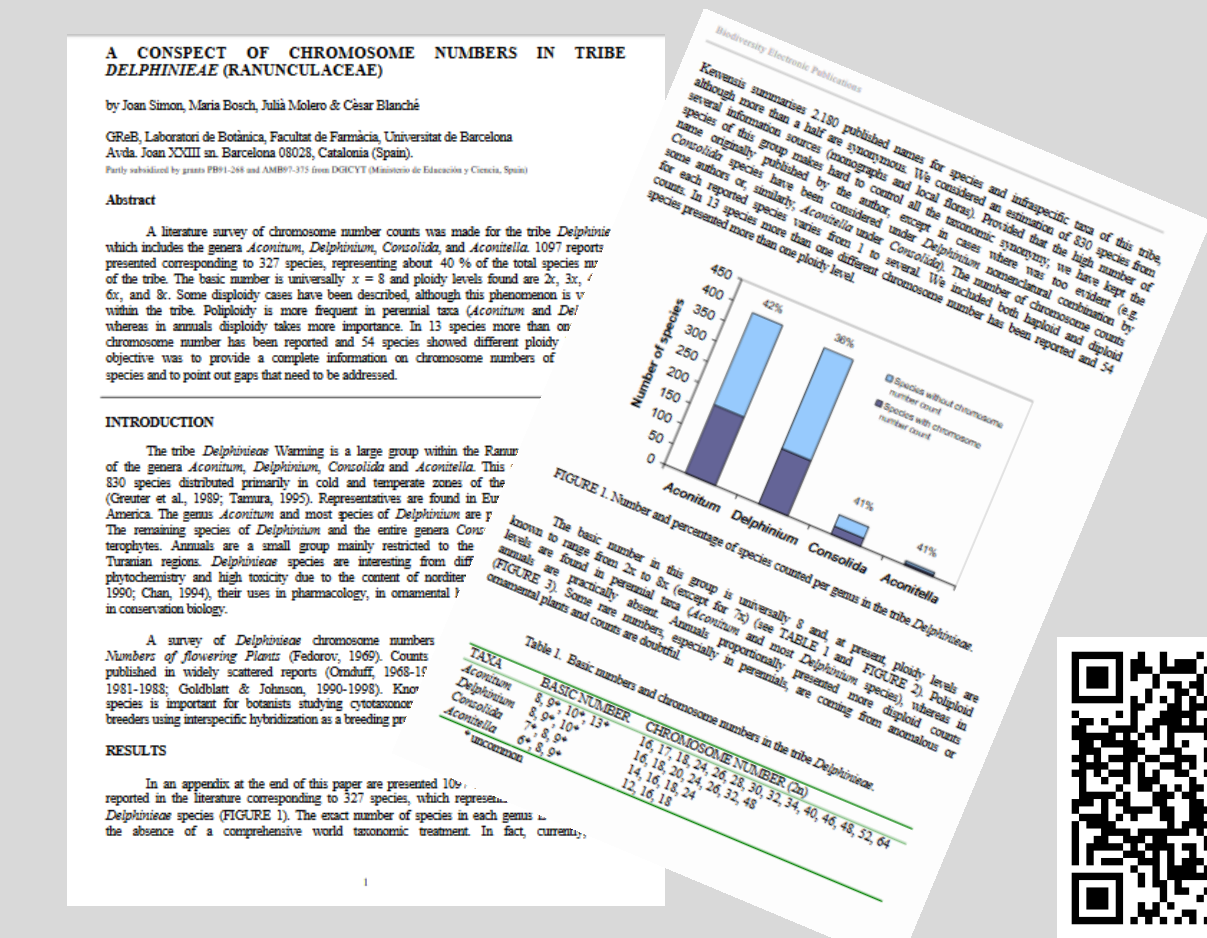


# DCDB: an updated on-line database of chromosome numbers of tribe *Delphinieae* (Ranunculaceae)

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**1999**  
Simon, J., M. Bosch, J. Molero & C. Blanché (1999). A conspect of chromosome numbers in tribe *Delphinieae* (Ranunculaceae) *Biodiversity Electronic Publications*, 1 [on line] <http://hdl.handle.net/2445/95875>



**2016**  
Bosch, M., J. Simon, J. López-Pujol & C. Blanché (2016). DCDB: an updated on-line database of chromosome numbers of tribe *Delphinieae* (Ranunculaceae) *Dipòsit Digital de la Universitat de Barcelona* [on line] <http://hdl.handle.net/2445/98702>

### Scope

- Accurate extensive literature and internet survey
- Published chromosome counts worldwide (1889-2016)
- Tribe *Delphinieae* Warming

*Aconitum* L.  
*Gymnaconitum* (Stapf) Wei Wang & Z. D. Chen  
*Delphinium* L. (including *Staphisagria* Spach)  
*Consolida* (DC.) S.F. Gray  
*Aconitella* Spach.

**Table structure: 8 fields**

Consensus name	Published name	Plantist name	Country (or area)	n	2n	Reference	Observations
<b>ACONITUM</b>							
<i>Aconitum ajacense</i> Nakai*	<i>Aconitum ajacense</i> Nakai	<i>Aconitum ajacense</i> Nakai	Japan	32	64	Kunze (1959a)	*According Radtke (1984) should be <i>A. japonicum</i> subsp. <i>subconcomitans</i>
<i>Aconitum alboidacum</i> Kom.	<i>Aconitum alboidacum</i> Kom.	<i>Aconitum alboidacum</i> Kom.	Russia	16	32	Sokolovskaya (1966)	
<i>Aconitum alboidacum</i> Kom.	<i>Aconitum alboidacum</i> Kom.	<i>Aconitum alboidacum</i> Kom.	China	16	32	Shang & Lee (1984)	
<i>Aconitum alboidacum</i> Kom.	<i>Aconitum alboidacum</i> Kom.	<i>Aconitum alboidacum</i> Kom.	China	16	32	Yang et al. (1993b)	
<i>Aconitum alboidacum</i> Kom.	<i>Aconitum alboidacum</i> Kom.	<i>Aconitum alboidacum</i> Kom.	China	16	32	Yang (1995)	
<i>Aconitum albidum</i>	<i>Aconitum albidum</i>	<i>Aconitum albidum</i>	China	16	32	Lin et al. (1998)	
<i>Aconitum albidum</i>	<i>Aconitum albidum</i>	<i>Aconitum albidum</i>	China	16	32	Yuan & Yang (2005)	
<i>Aconitum albidum</i>	<i>Aconitum albidum</i>	<i>Aconitum albidum</i>	China	16	32	Yuan & Yang (2005)	
<i>Aconitum albivittatum</i> Kom.	<i>Aconitum albivittatum</i> Kom.	<i>Aconitum albivittatum</i> Kom.	China	16	32	Yuan & Yang (2005)	
<i>Aconitum albivittatum</i> Kom.	<i>Aconitum albivittatum</i> Kom.	<i>Aconitum albivittatum</i> Kom.	China	16	32	Yuan & Yang (2005)	
<i>Aconitum albivittatum</i> Kom.	<i>Aconitum albivittatum</i> Kom.	<i>Aconitum albivittatum</i> Kom.	Not indicated	16	32	Kobsová (2015)	From Cultures
<i>Aconitum albivittatum</i> Kom.	<i>Aconitum albivittatum</i> Kom.	<i>Aconitum albivittatum</i> Kom.	China	16	32	Hono et al. (2015)	

635 published names detected  
511 consensus names resolved

3-column synonyms listing for quick and easy browsing

Geographic origin of CNR

Relevant notes on taxonomic criteria, type of data, confidence, hybrid origin, studied populations...

n, 2n (C-Values noted when accepted)

Independent entries for distinct populations

### Technical data

- Updated 23/IV/2016 [Yearly updated in the future]
- MsExcel® & MsAccess® Software [Future expansion to web search by Dreamweaver®]
- Available directly from the Digital Repository of the Universitat de Barcelona
- Complete format: <http://hdl.handle.net/2445/98702>
- Simultaneously, DCDB will contribute to the resources of CCDB

This make possible to identify the number of populations truly studied (in some cases, a single report in a given table of a standard database means, in fact, up to 60 analysed populations, which is informative of significant chromosome knowledge, for instance on variation levels of karyotype structure

## Results

### Numbers

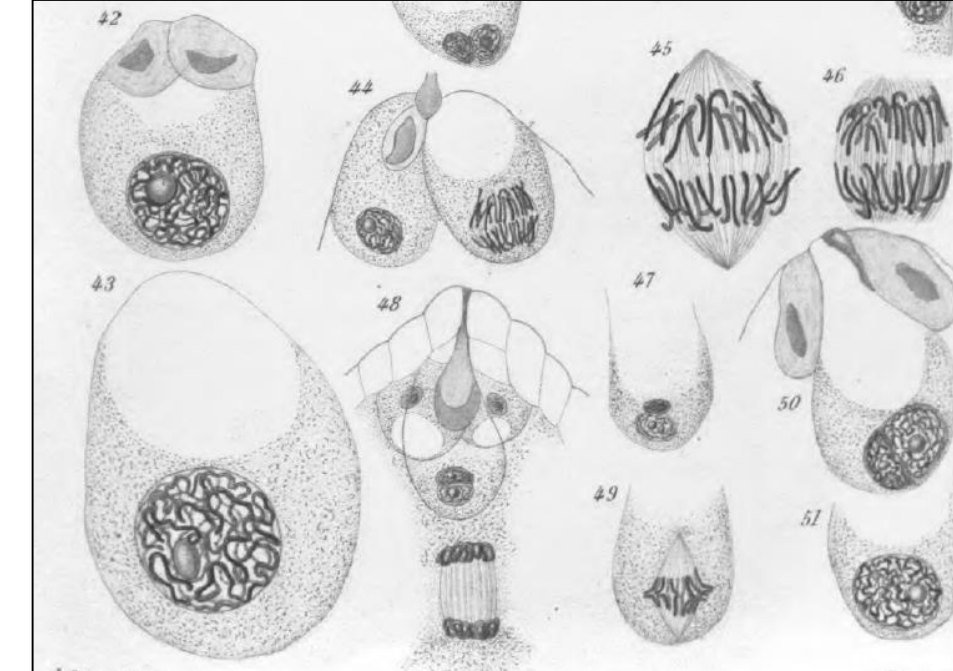
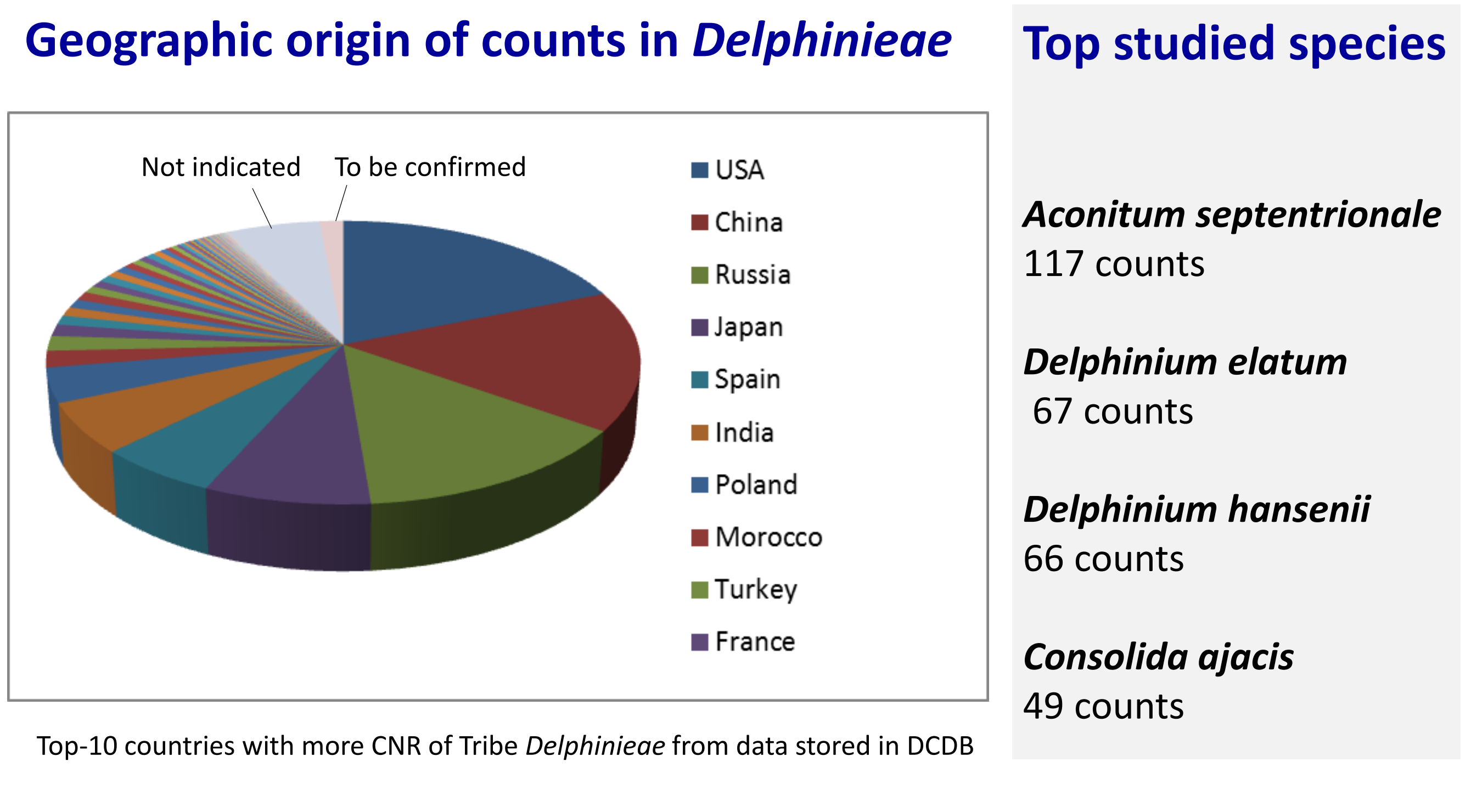
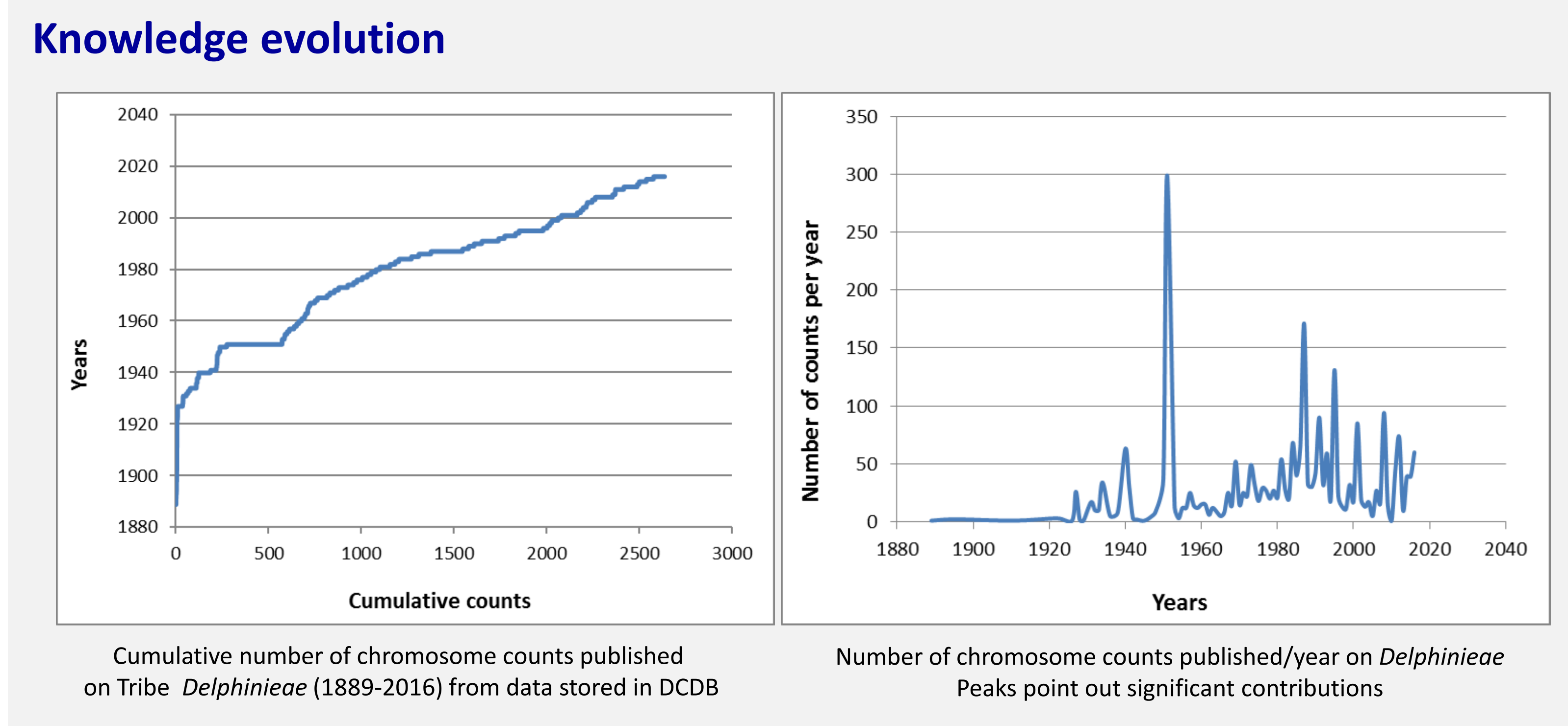
- Total number of reports: **2598**
- Increase vs. 1999 version: c. **137%** added [1097 reports captured in the 1999 version]
- Total number of reported species: **389** [ **44,5%** of tribe ] / **467** taxa [ **46,7%** of tribe ]

This increase is due both to chromosome research progress (analyzed as counts/year) and an improved information capture system (including checking of populations location through Cyrillic, Japanese and Chinese writing systems). Additionally, recent taxonomic advances, synonymization and new phylogenetic criteria have also been taken in account.

### First report

De même encore, il en existe douze, d'après M. Strasburger (3), soit dans les noyaux polliniques, soit dans le noyau primaire du sac embryonnaire de l'*Heleborus fatidica*. Quant à la copulation des noyaux sexuels chez les Ranunculacées (*Aconitum*, *Delphinium*, etc.), il suffira de jeter les yeux sur les figures 50 et 51 pour constater qu'elle s'effectue comme dans les exemples cités en dernier lieu.

**1889**  
*Delphinium ajacis* L. [n = 12]  
Guignard, L. (1889)  
Étude sur les phénomènes morphologiques de la fécondation. *Bull. Soc. Bot. France* 36: 100-146.

- ### Top studied species
- Aconitum septentrionale***  
117 counts
  - Delphinium elatum***  
67 counts
  - Delphinium hansenii***  
66 counts
  - Consolida ajacis***  
49 counts

### Basic numbers and chromosome numbers in the tribe *Delphinieae*

GENUS	BASIC NUMBER (x)	CHROMOSOME NUMBER (2n)
<i>Aconitum</i>	6*, 8, 9*, 10*, 13*	12, 16, 17, 18, 20, 24, 26, 28, 30, 32, 34, 40, 46, 48, 52, 64
<i>Gymnaconitum</i>	8	16
<i>Delphinium</i>	8, 9*, 10*	16, 18, 20, 24, 32, 48
<i>Consolida</i>	7*, 8, 9*, 10*	14, 16, 18, 20, 24
<i>Aconitella</i>	6*, 8, 9*	12, 16, 18

\* uncommon

### Tribe diversity

- The main basic number x = 8 is found at 2x, 3x, 4x, 5x, 6x, and 8x ploidy levels, whereas x = 9 is much rarer
- Polyploidy is more frequent in perennial taxa (*Aconitum* and *Delphinium s.str.*)
- Dysploidy (both increasing and decreasing) takes more importance in annuals and should be considered as a source of new evolutionary opportunities
- B-chromosomes have been only found in *Aconitum* (17 species)
- The most frequent counts are 2n = 16 and 32 but counts of 2n = 12, 14, 17, 18, 20, 24, 26, 28, 30, 34, 40, 46, 48, 52, and 64 have also been recorded.

### Intraspecific diversity

- In 20 species more than one different chromosome number has been reported
- The most frequent case is sharing 2n = 16 and 2n = 18
- The species with more different chromosome numbers is *Aconitum palmatum* (2n = 30, 32, 46, 48 and 52)
- 81 species showed different ploidy levels
- Some rare numbers, especially in perennials, are coming from anomalous, experimental or ornamental plants and some other deviating counts are doubtful or coming from very old literature

The *Delphinieae* Chromosome Database (DCDB) provides the most complete current available information on chromosome numbers of *Delphinieae*, yearly updated and easily available by a system searchable through both the UB Repository and international platforms as CCDB (Rice et al., 2015), to be useful for general building of cytotaxonomical databases and for specific research ongoing projects of systematics of *Ranunculaceae*.