All of the material was burned in the incinerator at the station. Invasive plants were taken from 76 sites, all in the vicinity of the station. The amount of observed grass was higher than in the previous season (109 tussocks from 58 sites). No tussocks were found in the ASPA No 128 Western Shore of Admiralty Bay. Each site was photographed, and the GPS location was noted.

The actions, both around Arctowski Station, and in ASPA No 128 will be continued during the next Antarctic seasons.

***References***

Galera H., Wódkiewicz M., Czyż E., Łapiński S., Kowalska M.E., Pasik M., Rajner M., Bylina P., Chwedorzewska K.J. 2017. First step to eradication of *Poa annua* L. from Point Thomas Oasis (King George Island, South Shetlands, Antarctica). Polar Biology, 40, 939–945