2026 Project collaboration for a secondment of a young Chinese visiting scientists to the MARA-CABI European Laboratory in Switzerland

PROJECT DESCRIPTION No. 1

Studying the response of the aquatic weed flowering rush, *Butomus umbellatus* to the presence of the specialist herbivorous weevil, *Bagous nodulosus*



Background: Flowering rush (Butomus umbellatus L.) is a perennial aquatic plant that grows along lake shores and in slow-moving bodies of water, irrigation ditches, and wetlands in temperate Europe and Asia, including China. In North America, where B. umbellatus was introduced as an ornamental more than 100 years ago. Flowering rush is now considered an aggressive invader of freshwater systems, and is becoming an increasing problem in the midwestern and western states of the USA and western Canada. Since no effective long-term control methods are currently available, a biological control project was started in spring 2013 prioritizing the weevil Bagous nodulosus as one of the most promising potential biological control agents (Häfliger et al. 2025). The weevil is native to Europe, but its status in Asia is unknown. A petition for release was submitted in April 2022. In July 2022, the species was approved field release in Canada by the Canadian Food Inspection Agency and in November 2024 was approved for release in the US by USDA APHIS.

Study aims: The aim of the current study is to establish the response of the plant that may be expected once the weevil establishes in North America. This will include direct impact of the weevil to plant fitness and biomass but also changes in resource allocation.

Methods: In March 2025, we set up an impact experiment at CABI in Delémont with 8 pools, 4 treated with weevils and 4 controls. Each pool contained six frames (60x60 cm) filled with potting soil with three different plant densities, i.e. 1, 4, and 9 plants. In the weevil treated pools, 12 pairs of weevils were released per pool, while the controls had none. The pools will be left for 2 full growing seasons and taken down in September 2026. During the takedown of the experiment various measures will be taken including biomass of above ground and below ground plant parts, plant fitness measures such as number of leaves per plant, length of each leaf and number of flowers. Plant samples will also be taken to measure the carbon to nitrogen ratios, to understand how the plant is reallocating resources in the presence and absence of the weevil.

The candidate will work as a collaborator in the proposed biological weed control project at CABI in Switzerland. He/she will help the team in herbivorous weevil experiments on aquatic weeds, and will study various aspects of the biology and ecology of herbivorous biocontrol agents and its target host. CABI Switzerland offers

a friendly multilingual (English, French, and German) work environment with the possibility to exchange with students and researchers. The scientists will profit from learning different methods and approaches in biological control as well as in risk assessments and biosafety. He/she will profit from the international network of CABI.
Keywords: biological control, aquatic plant, impact assessment, resource allocation.
Reference: Häfliger, P. Lamoureux, J., Bailey, M., Brozzi, C., Cloșca, C., Thomas, S., Kurose, D. and Weyl, P. (2025) Biological control of flowering rush, Butomus umbellatus. Annual report 2024. CABI, Delémont, Switzerland, 19pp.

CABI hosting team and project supervisor:
Dr Philip Weyl
Weed biocontrol
CABI Switzerland & MARA China – CABI European Laboratory
Rue des Grillons 1
CH-2800 Delémont
Switzerland
Telephone: +41 32 421 4871, Email: p.weyl@cabi.org
https://www.cabi.org/what-we-do/cabi-centres/mara-china-cabi-european-laboratory/

CANDIDATE SELECTION CRITERIA

Interest
- Strong interest in the specific proposed subject of project
- Research areas conducted by the candidate in China fit to the proposed research

Education & language skills
- MSc or above in a Life Science area ideally with entomology, invasive species, IPM and/or biological control as major subject(s);
- Fluent spoken English and very good English writing skills.

Experience
- 2-3 years of post-graduate experience or equivalent working experience in relevant research area(s) as per announced project description;
- Experience in lab and field work, experimental design, data collection and handling, statistical analysis and reporting;
- Good scientific publication record;
- Proficiency in Microsoft Office Suite of packages.

Personal characteristics
- A team player with good interpersonal and communication skills;
- Reliable, precise, independent working style
- Self-motivated;
- Flexible;
- High ability to adapt to cultural differences.

Funding
- Funding is needed by Chinese applicant’s sending institution
- Co-Funding is provided through the MARA China–CABI European laboratory

Period of secondments

- Up to 4 months during 2026 (early August and early December) As work will include taking down an existing experiment, the period of work will be starting in mid-August 2026 - December 2026. However please do not hesitate to contact us to discuss a possible starting date.

How to apply

- Plea submit your motivation letter, cv, and English language certificates to Tian Fang 田芳 tianfang@caas.cn and/or Stefan Toepfer s.toepfer@cabi.org

MARA CHINA – CABI
European Laboratory
中国农业农村部 – CABI欧洲实验室

PROJECT DESCRIPTION No. 2

Biology, ecology and host specificity of parasitoids for the biological control of the invasive box tree moth

The box tree moth (BTM), *Cydalima perspectalis,* is an insect pest of East Asian origin that was first found in Europe in 2007 and quickly spread to most European countries up to the Caucasus and Iran. In North America, it was first detected in 2018 in Toronto, Canada and in the following years also in nurseries of boxwood plants to six US states. In a joint project with partners from the US and Canada, CABI collaborated with Universities in South Korea to do some first prospections for natural enemies of the BTM in its native range to identify candidates for classical biological control. Several parasitoids were found and brought to the high security quarantine laboratory of CABI in Delémont, Switzerland, for further studies. Currently, colonies of two larval parasitoids of BTM are continuously cultured for this purpose.

The project concentrates to studying the biology, ecology, and host specificity of the parasitoids to determine their suitability and safety for releases against the BTM. Because they are foreign species, the work will be mainly conducted in CABI's quarantine laboratory in Delémont, Switzerland. A better understanding of the parasitoids biology and ecology is also highly relevant for BTM management in East Asia including China.

Applicants for this project should have an interest and experience in entomology (e.g. insect rearing) and at least a theoretical background in biological control. The candidate will work as a collaborator in the biological control project at CABI Switzerland. CABI Switzerland offers a friendly multilingual (English, French, and German) work environment with the possibility to exchange with students and researchers. The scientists will profit from learning different methods and approaches in biological control as well as in risk assessments and biosafety. The project supervisor (Dr Lukas Seehausen) is an expert in invasion ecology and biocontrol.

CABI hosting team and project supervisor:
Dr Lukas Seehausen
Risk Analysis & Invasion Ecology
CABI
Rue des Grillons 1
CH-2800 Delémont
Switzerland
Telephone: +41 (0)32 421 4887, Email: l.seehausen@cabi.org
https://www.cabi.org/what-we-do/cabi-centres/mara-china-cabi-european-laboratory/

CANDIDATE SELECTION CRITERIA

Interest

- Strong interest in the specific proposed subject of project
- Research areas conducted by the candidate in China fit to the proposed research

Education & language skills

- MSc or above in a Life Science area ideally with entomology, invasive species, IPM and/or biological control as major subject(s);
- Fluent spoken English and very good English writing skills.

Experience

- Experience in lab and field work, experimental design, data collection and handling, statistical analysis and reporting;
- Proficiency in Microsoft Office Suite packages.

Personal characteristics

- A team player with good interpersonal and communication skills;
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Funding

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Period of secondments

- Up to 4 months during 2026 (somewhen between August and early December)

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PROJECT DESCRIPTION

Biosafety and ecological assessments of parasitoids of the invasive alien maize pest, fall armyworm

The fall armyworm (FAW), *Spodoptera frugiperda* (Lepidoptera: Noctuidae) is a pest of maize originating from the Americas. In 2016 it was observed for the first time in Africa and, in two years, has invaded most of the continent. In 2018, it was discovered in many Asian countries including China. FAW is causing serious damage to maize in most invaded countries where it became a threat to food security. It is considered a key invasive in China and South-East Asia, but has also started to invade Europe.

CABI is developing various sustainable management methods against FAW, including biological control. In Africa, native parasitoids that have adopted to FAW as a host are presently being studied for their potential use in conservation and augmentative biocontrol strategies. At the same time, surveys have been carried out for parasitoids in the Americas to study the potential of classical biological control. The parasitoid species, *Eiphosoma laphygmae* and *Campoletis flavicincta*, from Bolivia are being cultured at the CABI quarantine laboratory in Delémont in Switzerland and more parasitoids will be brought from South America in 2026. The parasitoids are being assessed for their potential as biological control agents for introduction into Africa, Asia or Europe. Research is needed to improve mass rearing techniques, a fundamental step needed for successful biocontrol agent releases. Studies also focus on the biosafety assessment, such as the host specificity of parasitoids for FAW.

The candidate will work as a collaborator in a biological control project at CABI Switzerland. He/she will help the team in improving mass rearing techniques of parasitoids, and will study various aspects of the biology and ecology of the parasitoids, including their host specificity hopefully leading to conclusions on their biosafety and potential efficacy. The candidate will become familiar with FAW and parasitoid rearing and biology, and will also receive the training and information for assessing the potential for biological control using these and other parasitoids in China, as well as on biological control techniques in general. The project supervisor (Dr Marc Kenis) is an expert in invasion ecology and biological control of arthropods.

CABI hosting team and project supervisor:
Dr Marc Kenis
Risk Analysis & Invasion Ecology
CABI Switzerland & MARA China – CABI European Lab
Rue des Grillons 1
CH-2800 Delémont
Switzerland
Telephone: +41 (0)32 421 4884, Email: m.kenis@cabi.org
https://www.cabi.org/what-we-do/cabi-centres/mara-china-cabi-european-laboratory/

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Personal characteristics

- A team player with good interpersonal and communication skills;
- Reliable, precise, independent working style
- Self-motivated;
- Flexible;
- High ability to adapt to cultural differences.

Funding

- Funding is needed by Chinese applicant's sending institution
- Co-Funding is provided through the MARA China–CABI European laboratory

Period of secondments

- Up to 4 months during 2026 (somewhen between August and early December)

How to apply

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