European Arboricultural Standards

… and their development

Jaroslav Kolařík, Ph.D.

The European Arboricultural Council (EAC)

EUROPEAN ARBORICULTURAL COUNCIL e.V. (EAC)

- **WHY**
- **WHAT**
- **HOW**
- **WHO**

The European Arboricultural Council (EAC)

EUROPEAN ARBORICULTURAL COUNCIL e.V. (EAC)

- **WHY**

  reason behind project of European Arboricultural Standards

- **WHAT**

  EAC working group and ERASMUS+ project

- **HOW**

  experience in past - plans for future

- **WHO**

  development team and cooperation options

EUROPEAN ARBORICULTURAL COUNCIL e.V. (EAC)

WHY

WHY


EUROPEAN
EAC
TREE WORKER


ARB Approved
CONTRACTOR
trees.org.uk


VETCERT
CERTIFIED VETERAN TREE SPECIALIST

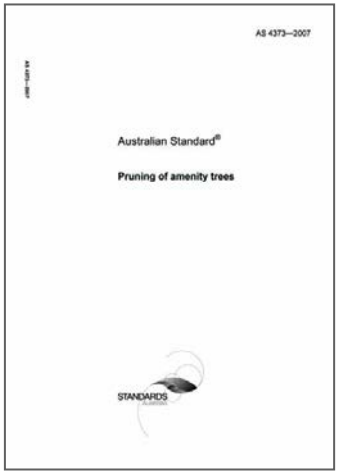

CERTIFIED
ARBORIST
ISA

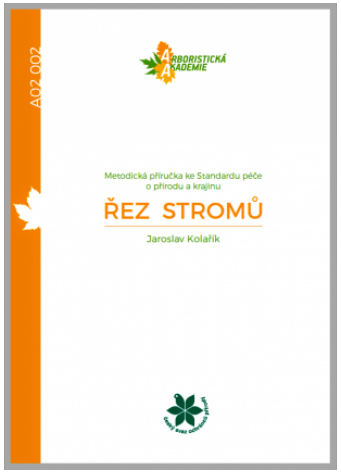

MEMBER
INTERNATIONAL SOCIETY OF ARBORICULTURE
ISA

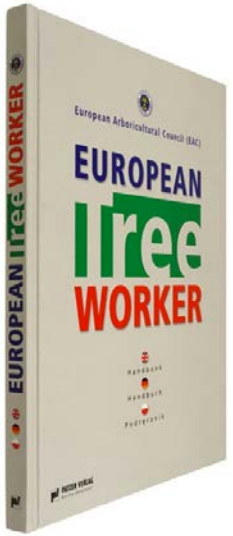

ČESKÝ
CERTIFIKOVANÝ
ARBORISTA
1
2
3
4

WHY

EUROPEAN ARBORICULTURAL COUNCIL e.V. (EAC)







WHY

Aerial Solutions Inc.

- **WHY**
  - unification of professional recommendations within EU countries

WHY

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  - unification of professional recommendations within EU countries
  - existing questions (support of research)

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  - unification of professional recommendations within EU countries
  - existing questions (support of research)
  - definition of national annexes (specifics)

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- **WHY**
  - unification of professional recommendations within EU countries
  - existing questions (support of research)
  - definition of national annexes (specifics)
  - support of worker exchange between countries

EUROPEAN ARBORICULTURAL COUNCIL e.V. (EAC)

WHAT

WHAT

EAC working group and ERASMUS+ project

- **2018** EAC working group “European Tree Pruning Standard” (Barcelona, Riga)

WHAT

EAC working group and ERASMUS+ project

- **2018** EAC working group “European Tree Pruning Standard” (Barcelona, Riga)
- **2019 - 2022** ERASMUS+ project TeST - “Technical Standards in Tree Work”

EUROPEAN ARBORICULTURAL COUNCIL e.V. (EAC)

WHAT

ARBORICULTURAL STANDARDS

EUROPEAN TREE PRUNING STANDARDS

ETPS : 2018

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SK : Rez stromov
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This standard is intended to define the technical and technological procedures used by tree pruning of ornamental trees growing outside forrests.

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European Arboricultural Council

Team of authors:
Jaroslav Kolařík (Team coordinator, Czech Republic), Valentino Cristini (Czech Republic), Jonas Davensis (Lithuania), Tomáš Fraňo (Slovak Republic), Tom Joye (Belgium), Gregor Orlik (Germany) Gerard Passola (Spain), Paolo Pietrobon (Italy), Henk van Scherpenzeel (Netherlands), Daiga Strēle (Republic of Latvia), Marko Svenda (Croatia), Kamil Witkoś-Gnach (Poland).

Text revision:
James Funai (U.S.A.)

WHAT

TeST - Technical Standards in Tree Work

- **PLANTING OF TREES**
- **TREE PRUNING**
- **CABLING / BRACING**

WHAT

- **PLANTING OF TREES**

Quality of trees

Preparatory works

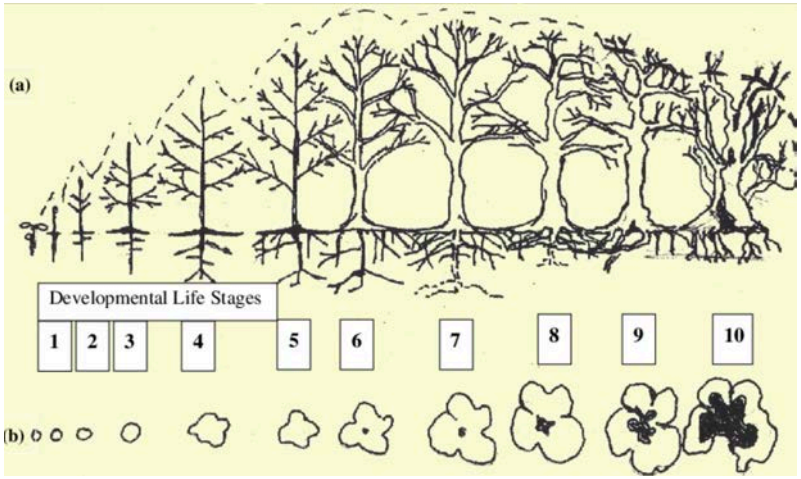
Technology of planting

Follow-up care

Kolarik, EXETER, 2019

WHAT

- **TREE PRUNING**



Pierre Raimbault

Pruning techniques

Methods in regard of stage/purpose

Taxon-specific approach

Site management

WHAT

- **CABLING / BRACING**

Methods for crown stabilisation
- dynamic systems
- static systems
- propping

Materials (systems) in use

Recommendations for installation

Follow-up care

WHAT

- **BASIC TEXT OF STANDARD**
  - Consensual recommendations
  - Principles, rules and guidlines
  - Technical (short) descriptions (no explanations)

WHAT

- **BASIC TEXT OF STANDARD**
  - Consensual recommendations
  - Principles, rules and guidlines
  - Technical (short) descriptions (no explanations)
- **NATIONAL ANNEXES**
  - Specific methods
  - Legislative differences

- **RESULTING TEXTS**
  - Available for FREE to download
  - In English, German and another 8 languages
  - National Annexes only in English and the local language

EUROPEAN ARBORICULTURAL COUNCIL e.V. (EAC)

HOW

HOW

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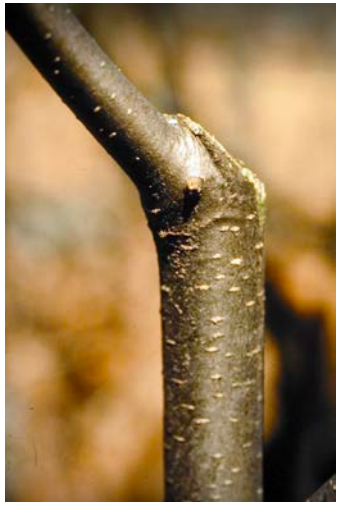
Branch removal method

- target pruning
- pruning to lateral
- stub cut (internodal)
- knuckle cut
- rip cut (controlled breaking)
- branch chopping



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1 young tree	1/A			1/D	1/E
2 semi-mature tree	2/A	2/B		2/D	2/E
3 mature tree	3/A	3/B	3/C	3/D	3/E
4 veteran tree	4/A	4/B	4/C	4/D	

HOW

Young tree

Characterized by significant apical dominance and the presence of a temporary crown, permanent road clearance has not been reached yet.

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1 young tree	1/A			1/D	1/E
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4 veteran tree	4/A	4/B	4/C	4/D	

HOW

Semi-mature tree

Tree growing to the size of a mature specimen above the temporary crown. Crown is still formed by apical dominance, but already with an established, permanent structure of main branches (permanent crown).

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1 young tree	1/A			1/D	1/E
2 semi-mature tree	2/A	2/B		2/D	2/E
3 mature tree	3/A	3/B	3/C	3/D	3/E
4 veteran tree	4/A	4/B	4/C	4/D	

HOW

Mature tree

Tree that has reached the maximum crown spread (height and diameter) for that particular taxon, at the specific location and in the context the tree grows in.

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1 young tree	1/A			1/D	1/E
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3 mature tree	3/A	3/B	3/C	3/D	3/E
4 veteran tree	4/A	4/B	4/C	4/D	

HOW

Veteran tree

Within the framework of this pruning standard, a veteran tree is characterized as a tree that:

- has reached significant size for the given species,
- has reached significant age for the given species regarding growing conditions and climatic zone,
- shows significant increases in biodiversity value (cavity, wood decomposition etc.)
- shows changes in the crown architecture and a gradual process of natural crown retrenchment (transition from the primary to the secondary crown lower down on the stem and main branches).

Veteran trees often enjoy formal protection in a given country or region, and their exceptional value also includes historical, cultural or landscape value.

	A structural pruning	B lateral crown reduction	C upper crown reduction	D shaping	E mismanaged/mutilated tree management
1 young tree	1/A			1/D	1/E
2 semi-mature tree	2/A	2/B		2/D	2/E
3 mature tree	3/A	3/B	3/C	3/D	3/E
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HOW

Structural pruning

Focused on correcting tree`s crown architecture to establish desired, stable structure, with elimination or reduction) of branches with weak forks or reduced stability.

	A structural pruning	B lateral crown reduction	C upper crown reduction	D shaping	E mismanaged/mutilated tree management
1 young tree	1/A			1/D	1/E
2 semi-mature tree	2/A	2/B		2/D	2/E
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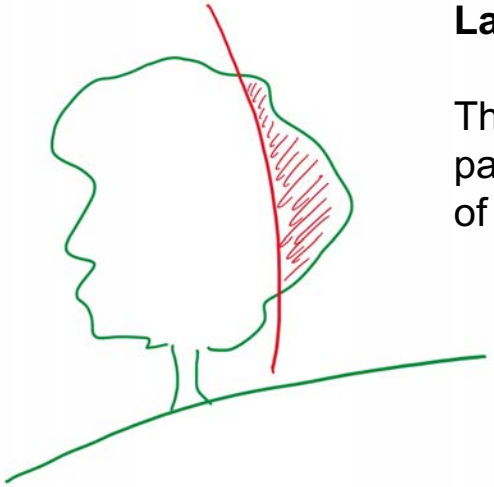
HOW



Lateral crown reduction

This intervention is aimed at the reduction of the side or lower parts of the crown. A lateral reduction does not intervene in the top of the crown and does not alter the height of the tree.

	A structural pruning	B lateral crown reduction	C upper crown reduction	D shaping	E mismanaged/mutilated tree management
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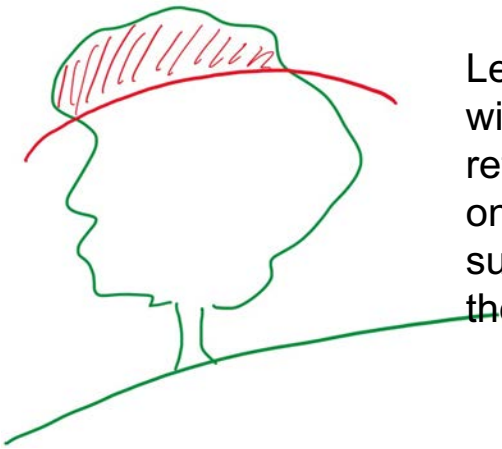

Upper crown reduction

Less common type of intervention that should always connected with a need to stabilize the whole tree or perform natural crown retrenchment. An upper crown reduction must only be performed on trees in development phase 3-4 (mature, veteran), generally in successive steps and to the minimum extent necessary to meet the objectives.

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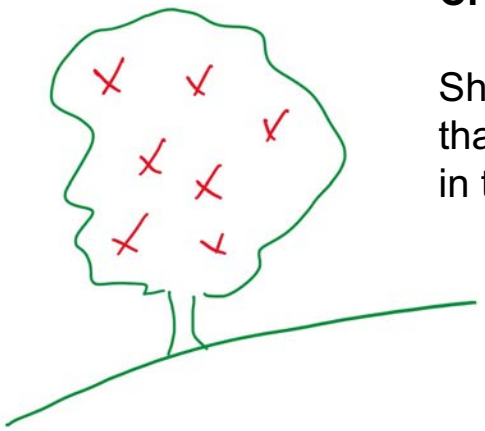

Crown shaping

Shaping trees (hedging, pleaching, polarding) is a set of interventions that irreversibly alter the tree's crown architecture. It must be started in the youth of a tree and must be sustained for the rest of its life.

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HOW

Pruning of mismanaged/mutilated trees

Trees, which have been dramatically affected in their physiological functions (removal of a substantial part of the crown etc.) either due to natural disaster or inappropriate management procedure (topping, root damage etc.). Standard pruning techniques cannot be applied to these trees. If there is a possibility to convert the tree crown to one of the standard types of care over time, this approach is preferred. Otherwise, cost-effective solutions are chosen to ensure enough tree stability and the longest possible life expectancy, taking into account the tree's benefits on the site.

	A structural pruning	B lateral crown reduction	C upper crown reduction	D shaping	E mismanaged/mutilated tree management
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3 mature tree	3/A	3/B	3/C	3/D	3/E
4 veteran tree	4/A	4/B	4/C	4/D	

HOW

Each category:

- objectives
- branch removal methods
- timing (repetitions)
- optimal season
- deadwood management
- critical errors


Version 30/10/2018

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5.2.5 **Timing:** Formative pruning should start 3 years after planting, at the latest.
5.2.6 Formative pruning of young trees is periodical, and pruning should be repeated every 2-3 years, based on risk assessment and objectives.
5.2.7 **Optimal season:** during the growing season is preferred, but the dormant period is acceptable as well. Formative pruning should NOT be performed in the following periods:
- Post-dormancy – period between budding until full development of leaves,
- Pre-dormancy – period when leaves start to color (autumn) until they are shed or fully disfunctional.

5.2.8 **Methods:** Target pruning is the main branch removal method (3.1.5). Pruning to lateral (3.1.6) is accepted in justified cases.
5.2.9 Leaf area removal should not exceed 20-25%.
5.2.10 **Critical errors:**
- A late start to the pruning interventions leads to the need to remove large volumes of the crown and create large wounds during repeated interventions.
- Excessive hit rate (large volume of leaf area removal) can cause a large volume of epicormic growth on the stem and branches.

5.3 2/A Crown maintenance – semi-mature trees

5.3.1 **Objectives:** takes place within the permanent crown, intervening in the crown architecture, with the objective of establishing a sustainable and stable crown structure, close to the natural tree shape with respect to the species.
5.3.2 Top of the crown (apical shoot) is always to be retained and favored.
5.3.3 When pruning in the permanent crown, the following branches are considered problematic and must be removed (in order of priority):
- broken, dead or dying branches,
- branches colonized by pests or diseases,
- shoots growing below the grafting level,
- rubbing branches,
- branches with developing/developed weak forks (V-shaped unions). Reduction can be considered as an alternative to removal,
- epicormic shoots in the permanent crown should be left or managed with respect to the tree species, vitality and growing context.

If branches grow in pairs or rings, they are removed selectively (not all at once) and/or reduced.
5.3.4 **Timing:** pruning is not repetitive, but occasional. On average, the pruning period will not exceed 5-10 years, depending on the objectives and risk assessment.
5.3.5 **Optimal season:** Ideal season is the vegetative period, but the dormant period is accepted as well. Crown maintenance should NOT be performed in following periods:
- post-dormancy – period between budding until full development of leaves,
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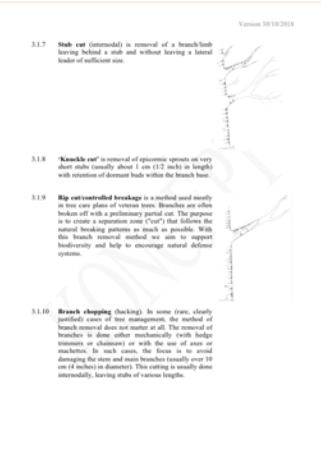
Version 30/10/2018

3.1.7 **Stub cut** (intermodal) is removal of a branch/limb leaving behind a stub and without leaving a lateral leader of sufficient size.

3.1.8 **'Knuckle cut'** is removal of epicormic sprouts on very short stubs (usually about 1 cm (1/2 inch) in length) with retention of dormant buds within the branch base.

3.1.9 **Rip cut/controlled breakage** is a method used mostly in tree care plans of veteran trees. Branches are often broken off with a preliminary partial cut. The purpose is to create a separation zone ("cut") that follows the natural breaking patterns as much as possible. With this branch removal method we aim to support biodiversity and help to encourage natural defense systems.

3.1.10 **Branch chopping** (hacking). In some (rare, clearly justified) cases of tree management, the method of branch removal does not matter at all. The removal of branches is done either mechanically (with hedge trimmers or chainsaw) or with the use of axes or machetes. In such cases, the focus is to avoid damaging the stem and main branches (usually over 10 cm (4 inches) in diameter). This cutting is usually done internodally, leaving stubs of various lengths.

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HOW

1/A – Formative pruning

Objectives: takes place within the temporary crown to ensure sufficient road clearance while supporting the development of a stable and sustainable permanent crown.

Minimum road clearance is differentiated for:

- pedestrians, cyclists ..... 2,5 m (8 feet),
- cars ..... 4,5 m (15 feet)

Considering the tendency of branches to bend down over time, it is advisable to aim for an initial clearance of 3 m (10 feet) (pedestrians) and 5-7 m (16 to 23 feet) (cars) with respect to the location and tree species in question.
Crown rising should take place in successive steps, leaving the ratio between trunk and crown approximately at 1:1.

The top of the crown (apical shoot) should always be retained and favored.

	A structural pruning	B lateral crown reduction	C upper crown reduction	D shaping	E mismanaged/mutilated tree management
1 young tree	1/A			1/D	1/E
2 semi-mature tree	2/A	2/B		2/D	2/E
3 mature tree	3/A	3/B	3/C	3/D	3/E
4 veteran tree	4/A	4/B	4/C	4/D	

HOW

1/A – Formative pruning

When pruning in the temporary crown, the following branches are considered problematic and must be removed or reduced (in order of priority):

- broken, dead or dying branches,
- branches colonized by pests or diseases,
- branches with developing/developed weak forks (V-shaped union),
- rubbing branches,
- codominant branches, competing with the apical shoot,
- epicormic shoots growing on the stem,
- shoots growing below the grafting level.

If branches grow in pairs or rings, they are removed selectively (not all at once) and/or reduced.

	A structural pruning	B lateral crown reduction	C upper crown reduction	D shaping	E mismanaged/mutilated tree management
1 young tree	1/A			1/D	1/E
2 semi-mature tree	2/A	2/B		2/D	2/E
3 mature tree	3/A	3/B	3/C	3/D	3/E
4 veteran tree	4/A	4/B	4/C	4/D	

HOW

1/A – Formative pruning

Timing: Formative pruning should start 3 years after planting, at the latest.

Formative pruning of young trees is periodical, and pruning should be repeated every 2-3 years, based on risk assessment and objectives.

Optimal season: during the growing season is prefered, but the dormant period is acceptable as well. Formative pruning should NOT be performed in the folowing periods:

- post-dormancy – period between budding until full development of leaves,
- pre-dormancy – period when leaves start to color (autumn) until they are shed or fully disfunctional.

Methods: Target pruning is the main branch removal method (3.1.5). Pruning to lateral (3.1.6) is accepted in justified cases.

Leaf area removal should not exceed 20-25%.

	A structural pruning	B lateral crown reduction	C upper crown reduction	D shaping	E mismanaged/mutilated tree management
1 young tree	1/A			1/D	1/E
2 semi-mature tree	2/A	2/B		2/D	2/E
3 mature tree	3/A	3/B	3/C	3/D	3/E
4 veteran tree	4/A	4/B	4/C	4/D	

HOW

1/A – Formative pruning

Critical errors:

- Late start to the pruning interventions leads to the need to remove large volumes of the crown and create large wounds during repeated interventions.
- Excessive hit rate (large volume of leaf area removal) can cause a large volume of epicormic growth on the stem and branches.

	A structural pruning	B lateral crown reduction	C upper crown reduction	D shaping	E mismanaged/mutilated tree management
1 young tree	1/A			1/D	1/E
2 semi-mature tree	2/A	2/B		2/D	2/E
3 mature tree	3/A	3/B	3/C	3/D	3/E
4 veteran tree	4/A	4/B	4/C	4/D	

HOW

Challenges

- **Gaps** in knowledge. “We've always done it and it works” is not good enough explanation - necessity of research and definition of influencing factors.
- **Species-specific approach** - broadleaves/conifers/palms, cultivars etc.
- **Approach to stressed trees** due to physiological stress or influence of pest and diseases.
- **Problems** in understanding legislative/cultural differences of other countries/regions.
- **Restrains** of using standards developed in different country
- **Formalities** - text is too long/short/technical, difference between standard and textbook etc.

EUROPEAN ARBORICULTURAL COUNCIL e.V. (EAC)

WHO

WHO

ARBORISTICKÁ AKADEMIE

2012
Certification center for program “Czech Certified Arborist”

2012 - 2017
Development of Czech Arboricultural Standards (12 issues)

2016 - 2019
Participation on development of Slovak Arboricultural Standards

2018
EAC Working Group - European Tree Pruning Standard
Certification center for program “European Tree Worker”

2019
Certification center for program “VETcert”

WHO

EUROPEAN ARBORICULTURAL COUNCIL e.V. (EAC)

- **2019 - 2022** ERASMUS+ project TeST - "Technical Standards in Tree Work"
- 10 partner EU countries with possible cooperation with any number of other partners (EU or not)
- workshops, consultations, dissemination activities
- free Technical standards for the use of arboricultural industry (+ national annexes)

WHO

	**Arboristická Akademie** Czech Republic
	**Natuurinvest - Inverde** Belgium
	**Institut Drzewa** Poland
	**European Arboricultural Council** Germany
	**Silvatica s.a.s** Italy
	**Doctor Arbol** Spain
	**Labie Koki Eksperti** Latvia
	**Lietuvos arboristikos centras** Lithuania
	**Boomtotaalzorg B** Netherlands
	**ISA Slovensko** Slovak Republic

WHO

EUROPEAN ARBORICULTURAL COUNCIL e.V. (EAC)

- **1-st meeting**

  30.10. - 1.11. 2019 Brussels, BE

- **willingness to cooperate?**

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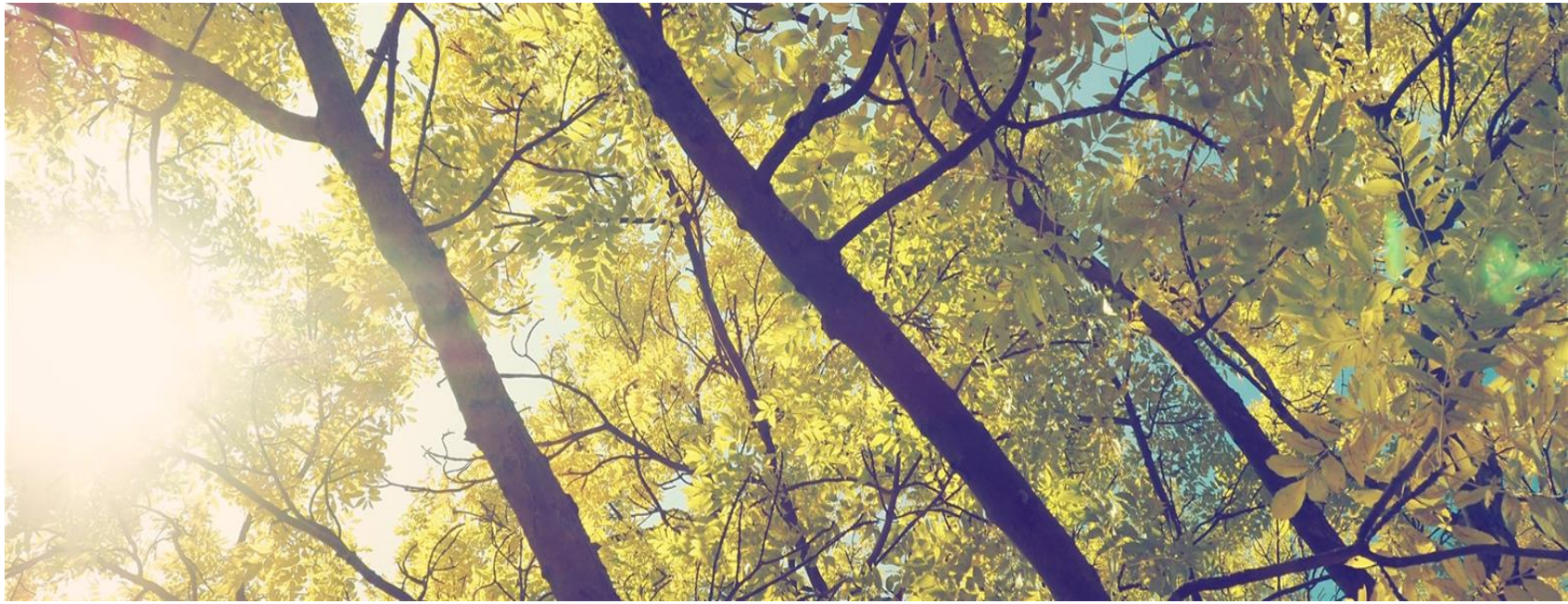
The European Arboricultural Council (EAC)

Thank you for your attention!



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